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## Deanship of Student Affairs, Admissions, and Registration

Alfaisal University Undergraduate Catalog contains current information regarding the University calendar, admissions, degree requirements, fees, regulations, and course offerings. It is not intended to be and should not be relied upon as a statement of the University's contractual undertakings.

Alfaisal University reserves the right in its sole judgment to make changes of any nature in its program, calendar, or academic schedule whenever it is deemed necessary or desirable, including changes in course content, the rescheduling of classes with or without extending the academic term, cancelling of scheduled classes and other academic activities, and requiring or affording alternatives for scheduled classes or other academic activities, in any such case giving such notice thereof as is reasonably practicable under the circumstances.

Alfaisal University is committed to providing information in a manner that is accessible to all. If you are in need of a printed copy of the material presented in the University Undergraduate Catalog, please contact the Deanship of Student Affairs, Admissions, and Registrations for a printout of the website.

Deanship of Student Affairs, Admissions, and Registrations can be reached by e-mail, phone, or mail:

- E-mail: [Deanship of Student Affairs, Admissions, and Registrations](#)
- Phone: Local Tel: 920 000 570 International Tel: +966 11 215 7777
- Address: Alfaisal University, Deanship of Student Affairs, Admissions, and Registrations, Al Takhassousi, Al Zahrawi Street Riyadh 11533

*University Undergraduate Catalog information is subject to change. Please check back to this website for the most up-to-date information.*

## General Information

### Profile

**FOUNDED:** Chartered in 2008

**LOCATION:** Riyadh-Saudi Arabia  
P.O. Box 50927, Riyadh, 11533,  
Kingdom of Saudi Arabia

**CAMPUS:** A truly architecturally stunning campus, situated on the austere grounds of the palace of his Majesty the Late King Faisal, located in the heart of Riyadh, the political and the financial center of Saudi Arabia and the region.

**TYPE:** Baccalaureate-Arts and Sciences, and Master of Science Focus; a private non-profit University

**CALENDAR:** Two fifteen-week regular semesters, eight-week summer session

**DEGREES/MAJORS:** Bachelor of Arts, Bachelor of Science, Master of Science; more than 30 regular majors, unique area majors, plus minor degree; more than 10 accredited Graduate degrees, and many Executive Education Courses.

**ENROLLMENT:** 3604 undergraduates, 587 graduates (Fall 2022)

**STUDENT/FACULTY:** 18:1 (undergraduate)

**FACULTY PH.D.:** 84% of full-time faculty hold terminal degrees in their field

**FINANCIAL AID:** More than 22 million Saudi Riyals distributed in 2020-2021; extensive program of university and college-funded scholarships.

**ATHLETICS:** Inter-collegiate sports teams.

**ALUMNI:** More than 4,000 from more than 42 countries.

### Distinctions

The Times Higher Education World University Rankings 2019: College of Medicine and College of Science were ranked 1st in Saudi Arabia, the University was ranked 2nd in Saudi Arabia and the Arab Region, and 301-350 globally. Alfaisal University is also recognized as one of world's top 200 institutions under 50 Years old. 2016 US News: Alfaisal University ranked 12th out of 125 institutions in Arab Region & 5th in Kingdom as Best Arab Universities. QS University Rankings for Arab Region 2015: Alfaisal ranked 1st in Kingdom for second year in row in number of citations per paper. Nature Index 2016 showed Alfaisal University ranking 3rd & 5th in national & regional collaborations, respectively.

# The Vision and the Mission of the University

The vision of Alfaisal University is to be a world-class institution and a pioneer in innovation and knowledge applications. The University mission is to be a student-centered university that creates and disseminates knowledge through world-class academic programs, research, and service that benefits humanity.

In advancing its mission, the University adhere to the current values:

- *Culture*: Understand and value core elements of Saudi culture.
- *Knowledge*: Contribute new knowledge in the fields of science and technology.
- *Performance*: Commit to continuous improvement in performance and quality.
- *Leadership*: Demonstrate leadership with respect to academics, research, and service, and build leaders.
- *Faith*: Honor the role of faith in life.
- *Integrity*: Demonstrate professional and institutional integrity.
- *Responsibility*: Embrace social and environmental responsibility.
- *Honesty*: Demonstrate honesty in one's actions and treatment of others.
- *Service*: Provide value-added service at the local, regional, and international levels.
- *Learning*: Instill the habit of lifelong curiosity and learning.
- *Equal opportunity*: Strive for equal opportunity within the context of valuing talent and ability.

Fulfilling its distinctive mission, Alfaisal University's aim is to continue to be one of the finest private non-profit universities in the country and the region.

## Presidents

- Dr. Mohammed Alhayaza 2015-Present
- Dr. Faisal AlMubarak (Provost) 2010-2015
- Dr. Alan Goodridge (Provost) 2008-2010

## Historical Contexts

The King Faisal Foundation (KFF) which was established in 1976 by the heirs of the late King Faisal, launched Alfaisal University as the premier coeducational institution for business, engineering, science, and medical education and research in the

Kingdom and the region. The deeply held principle of KFF was that a well-educated population was the foundation for a strong nation. The Foundation has always promoted a pragmatic approach to furthering the opportunities for Saudi youth. The creation of a university that strives to achieve excellence in several fields is yet another important advance towards fulfilling its desire to enrich the country's enterprising individuals with the ability to compete on a global level. Financial support provided by the King Faisal Foundation has also produced the King Faisal School, Prince Sultan College for Tourism and Business, and Effat College (for women).

Plans for establishing Alfaisal University began in 1999. The first "Concept Paper" regarding the University was prepared in late 2000 with the support of the Carlyle Group. It was submitted to the Economic Offset Committee in February 2001 to qualify the University under the Economic Offset Program. Approval was received in July 2001. Four non-Saudi multinational companies agreed to become co-founders along with six Saudi organizations. In April 2003, the Offset Committee granted a multiple of eight offset credits to the non-Saudi co-founders for cash contributions. The Board of Trustees negotiated with the Ministry of Higher Education to secure an acceptable Charter that assured the independence of the University. The Charter (#10905) was approved by the Ministry on 10 July 2004 and unanimously ratified by the Board of Trustees on 25 October 2004.

Students at Alfaisal University are provided with opportunities for intellectual, cultural, social, emotional, and physical growth. Within the framework of the University founding principles, the University academic experience is complemented by meaningful student life activities and a variety of cultural events.

## The Scenic Campus

The campus is situated on the beautiful grounds of the late King Faisal's Palace at Al Maathur in the center of Riyadh, a historical location ideal for academic pursuits. The first two campus buildings (Science and Business) were completed in 2008 and 2009, respectively. Students began University studies in Engineering, Business, and Medicine in October 2008 with majors in the College of Science and General Studies beginning in 2011. A College of Pharmacy was added in 2015, and a College of Law & International Relations in 2021.



# Campus Offices

Campus Offices	
<i>Accreditation</i>	215-11-7619
<i>Admissions toll free</i>	920 000 570
<i>Alumni</i>	215-11-7987
<i>Campus Safety</i>	215-11-7853
<i>College of Business</i>	215-11-7712
<i>College of Clinical Pharmacy</i>	215-11-7646
<i>College of Engineering</i>	215-11-7714
<i>College of Law</i>	215-11-7958

Campus Offices	
<i>College of Medicine</i>	215-11-7650
<i>College Science</i>	215-11-7705
<i>Communications and Marketing</i>	215-11-8909
<i>External Relations</i>	215-11-7950
<i>Facilities</i>	215-11-7861
<i>Finance</i>	215-11-7880
<i>Graduate School</i>	215-11-7705
<i>Health Services/Clinics</i>	215-11-7995-7997

## Board of Trustees

- HRH. Prince Khalid Al Faisal Bin AbdulAziz Al-Saud** Chairman Board of Trustees
- HRH. Prince Turki Al-Faisal Bin Abdulaziz Al-Saud** King Faisal Foundation (KFF)
- HH. Prince Bandar Bin Saud Bin Khalid Al-Saud** King Faisal Foundation (KFF)
- HRH. Prince Saud Bin Turki Al-Faisal Bin Abdulaziz Al-Saud** King Faisal Foundation (KFF)
- H.E. Dr. Majid Bin Ibrahim Alfayyadh** King Faisal Specialist Hospital & Research Center (KFSHRC)
- H.E. Dr. Ghasan Bin Abdulrahman Alshibl**
- Al-Sheikh Hamad Bin Abdulaziz Al-Jomaih**
- Dr. Abdulaziz Alsebaile**
- Dr. Maher Alodan**
- Eng. Mohammed Bin Abdulrahman Alaqeel** Jarir Investment
- Eng. Ahmed Jazzar** President Boeing-Saudi Arabia
- Mr. Abdulaziz Al Faraj** BAE Systems Saudi Arabia
- Dr. Gada bint Abdulaziz Bin saif**
- Dr. Bassam Bin Abdullah Albassam**
- Dr. Saleem Bin Saleh Alsaleem**
- Dr. Manaji Bin Hassan Alkenani**
- Dr. Abdulmalik Bin Mohammed Alktheri**
- Dr. Mohammed Bin Ibrahim Alodhaib**
- H.E. Dr. Mohammed Bin Ali Alhayaza** President, Alfaisal University



## Officers of the Administration

**Mohammed Alhayaza PhD**, President

**Khaled M. AlKattan, MD, FRCS (Edn)**, Vice President for Administration and Finance

**HRH. Princess Maha Al Saud, PhD**, Vice President for External Relations

## University Administrative Officers

**Matheus (Theo) F. A. Goosen, PhD**, Associate Vice President for Research & Graduate Studies

**Khaled M. AlKattan, MD, FRCS (Edn)**, Dean, College of Medicine

**Muhammad Anan, PhD**, Acting Dean, College of Engineering

**Bajis Dodin, PhD**, Interim Dean, College of Business

**Matheus (Theo) F. A. Goosen, PhD**, Acting Dean, College of Science, & General Studies

**Mustafa Abdelwahid, PhD**, Acting Dean of Admission & Registration, Student Affairs

**Saddam Muthana**, Director of Quality Assurance and Accreditation

**Mustafa Abdelwahid, PhD**, University Librarian

# Chairman's Message

## **A word from HRH Prince Khalid Al Faisal bin Abdulaziz**

Within the framework of its caring for human development, which is the most important basic factor in total development, King Faisal Foundation extends its projects in serving education through King Faisal Schools, Prince Sultan College of Tourism and Management, Effat College, in addition to Scholarship Programs. Today it presents Alfaisal University as a contemporary Arab academic university that has international scientific affiliations with similar institutions. Alfaisal uses its expertise to develop educational techniques and provide appropriate mechanisms to mobilize the wisdom of the Creator of the human mind's abilities in order to innovate and upgrade life.

It is obvious that the main handicap that retards Arab societies, in general, is the low quality of education and the inability of its prevailing systems and means – such as prompting and keeping by heart – to qualify humans to be able to advance a society pursuant to a scientific rule that adopts contemporary means and technology, and to fulfill the urgent need for training the educated on thinking so as to reach the right decision.

It is illogical to confine the mission of upgrading education to the State alone. It is unfair to the State and to the investment in the human element that serves society as a whole. All of society must stand shoulder to shoulder to carry out this mission.

Therefore, the aim of this University is to provide the student with the educational level he seeks abroad, to be an example for voluntary work which the private sector can contribute to the development of our homeland, and, at the same time, to employ its abilities and research centers to serve society, and to build bridges to the most advanced international sites in educational techniques and tools.



# President's Message

Greetings from Alfaisal University,

I am very proud to be president of Alfaisal University, an institution increasingly recognized as one of the best in Saudi Arabia.

Since its founding by the King Faisal Foundation in 2002 as one of the first private nonprofit, research and student-centered universities in the Kingdom, Alfaisal University has been advancing at a confident and sustainable pace to serve the community as a quality education provider in Saudi Arabia. The University has strong relationships with international and local universities, business communities and works closely with organizations to stay at the forefront of advanced pedagogical practices. Alfaisal University capitalizes on these relationships for the benefit of its students. Research, as well as recent trends, indicates that we must move from theory-based curricula to task-based curricula, allowing students to be exposed to the most up-to-date practices.

English is the language of instruction in our four colleges: Business, Engineering, Science, and Medicine. Each offers world-class undergraduate and graduate programs for the finest male and female students in the Kingdom and the Region. Located in the heart of Riyadh, the center for commerce, industry, and research, with our solid reputation and affiliations with leading hospitals and ample access to our faculty, more students are looking to launch their medical career at Alfaisal University. Alfaisal offers its students the opportunity to develop their full potential with outstanding facilities, inspiring academics and research-led teaching that will enable them to graduate as highly skilled, well-developed individuals able to transition seamlessly into the workplace.

Alfaisal University is a highly diverse and welcoming community with a beautiful campus. Big enough to have an international presence and impact, yet small enough that students are able to develop a strong sense of community with lifelong connections to friends and mentors.

Alfaisal University's rise to prominence has been the result of many factors: the contributions of talented and dedicated faculty; the energy, enthusiasm, and inventiveness of graduate and undergraduate students; the dedication and support of excellent staff; the passion of our founders to make a difference in the Kingdom and the world; and the support of our donors and partners.

I invite you to explore what Alfaisal has to offer you through our website and to discover what sets us apart from other fine universities.

I believe you'll be impressed by what our university has achieved so far, and as confident as I am in its potential to accomplish even more great things in the near future. Your prescription for success begins at Alfaisal.

Sincerely,  
Mohammed Alhayaza  
President, Alfaisal University

# Catalog Information

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## Using the Catalog

The statements in this catalog are for informational purposes only and should not be construed as the basis of a contract between a student and Alfaisal University. The course offerings and requirements of the University are continually under review and revision. This catalog presents those in effect at the time of publication. Courses listed in this publication are subject to revision without advance notice and are not necessarily offered each term or each year. Information regarding changes will be available in the Offices of Admissions, the Provost, the colleges, and major departments. It is especially important that each student note that it is his or her responsibility to be aware of current graduation requirements for a particular degree program.

## Academic Terminology

**Academic Affairs** One of the four major divisions of the University, headed by the Vice President and Provost, that focuses on educational needs of students.

**Academic Good Standing** A minimum cumulative grade point average of 2.00, which is required for continued enrolment in the University.

**Academic Year** The period commencing with the fall semester (16 weeks + final exams) and continuing through the spring semester (16 weeks + final exams) and summer term (8 weeks).

**Alumni** Individuals who have attended or graduated from a particular college or university.

**Board of Trustees** The governing body for Alfaisal University.

**Co-requisite** indicates a course that you must have satisfactorily enrolled in at the same time as the listed course.

**Credit Hour** A standard unit of measuring course work; credit hours are assigned to a particular course and count toward graduation, except in remedial courses. Typically, a course that meets for three hours a week is worth three credit hours.

**Cross-listed** Course offered by more than one department but treated as one course for credit purposes.

**Curriculum** A program of study covering the entire undergraduate or graduate career and designed to satisfy the requirement for a degree.

**Dean** The highest administrative officer of a college.

**Department Chairperson** An administrative officer holding faculty rank; responsible for the primary unit of academic organization.

**General Education Requirement** Student must take foundation courses in general subjects to obtain a baccalaureate degree.

**Grade Point Average (GPA)** The total number of grade points divided by the total graded semester hours attempted at Alfaisal University.

**Independent Study** Intensive study in a special area of the student's interest under the direction of a faculty member. Each individual investigation is to culminate in a comprehensive written report and/or examination and/or artistic project. A maximum of 3 semester hours may be applied toward graduation.

**Prerequisite** indicates a course that you must have satisfactorily completed before enrolling in the course.

**Professional Practice** Professional Practice consists of academic/career related work experiences completed for credit either on campus or at a place of business. They may or may not be salaried.

**Provost** The Vice President for Academic Affairs who is responsible for all academic matters.

**Recommendation** knowledge, skills, and the completion of courses and other requirements that may assist in a course, but are not required, are recommendations.

**Registrar** An academic unit that maintains academic records, awards transfer credit, and provides enrolment verification, transcripts, and course registration.

**Requirement** a mandatory criterion for enrolment in a course. For example, grade of C or higher in a beginning algebra course might be a requirement for a course.

**Semester** A semester at Alfaisal University is the 14-16-week offered each fall and spring.

**Seminar** A regular meeting of students, under the guidance of a faculty member, in which each conducts research and exchanges information, problems, and results through informal lectures, reports, and discussion.

**Student Affairs** One of the four major divisions of the University, headed by the Dean of Admission & Registration, Student Affairs that focuses on personal and non-academic needs of students.

**Syllabus** A document describing the objectives, outcomes, assessment activities, and structure of a course.

**Transcript** The University's official record of credit or degrees awarded, including the courses taken by a student and the grades received in each course.

## Units of Instruction

**Major:** A cohesive combination of courses, including introductory, intermediate, and advanced course work that designates a student's primary area of specialization. Majors are designated on university transcripts.

**Minor:** A combination of courses designed to provide a cohesive introduction to an area of study beyond the major. Minors are designated on university transcripts upon receipt of degree.

**Concentration:** A subdivision of a major without specific requirements that is provided for advisement only. Concentrations are not designated on university transcripts. All informal curricular recommendations made by departments and schools (such as emphases, tracks, areas of study, specializations, etc.) should be considered concentrations. Concentrations are advisory only; no approval process is required.

## Course Information

The University operates on the semester plan. The credit value of all courses is stated in terms of semester hours. Ordinarily, a semester hour is assigned for a 50-minute class meeting per week for the semester; therefore, a course valued at three semester hours generally meets three periods weekly. In laboratory courses, at least two 50-minute periods per week are ordinarily required for each semester hour of credit.

**Course Availability:** Some courses listed in the Undergraduate Catalog may not be available each year. Students should consult the major department or school or the [University website](#) for class availability. Questions concerning scheduling of courses should be referred to the department chairperson or college Dean.

**Course prerequisites** in effect at the time of publication are printed in this catalog. However, prerequisites may change over time and do not depend on catalog year.

## Course Numbering

Each course bears a distinguishing number for identification and indication of its academic level. The numbering system is as follows:

**100-199** Lower-division undergraduate courses, primarily for freshmen and sophomores.

**200-299** Upper-division undergraduate courses, primarily for juniors and seniors. A student normally should have completed at least 45 semester hours before enrolling in a course at this level at the time of registration.

**300-399** Advanced undergraduate courses. Open to juniors, seniors, and sometimes graduate students. A student normally should have completed at least 75 semester hours before enrolling in a course at this level.

**400-499** Advanced undergraduate courses. Open to juniors, seniors, and sometimes graduate students. A student normally should have completed at least 75 semester hours before enrolling in a course at this level.

## Course Descriptions

The following information is given for each course: course number (three or five digits preceding the title); course title; and credit value in semester hours. The University may cancel or add course offerings after publication of this *Undergraduate Catalog* depending upon the adequacy of enrolment and availability of faculty. Following the above information, any prerequisites, restrictions on enrolment, and any special considerations are noted. A course prerequisite is knowledge or experience a student is required or recommended to have prior to enrolling in a course.

## Sample Course Listing

<b>Course Code:</b> ME 421	<b>Course Name:</b> Renewable Energy Systems
<b>Credit Hours:</b> 3	<b>Pre-requisites:</b> ME 307
<b>Co-requisites:</b> none	

The course gives an overview of renewable energy sources including biomass, hydroelectricity, geothermal, tidal, wave, wind, and solar power. And it also presents the fundamentals of different renewable energy systems with a main focus on technologies with high development potential. Furthermore, it integrates

math, engineering, climate studies and economics, and enabling students to gain a broad understanding of renewable energy technologies and their potential.

**Prerequisites:** ME 307 or **Thermal Fluids Engineering II**. The course number, “421,” indicates that the course is primarily for senior. The “3 sem. hrs.” following the title, indicates the credit value in semester hours. A brief description of the course is provided in the paragraph following the semester hours. The

information after “Prerequisites” indicates the required background for enrolling in the course. In the example given, a student must have passed ME 307 or **Thermal Fluids Engineering II** prior to enrolment in ME 421. Course title revisions or a change in the course number are indicated by a “formerly” statement. Additional information about the course is available in the particular departmental or college office.

## Number of enrolled undergraduate & graduate students

Level	College	Program	Male Saudi	Male Non-Saudi	Males	Female Saudi	Female Non-Saudi	Females	Total
PhD	College of Medicine	PhD. Biomedical Sciences	2	3	5	6	7	13	18
Master	College of Business	M. Finance	30	2	32	24	0	24	56
Master	College of Business	M. General	66	3	69	114	7	121	190
Master	College of Business	M. Digital Marketing	0	0	0	4	1	5	5
Master	College of Business	M. Exec MBA - General	4	0	4	8	1	9	13
Master	College of Business	M. Human Capital Mgmt	0	0	0	2	0	2	2
Master	College of Business	M. Accounting & Taxation	6	0	6	3	1	4	10
Master	College of Business	M. Healthcare Management	8	2	10	13	1	14	24
Master	College of Medicine	M. Biotechnology	2	0	2	5	1	6	8
Master	College of Medicine	M. Public Health	4	3	7	12	0	12	19
Master	College of Medicine	M. Clinical Anatomy	0	3	3	2	2	4	7
Master	College of Medicine	M. Health Economics	5	0	5	8	2	10	15
Master	College of Medicine	M. Infection Control	7	2	9	17	0	17	26
Master	College of Medicine	M. Cancer Nanoscience	1	0	1	0	0	0	1
Master	College of Medicine	M. Clinical Psychology	4	0	4	8	1	9	13
Master	College of Medicine	M. Genetic Counselling	0	0	0	5	2	7	7
Master	College of Medicine	M. Analytical Biochemistry	2	0	2	5	3	8	10
Master	College of Medicine	M. Applied Health Research	1	0	1	1	0	1	2
Master	College of Medicine	M. Laboratory Quality Mgmt	6	0	6	15	0	15	21
Master	College of Medicine	M. Molecular & Cell Biology	7	0	7	24	3	27	34
Master	College of Medicine	M. Cl. Embryology&Reprod Bio	3	1	4	15	4	19	23
Master	College of Medicine	M. Cl. Speech Lang Pathology	1	0	1	13	1	14	15
Master	College of Medicine	M. Hemostasis and Thrombosis	0	0	0	1	0	1	1
Master	College of Medicine	M. Biostatistics&Epidemiology	0	3	3	3	1	4	7
Master	College of Medicine	M. Health Policy & Management	12	5	17	34	6	40	57
Master	College of Medicine	M. Health Research Management	0	0	0	4	0	4	4
Master	College of Medicine	M. Radiological & Imaging Sc.	12	1	13	18	2	20	33
Master	College of Medicine	M. Transfusion Med&Stem Cells	9	0	9	4	1	5	14
Master	College of Medicine	M. Nanodiagnostic&Nanomedicine	0	0	0	1	1	2	2
Master	College of Engineering and Advanced Computing	M. Engineering & Sys Mgmt	13	0	13	6	2	8	21
Master	College of Engineering and Advanced Computing	M. Artificial Intelligence	0	2	2	7	1	8	10
Master	College of Science & General Studies	M. Nanoscience&Nanotechnology	0	0	0	6	0	6	6

High Diploma	College of Business	HD. Business Administration	1	0	1	2	0	2	3
High Diploma	College of Medicine	HD. Child Life	1	0	1	18	0	18	19
Undergraduate	College of Business	BBA.Finance	408	17	425	286	11	297	722
Undergraduate	College of Business	BBA.Marketing	28	10	38	105	14	119	157
Undergraduate	College of Business	BBA.Accounting	20	8	28	14	5	19	47
Undergraduate	College of Business	BBA.General Business	6	3	9	8	1	9	18
Undergraduate	College of Business	BBA.Business Analytics	3	1	4	6	0	6	10
Undergraduate	College of Business	BBA.Project Management	142	20	162	183	19	202	364
Undergraduate	College of Business	BBA.Human Resource Mgmt	7	0	7	9	3	12	19
Undergraduate	College of Business	BBA.Accounting - Finance	0	1	1	1	0	1	2
Undergraduate	College of Business	BBA.Finance - Accounting	0	0	0	2	1	3	3
Undergraduate	College of Business	BBA.Marketing - Family Bu	0	0	0	1	0	1	1
Undergraduate	College of Business	BBA.Finance - Project Mgmt	0	0	0	4	0	4	4
Undergraduate	College of Business	BBA.Family Bu - Project Mgmt	0	1	1	0	0	0	1
Undergraduate	College of Business	BBA.Project Mgmt - Family Bu	0	0	0	1	0	1	1
Undergraduate	College of Business	BBA.Entrepreneurship&Family Bu	17	1	18	20	3	23	41
Undergraduate	College of Medicine	Medicine & Surgery (MBBS)	174	602	776	300	741	1041	1817
Undergraduate	College of Pharmacy	Doctor of Pharmacy	5	1	6	16	50	66	72
Undergraduate	College of Engineering and Advanced Computing	BS.Software Engineering	145	95	240	191	70	261	501
Undergraduate	College of Engineering and Advanced Computing	BS.Biomedical Engineering	0	2	2	6	4	10	12
Undergraduate	College of Engineering and Advanced Computing	BS.Electrical Engineering	20	13	33	18	7	25	58
Undergraduate	College of Engineering and Advanced Computing	BS.Industrial Engineering	224	26	250	231	13	244	494
Undergraduate	College of Engineering and Advanced Computing	BS.Mechanical Engineering	25	22	47	20	3	23	70
Undergraduate	College of Engineering and Advanced Computing	BS.Architectural Engineering	24	9	33	100	26	126	159
Undergraduate	College of Law & International Relations	BS.Law and Int'l Relations	118	5	123	178	22	200	323
Undergraduate	College of Science & General Studies	BS.Life Sciences	7	5	12	24	46	70	82

Row Labels	Sum of Females	Sum of Males	Sum of Total
High Diploma	20	2	22
Master	426	230	656
PhD	13	5	18
Prep Year	325	334	659
Undergraduate	2763	2215	4978
<b>Grand Total</b>	<b>3547</b>	<b>2786</b>	<b>6333</b>

## Colleges and Departmental Abbreviations

The following abbreviations for departmental and college offerings are used both in the program requirement descriptions and in the course descriptions throughout the *Undergraduate Catalog*.

COURSE CODE	COURSE TITLE
<b>ACC</b>	Accounting
<b>AMB</b>	Ambulatory Care
<b>ANT</b>	Anthropology
<b>APP</b>	Advanced Pharmacy Practice
<b>ARB</b>	Arabic
<b>ARE</b>	Architectural
<b>BAN</b>	Business Analytics

COURSE CODE	COURSE TITLE
BCH	Biochemistry
BEP	Basics of Biostatistics & Epidemiology
BHS	Behavior Science
BIO	Biology
BPH	Pharmacotherapy
BSN	Nanomaterials & Nanotechnology
BST	Biostatistics
CAM	Complementary and Alternative Medicine
CHM	Chemistry
COM	Primary Health Care & Rural Health
CSC	Computer Science
CVP	Cardiopulmonary Block
DIT	Drug Information and Evidence
ECO	Economics
EE	Electrical Engineering
END	Endocrine Block
ENG	English
ENV	Environmental
FIN	Finance
FMT	Forensic Medicine & Toxicology
FON	Foundation Block
FRE	French
GEN	(Genetics)
GER	German
GIT	Gastrointestinal Block
GYN	Gynecology
HEM	Hem/One Block
HEN	Health Economics and Health Care Management
HIS	History
HNS	Head & Neck & Special Senses Block
HRM	Human Resources
IE	Industrial Engineering
IMD	Sub-Specialty Medicine
IMM	Immunology
INS	Integrated Neuroscience
IPH	Integrated Pharmacotherapy
IPP	Introductory Pharmacy Practice
ISL	Islamic Studies
KIN	Pharmacokinetics
LAW	Law
LSR	Research Methodology
LST	Life Science
MAT	Mathematics
MCH	Medicinal Chemistry
ME	Mechanical Engineering
MED	Medicine
MGT	Management

COURSE CODE	COURSE TITLE
MIF	Medical Informatics
MIM	Medical Imaging
MKT	Marketing
MOL	Molecular Medicine
MSF	Medication Safety
MSK	Musculoskeletal Block
MTM	Medication Therapy Management
NEU	Neuroscience Block
NTN	Nutrition
OPM	Operations & Project Management
PCL	Patient Care
PED	Pediatrics
PHC	Pharmaceutics
PHG	Pharmacogenomics
PHI	Pharmaceutical Industry
PHL	Philosophy
PHU	Physics
PHY	Physiology
POD	Pathogenesis of Diseases
PRC	Pharmacy Practice
PRO	Communications Skills
PSY	Psychology
PTH	Parenteral Therapy
RAD	Radiology
REG	Pharmacy Regulations
REN	Renal Block
REP	Reproductive Block
RES	Respiratory Block
SCI	Forensic Science
SCR	Self-Care and Non-Prescription Drugs
SE	Software Engineering
SSP	Surgical Subspecialty
STA	Statistics
SUR	Surgery

## University Overview

### About Alfaisal University

Alfaisal University was founded by the highly reputed King Faisal Foundation in 2002 as one of the first Private Non-Profit, research and teaching universities in the Kingdom committed to achieving international standards of excellence. It has the support of national and international co-founders and distinguished Board

Members that have continually supported the university in its mission to remain a student-centered institution committed to research.

Alfaisal University is made up of four faculties, spanning from Business, Engineering, Medicine, Science and General Studies offering world-class marketable undergraduate and graduate programs to the finest male and female students in the Kingdom and the Region. Located in the heart of Riyadh, the center for commerce, industry, and research, Alfaisal offers its students opportunities to develop their full potential with outstanding facilities, inspirational academics and research-led teaching that will enable our students to leave us as highly skilled, well-developed individuals able to make the transition into the workplace easily.

## Alfaisal University Vision Statement

Alfaisal University is a private non-profit institution which aspires to be a world-class research university committed to the creation, dissemination, and application of knowledge in the fields of business, engineering, life sciences and medicine, and to the development of knowledge-based economies.

## Alfaisal University Mission Statement

Alfaisal University is a student-centered university which creates and disseminates knowledge through world-class undergraduate and graduate education programs, research and service that benefit the Kingdom of Saudi Arabia, the region, and the world, and stimulate the development of knowledge-based economies.

## Accreditation

Alfaisal University is fully accredited by Saudi Ministry of Education (MoE).

## Governing

The University Council is the major internal governance body of the University. The Council acts in legislative and advisory roles regarding university policies involving faculty and students, academic programs and planning, and University concerns.



# Undergraduate Majors in Alfaisal

College	Degree	Basic Major (Mandatory)	Second Major (Optional) Choose One Other Than Basic Major	Minor/Track (Optional) Choose One Other Than Basic Major	Minor/Track (Optional) Choose One Other Than Basic Major	Minor/Track (Optional) Choose One Other Than Basic Major	Comments
College of Business	Bachelor of Business Administration	Project Management	Project Management	Project Management	#N/A	#N/A	A business student can choose a basic major only <b>OR</b> double major <b>OR</b> a basic major with a minor
College of Business	Bachelor of Business Administration	Finance	Finance	Finance	#N/A	#N/A	A business student can choose a basic major only <b>OR</b> double major <b>OR</b> a basic major with a minor
College of Business	Bachelor of Business Administration	General Business	General Business	General Business	#N/A	#N/A	A business student can choose a basic major only <b>OR</b> double major <b>OR</b> a basic major with a minor
College of Business	Bachelor of Business Administration	Marketing	Marketing	Marketing	#N/A	#N/A	A business student can choose a basic major only <b>OR</b> double major <b>OR</b> a basic major with a minor
College of Business	Bachelor of Business Administration	Entrepreneurship and Family Business	Entrepreneurship and Family Business	Entrepreneurship and Family Business	#N/A	#N/A	A business student can choose a basic major only <b>OR</b> double major <b>OR</b> a basic major with a minor
College of Business	Bachelor of Business Administration	Accounting	Accounting	Accounting	#N/A	#N/A	A business student can choose a basic major only <b>OR</b> double major <b>OR</b> a basic major with a minor
College of Business	Bachelor of Business Administration	Human Resource Management	Human Resource Management	Human Resource Management	#N/A	#N/A	A business student can choose a basic major only <b>OR</b> double major <b>OR</b> a basic major with a minor

College of Business	Bachelor of Business Administration	Choose one of the above	Choose one of the above	Strategic Communication	#N/A	#N/A	A business student can choose a basic major only <b>OR</b> double major <b>OR</b> a basic major with a minor
College of Business	Master of Business Administration	General (MBA)	General (MBA)	#N/A	#N/A	#N/A	An MBA student can choose a basic major only <b>OR</b> double major
College of Business	Master of Business Administration	Finance (MBA)	Finance (MBA)	#N/A	#N/A	#N/A	An MBA student can choose a basic major only <b>OR</b> double major
College of Business	Master of Business Administration	Human Capital Management (MBA)	Human Capital Management (MBA)	#N/A	#N/A	#N/A	An MBA student can choose a basic major only <b>OR</b> double major
College of Business	Master of Business Administration	Digital Marketing (MBA)	Digital Marketing (MBA)	#N/A	#N/A	#N/A	An MBA student can choose a basic major only <b>OR</b> double major
College of Business	Master of Business Administration	Accounting & Taxation (MBA)	Accounting & Taxation (MBA)	#N/A	#N/A	#N/A	An MBA student can choose a basic major only <b>OR</b> double major
College of Business	Master of Business Administration	Healthcare Management (MBA)	Healthcare Management (MBA)	#N/A	#N/A	#N/A	An MBA student can choose a basic major only <b>OR</b> double major
College of Business	General Executive MBA in Business Administration (G-EMBA)	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
College of Business	Executive MBA in Health Care Leadership	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
College of Business	Accelerated MBA Program in Real Estate Development (AMBA-RED)	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
College of Business	High Diploma in Business Administration	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Bachelor of Medicine, Bachelor of Surgery	Medicine and Surgery (MBBS)	#N/A	Strategic Communication	#N/A	#N/A	#N/A
College of Medicine	Doctoral Degree in Biomedical Sciences	Biomedical Sciences	#N/A	#N/A	#N/A	#N/A	#N/A

College of Medicine	Master of Science in Biomedical Sciences	Molecular and Cell Biology (MBS)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Science in Biomedical Sciences	Infection Control (MBS)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Science in Biomedical Sciences	Clinical Embryology and Reproductive Biology (MBS)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Science in Biomedical Sciences	Biomedical Sciences	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Science in Biomedical Sciences	Analytical Biochemistry (MBS)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Science in Biomedical Sciences	Transfusion Medicine and Stem Cell (TMS)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Science in Biomedical Sciences	Biotechnology (MBS)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Science in Biomedical Sciences	Hemostasis and Thrombosis (MBS)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Science in Biomedical Sciences	Laboratory Quality Management (MBS-LQM)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Science in Biomedical Sciences	Clinical Anatomy (MBS)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Genetic Counselling	Genetic Counselling (MGC)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Public Health	Biostatistics and Epidemiology(MPH)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Public Health	Public Health (MPH)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Public Health	Health Policy & Management (MPH)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Public Health	Mass Gathering Health (Hajj & Umrah) (MPH)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Clinical Speech Language Pathology	Clinical Speech Language Pathology (MSP)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Masters of Science in Applied Health Research	Applied Health Research (MHR)	#N/A	#N/A	#N/A	#N/A	#N/A

College of Medicine	Master of Science in Health Research Management	Health Research Management (MRM)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Radiological and Imaging Sciences	Radiological and Imaging Sciences (MRIS)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Radiological and Imaging Sciences	Ultrasound (MRIS)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Radiological and Imaging Sciences	General (MRIS)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Clinical Psychology	Clinical Psychology (MCP)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Cardiac Nursing	Cardiac Nursing (MCN)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	Master of Science in Pathologist assistant	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	High Diploma in Biomedical Science	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	High Diploma in Clinical Psychology	Child Life	#N/A	#N/A	#N/A	#N/A	#N/A
College of Medicine	High Diploma in Public Health	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
College of Science and General Studies	Bachelor of Science in Life Sciences	Life Sciences	#N/A	Biological Sciences and Nanotechnology	Environmental Sciences and Sustainability	Strategic Communication	A science student can choose a basic major and a minor/track
College of Science and General Studies	Master of Nanoscience Nanotechnology	Nanoscience and Nanotechnology (MNT)	#N/A	#N/A	#N/A	#N/A	#N/A
College of Science and General Studies	High Diploma in Nanoscience Nanotechnology	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
College of Pharmacy	Doctor of Pharmacy- Pharm.D	Pharm.D	#N/A	Strategic Communication	#N/A	#N/A	#N/A
College of Law and International Relations	Bachelor of Law and International Relations	Law and International Relations	#N/A	Diplomacy and International Relations	International Law	Government and Public Policy	Choose one track. Also, Bachelor of Law and International Relations can choose a minor in Strategic Communication
	Bachelor of Governance and Public Policy	Governance and Public Policy	#N/A	Strategic Communication	#N/A	#N/A	#N/A

	Bachelor of Diplomacy and International Relations	Diplomacy and International Relations	#N/A	Strategic Communication	#N/A	#N/A	#N/A
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Engineering and Advanced Computing	Architectural Engineering	Bachelor of Architectural Engineering	Architectural Engineering	Artificial Intelligence	Construction Management
				Cybersecurity	Sustainable Development
				Strategic Communication	
				Project Management	
				Finance	
				Business Analytics	
				Entrepreneurship and Family Business	
				Marketing	
				Accounting	
				Human Resource Management	
		Master of Architectural Engineering	Architectural Engineering		Sustainable Built Environment
					Urban Design
					Digital Architectural Design
	Architecture	Bachelor of Architecture	Architecture	Artificial Intelligence	Interior Design
				Cybersecurity	Landscape Architecture
				Strategic Communication	
				Project Management	
				Finance	
				Business Analytics	
				Entrepreneurship and Family Business	
				Marketing	
				Accounting	
				Human Resource Management	
	Electrical Engineering	Bachelor of Electrical Engineering	Electrical Engineering	Artificial Intelligence	Robotics and Artificial Intelligence
				Cybersecurity	Renewable Energy
				Strategic Communication	Innovation and Entrepreneurship
				Project Management	
				Finance	
				Business Analytics	
				Entrepreneurship and Family Business	

				Marketing	
				Accounting	
				Human Resource Management	
	Industrial Engineering	Bachelor of Industrial Engineering	Industrial Engineering	Mechanical Engineering	Digital Design and Manufacturing
				Artificial Intelligence	
				Cybersecurity	
				Artificial Intelligence and Big Data	
				Strategic Communication	
				Project Management	
				Finance	
				Business Analytics	
				Entrepreneurship and Family Business	
				Marketing	
				Accounting	
				Human Resource Management	
		Master of Engineering and Systems Management	Engineering and Systems Management		Decision Analysis and Data Analytics
					Manufacturing and Supply Chain Management
					Intelligent Industrial Systems
		Higher Diploma of Engineering and Systems Management	Engineering and Systems Management		
	Mechanical Engineering	Bachelor of Mechanical Engineering	Mechanical Engineering	Industrial Engineering	Digital Design and Manufacturing
				Artificial Intelligence	
				Cybersecurity	
				Strategic Communication	
				Project Management	
				Finance	
				Business Analytics	
				Entrepreneurship and Family Business	
				Marketing	
				Accounting	
				Human Resource Management	

	Software and Cybersecurity Engineering	Bachelor of Software Engineering	Software Engineering	Strategic Communication	Artificial Intelligence and Big Data
				Project Management	Cybersecurity
				Finance	Game Development and Digital Media
				Business Analytics	
				Entrepreneurship and Family Business	
				Marketing	
				Accounting	
				Human Resource Management	
		Bachelor of Cybersecurity Engineering	Cybersecurity Engineering	Artificial Intelligence	
				Strategic Communication	
				Project Management	
				Finance	
				Business Analytics	
				Entrepreneurship and Family Business	
				Marketing	
				Accounting	
				Human Resource Management	
		Master of Cybersecurity	Cybersecurity		
	Biomedical Engineering	Bachelor of Biomedical Engineering	Biomedical Engineering	Artificial Intelligence	Medical Imaging
				Cybersecurity	Medical Devices
				Strategic Communication	Artificial Intelligence in Healthcare
				Project Management	
				Finance	
				Business Analytics	
				Entrepreneurship and Family Business	
				Marketing	
				Accounting	
				Human Resource Management	
	Computer Sciences and Artificial Intelligence	Bachelor of Artificial Intelligence	Artificial Intelligence	Cybersecurity	
				Strategic Communication	
				Project Management	
				Finance	



				Business Analytics	
				Entrepreneurship and Family Business	
				Marketing	
				Accounting	
				Human Resource Management	
		Bachelor of Data Science and Engineering	Data Science and Engineering	Artificial Intelligence	
				Cybersecurity	
				Strategic Communication	
				Project Management	
				Finance	
				Business Analytics	
				Entrepreneurship and Family Business	
				Marketing	
				Accounting	
				Human Resource Management	
		Master of Applied Artificial Intelligence			Intelligent Robotic Systems
					Artificial Intelligence in Healthcare
					Business Intelligence

## Visit and Contact Information

The Office of Admissions encourages students and families to visit campus. Campus Information Sessions, Open Houses and appointments with an Admission Counsellor are available.

For more information or to make a visit reservation, visit the Office of Admissions website or contact the Admissions Office. Prospective students may contact the Office of Admissions through a variety of sources.

### Office of Admissions

#### Alfaisal University

P.O. Box 50927

Riyadh 11533

Kingdom of Saudi Arabia

Toll Free: 920000570

## Student Rights and Responsibilities

### 1.2.1 Student Rights

Students at the University have the same rights and protections that are included in the constitution of the Kingdom of Saudi Arabia as citizens or non-citizens. In addition, students must adhere to the rules and regulations issued by the Ministry of Education (MoE):

1. Students have the right to be treated fairly and with dignity regardless of age, color, creed, disability, marital status, national origin or ancestry, race, religion, or sex.
2. The teacher-student relationship within the classroom is confidential, and disclosure of a student's personal or political beliefs expressed in connection with coursework will not be made public without explicit permission of the student. It is understood that the teacher may undertake the usual evaluation of knowledge and academic performance.

3. Students' records may be released to or examined by persons outside the University only upon request of the student or through compliance with applicable laws.
4. Students are free, individually or in association with other individuals, to engage in all campus activities as long as they do not in any way purport to represent the University.
5. Students are free to use campus facilities for meetings of student-chartered campus organizations, subject to regulations as to time and manner governing the facility.
6. Students may invite and hear speakers of their choice on subjects of their choice and approval will not be withheld by university officers for the purpose of censorship.
7. Students will have their views and welfare considered in the formation of the University policy and will be consulted by or may be represented on university committees that affect students as members of the University community on a case-by-case basis.
8. Individual's religious and spiritual beliefs are respected.
9. Students have freedom of research, of legitimate classroom discussion, and of the advocacy of opinions alternative to those presented in the classroom.
10. Students will be evaluated on knowledge and academic performance for purposes of granting academic credit and not on the basis of personal or political beliefs.
11. Students will be free from censorship in the publication and dissemination of their views as long as these are not represented as the views of Alfaisal University.
12. Students' publications are free from any official action controlling editorial policy. Publications shall not bear the name of the University or purport to issue from it without University approval.
13. Students are free, in accordance with University's regulations to form/join/participate in any group of intellectual, organizational, religious, social, economic, political, or cultural purposes.

### 1.2.2 Student Responsibilities

1. Remaining a member of Alfaisal community requires students to comply continuously with rules and regulations governing student's academic progress, social interactions, and personal behavior.

2. Students must avoid and not get involved in any form of academic misconduct such as: cheating, plagiarism and other misappropriation of the work of another, falsification of data, improperly obtaining or representing laboratory or field data, dishonesty in publication, publication or attempted publication of collaborative work without the permission of the other participants, abuse of confidentiality, misuse of computer facilities, misuse of human subjects, illegally or carelessly obtaining or using dangerous substances or providing such substances to others, falsification or unauthorized modification of an academic record, obstruction of the academic activities of another, aiding or abetting academic misconduct, attempted academic misconduct.
3. Students must be on a level of courtesy, civility and consideration that prevents them from any form of personal misconduct. They are expected to adhere to ethical standards in a variety of workplaces (e.g., classrooms, laboratories) within the explicit standards set by the University. Being physically or verbally threatening, disruptive, abusive, or hostile can make the workplace so unsafe or unpleasant that others cannot do their work.
4. Student must always present his/her Alfaisal Id at exams time.
5. Students must not misuse or damage any of the University facilities and they should behave properly in the public areas inside campus.
6. Students will be exempt from disciplinary action or dismissal from the University except for academic failure, failure to pay a university debt or a violation of a student or University rule or regulation. Rules and regulations shall be fully and clearly promulgated in advance of the supposed violation. The University has no legal authority over a student when outside University property, except where the student is on the property of a university-affiliated institution, where the student is engaged in a project, seminar, or class for academic credit or as otherwise provided in the University rules, regulations, and procedure on property that falls within the jurisdiction of university authority.
7. By the end of their final year of academic study, students should meet professional and legal practice requirements. They must value intellectual engagement, research-based practices, and life-long learning.

8. Regular and punctual attendance is required of all students for all classes, labs, seminars and/or clinical experiences. A student who is constantly late and/or absent from classes, seminars and/or labs may be unable to meet the course requirements and may not be able to receive a credit for the course.
9. The use of cell phones or other electronic messaging devices during class or lab is not permitted. Text messaging or e-mailing in class is prohibited.
10. It is recognized that every member of the community has the responsibility to conduct him or herself in a manner that does not violate the rights and freedoms of others.
11. A student or group of students cannot organize events inside Alfaisal University campus without written approval from Deanship of Student Affairs, Admissions and registration (SA). In case there is an event/activity to be conducted inside University's campus, SA personal must be notified in writing at least one week ahead of event/activity date and specified form(s) must be filled out and approved before proceeding in event/activity.
12. Also, a student or group of students cannot initiate and hold an event/activity outside campus by the name of Alfaisal University without having written approval from SA.

### **1.2.2.1 Dress Code Policy**

#### **1. Introduction**

Alfaisal University is committed to creating learning, research and working environments that are inclusive and support the needs of all members of the university community.

This University welcomes the diversity of appearance which students and visitors bring to the campus. However, there may be occasions where health and safety or professional considerations restrict certain modes of dress and the wearing of jewelry items, footwear such as, for example, when working in labs.

The Dress Code policy aims to ensure health and safety standards are met, best practice is followed, and obligations required by wearing decent respectful clothes that goes with Saudi traditions, customs, and social norms are applied and implemented.

#### **2. Key Principles of the Dress Code Policy**

The University does not prescribe a formal dress code for students, except for students who are required to wear protective clothing, for example in laboratories and workshops. The University supports students to wear appropriate clothing. The University expects students to practice appropriate standards of personal hygiene. Students on placement visits may be required to follow dress codes as applied by the external agency, such as clinical placements in the hospitals. In the case of the latter, any professional requirements of external organizations must be followed. The University does not permit the wearing of clothes or display of badges, screensavers etc. which show obscene material Any breach of this policy may be subject to disciplinary action.

#### **3. Identity and Visual Checks**

All staff and students are expected to always carry University identity cards while on campus. The University is aware that some potential applicants and visitors may wish to wear niqab– however the University reserves the right to ensure that appropriate photo identity is received, and which can be verified. A private room will be made available, where possible in order to undertake such visual checks (through the temporary removal of the niqab) by a local female member of staff. Any person asked to remove their face covering for identification purpose may be denied entry if they refuse to do so. Similar visual checks will take place on key occasions such as prior to student examinations. It is the student's responsibility to provide appropriate photo identification (e.g., University identity card or passport if the identity card is not applicable).

#### **4. Health and Safety**

Health and safety requirements may mean that, for certain tasks, specific items of clothing such as overalls, protective clothing, uniforms, footwear etc. need to be worn or other items removed. The University is responsible for the health, safety and welfare of students and others who may be affected by its work activities. Where this is compromised by the wearing of certain dress (including footwear and jewelry items) or where this is likely to enhance the risk to other persons, a risk assessment for the activity will be carried out between the wearer and the supervisor/faculty. The responsibility for the final decision will rest with the Dean of Student Affairs, Admissions, and Registrations.

## 5. Medical Emergency

It should be noted that whenever possible medical intervention will take account of religion and cultural sensitivities. However, removal of any religious or cultural symbol, or face covering may be required. It is preferable that a female member of staff is present when a female requires medical assistance and similarly for men. All first aid staff will be made aware of this preference.

## 6. Placements and External Agencies

Students should dress according to both the University's and the appropriate local guidelines and regulations. However, it should be noted that the University is not responsible for setting the dress code and/or wearing of symbols required by external institutions. The external dress code can include removing jewelry/symbols and making an individual's face visible to ensure effective communication.

## 7. Policy Implementation

All students are expected to comply with this Policy. Colleges or other units hosting industry or other high-profile events at the University are responsible for advising about this Policy and compliance. All faculty and staff are responsible for implementing this policy within their area of responsibility. The University reserves the right to take appropriate action where any breach is identified.

## 8. Complaints & Advise

If students believe they have been unfairly treated regarding the implementation of the Dress Code, they are asked to bring this to the attention of the contact the Deanship of Student Affairs, Admissions, and Registrations. For further advice and support please contact the Deanship of Student Affairs, Admissions, and Registrations.

# Admissions

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## Admission Policies

Alfaisal University maintains a small university environment and values personal attention for every student, and our commitment to individuals ensures that admissions representatives will review every application carefully.

Alfaisal University seeks a highly motivated, academically well-prepared, and diverse student body. Admission to the University is competitive. Applying early is encouraged as the University has the right to limit enrolment due to space availability in major programs and overall student capacity. Please refer to the Admissions website for more information and detailed dates and deadlines. All prospective new students should apply for admission to Alfaisal University through the [University Online System](#).

## Admission General Information

Students who would like to join one of Alfaisal University academic programs can apply only through the [University Online Application System](#).

A student will find the suitable type of application according to his/her previous achievement (freshmen or transfer) and will see the list of credentials which he/she must provide and upload. After preparing all required documents, an applicant will start the process of filling out the online application form and completing all required elements.

In general, there are two types of admission in Alfaisal University: Direct Admission and Indirect Admission (University Preparatory Program - UPP).

## Direct Admission

Students excellent in educational attainment and English proficiency can join the university directly and skip the UPP in accordance with the following criteria:

### Direct Admission Criteria for Saudi Curriculum

#### Admission Criteria 2023-2024

Direct Admission Criteria for Saudi Curriculum						
College Sought	Business	Law	Engineering	Science	Pharm.D	Medicine
Certificate Type	Entry Requirements Score					
High School	90/100					98%
Qudurat	75/100					85
Tahseely	N/A		75/100			85
Acceptable English Language Proficiency Tests						
TOEFL IBT	61					79
IELTS	6					6.5
OOPT (English Placement Test)*	B2					C1
Interview	N/A					Required
*The University offers OOPT for those who have not taken the TOEFL or IELTS. Once you apply, your test date & time will be scheduled.						

### Direct Admission Criteria for American Curriculum

#### Admission Criteria 2023-2024

Direct Admission Criteria for American Curriculum								
College Sought			Business	Law	Engineering	Science	Pharm.D	Medicine
Certificate Type			Entry Requirements Score					
High School			90%					98%
SAT			1000/1600					1200/1600
SAT II Alternatives		Tahsily						85
(Since SAT II is no longer offered, you must have one of these tests if applying for College of Medicine)	Two Advanced Placement (AP) Tests (Biology and Chemistry)							4
	Two Subjects in AS and A2 from the British System (Biology and Chemistry)							A,A
	ACT Subjects (Biology and Chemistry)						28/36	
Or								
ACT			22/36					28/36
ACT Subjects (Biology and Chemistry)			N/A					28/36

Acceptable English Language Proficiency Tests			
TOEFL IBT	61		79
IELTS	6		6.5
OOPT (English Placement Test)*	B2		C1
Interview	N/A		Required
<i>*The University offers OOPT for those who have not taken the TOEFL or IELTS. Once you apply, your test date &amp; time will be scheduled.</i>			

## Direct Admission Criteria for British Curriculum

### Admission Criteria 2023-2024

Direct Admission Criteria for British Curriculum						
College Sought	Business	Law	Engineering	Science	Pharm.D	Medicine
Certificate Type	Entry Requirements Score					
High School	Applicant should obtain 12th grade transcript and diploma					
Two subjects in A2 level related to selected major (For Medicine, Pharmacy, and Science: Biology and Chemistry)	N/A					A,A
Two subjects in AS level related to selected major (For Medicine, Pharmacy, and Science: Biology and Chemistry)						A,A
(For Engineering: Math and Physics)	Average of two subjects 80					A,A
Four subjects in GCSE level related to selected major	Average of 4 subjects 80					A,A,B,B
Acceptable English Language Proficiency Tests						
TOEFL IBT	61					79
IELTS	6					6.5
OOPT (English Placement Test)*	B2					C1
Interview	N/A					Required
*The University offers OOPT for those who have not taken the TOEFL or IELTS.Once you apply, your test date & time will be scheduled.						

## Direct Admission Criteria for International Baccalaureate Curriculum

### Admission Criteria 2023-2024

Direct Admission Criteria for for International Baccalaureate Curriculum				
College Sought	Business	Law	Engineering	Science Pharm.D Medicine
Certificate Type	Entry Requirements Score			
High School	Applicant should obtain 12th grade transcript and diploma			
IB High Level (HL) in Three subjects. Two of them must be related to selected major				
(For Medicine, Pharmacy, and Science: Biology and Chemistry)	4,4,4			5,6,6
(For Engineering: Math and Physics)				
IB Diploma Total	26			30
Acceptable English Language Proficiency Tests				
TOEFL IBT	61			79
IELTS	6			
				6.5

OOPT (English Placement Test)*	B2		C1
Interview	N/A		Required
*The University offers OOPT for those who have not taken the TOEFL or IELTS. Once you apply, your test date & time will be scheduled.			

## Direct Admissions for Other International Curriculums

Students from other international systems curriculum can take any of the above listed system entrance exams and submit documents that prove that they finished their high schools (12 years of study) in their home countries and have their high school documents' evaluation completed in the Saudi Ministry of Education. Students will be evaluated based on their high school performance and interviews by perspective colleges. Students must also meet any of the English requirements as specified above.

**\*The University offers an English placement test for those who have not taken the TOEFL or IELTS. Once you apply, your test date & time will be scheduled.**

## Entry Requirements for University Preparatory Program (UPP)

Applicants who do not meet direct admissions requirements can join UPP at Alfaisal University. This program will enable students to improve English language proficiency and academic skills. Those who successfully finish UPP will join Alfaisal University. To get accepted in UPP, you must meet the following criteria:

### UPP Admission Criteria for Saudi Curriculum

#### Admission Criteria 2023-2024

UPP Admission Criteria for Saudi Curriculum						
College Sought	Business	Law	Engineering	Science	Pharm.D	Medicine
Certificate Type	Entry Requirements Score					
High School	85/100					90/100
Qudurat	70/100				75/100	80/100
Tahseely	--		70/100			
Acceptable English Language Proficiency Tests						
TOEFL IBT	45					
IELTS	5					
OOPT (English Placement Test)*	B1					
*The University offers OOPT for those who have not taken the TOEFL or IELTS. Once you apply, your test date & time will be scheduled.						

### UPP Admission Criteria for American Curriculum

#### Admission Criteria 2023-2024

UPP Admission Criteria for American Curriculum						
College Sought	Business	Law	Engineering	Science	Pharm.D	Medicine
Certificate Type	Entry Requirements Score					
High School	85/100				85/100	90/100



<b>SAT</b>		<b>800/1600</b>	<b>900/1600</b>	<b>1000/1600</b>
<b>SAT II Alternatives</b>	Tahsily	<b>N/A</b>	<b>75/100</b>	<b>80/100</b>
	Two Advanced Placement (AP) Tests (Biology and Chemistry)		<b>2</b>	<b>3</b>
(Since SAT II is no longer offered, you must have one of these tests if applying for College of Medicine)	Two Subjects in AS and A2 from the British System (Biology and Chemistry)	<b>N/A</b>	<b>AS: B,B</b>	<b>A,B</b>
	ACT Subjects (Biology and Chemistry)		<b>16/36</b>	<b>22/36</b>
<b>Or</b>				
<b>ACT</b>		<b>18/36</b>	<b>20/36</b>	<b>22/36</b>
<b>ACT Subjects (Biology and Chemistry)</b>		<b>N/A</b>	<b>16/36</b>	<b>22/36</b>
<b>Acceptable English Language Proficiency Tests</b>				
<b>TOEFL IBT</b>		<b>45</b>		
<b>IELTS</b>		<b>5.0</b>		
<b>OOPT (English Placement Test)*</b>		<b>B1</b>		
<i>*The University offers OOPT for those who have not taken the TOEFL or IELTS. Once you apply, your test date &amp; time will be scheduled.</i>				

## UPP Admission Criteria for British Curriculum

### Admission Criteria 2023-2024

UPP Admission Criteria for British Curriculum				
College Sought	Business	Law	Engineering	Science Pharm.D Medicine
Certificate Type	Entry Requirements Score			
High School	Applicant should obtain 12th grade transcript and diploma			
Two subjects in A2 level related to selected major (For Medicine, Pharmacy, and Science: Biology and Chemistry)	N/A			B,B
Two subjects in AS level related to selected major (For Medicine, Pharmacy, and Science: Biology and Chemistry)	Average of two subjects 75		Average 78	A,B
Four subjects in GCSE level related to selected major	Average of 4 subjects 75		Average 78	B,B,B,B
Acceptable English Language Proficiency Tests				
TOEFL IBT	45			
IELTS	5.0			
OOPT (English Placement Test)*	B1			
*The University offers OOPT for those who have not taken the TOEFL or IELTS.Once you apply, your test date & time will be scheduled.				

## UPP Admission Criteria for International Baccalaureate Curriculum

### Admission Criteria 2023-2024

UPP Admission Criteria for for International Baccalaureate Curriculum						
College Sought	Business	Law	Engineering	Science	Pharm.D	Medicine
Certificate Type	Entry Requirements Score					
High School	Applicant should obtain 12th grade transcript and diploma					
IB High Level (HL) in Three subjects. Two of them must be related to selected major  (For Medicine, Pharmacy, and Science: Biology and Chemistry)  (For Engineering: Math and Physics)	3,3,4			3,4,4		4,4,5
IB Diploma Total	24					26
Acceptable English Language Proficiency Tests						
TOEFL IBT	45					
IELTS	5.0					
OOPT (English Placement Test)*	B1					
*The University offers OOPT for those who have not taken the TOEFL or IELTS. Once you apply, your test date & time will be scheduled.						

## UPP Admission Criteria for Other Curriculum

Students from other international systems curriculum can take any of the above listed system entrance exams and submit documents that prove that they finished their high schools (12 years of study) in their home countries and have their high school documents' evaluation completed in the Saudi Ministry of Education. Students will be evaluated based on their high school performance and interviews by perspective colleges. Students must also meet any of the English requirements as specified above.

***\*The University offers an English placement test for those who have not taken the TOEFL or IELTS. Once you apply, your test date & time will be scheduled.***

## Transfer Students

Alfaisal University welcomes students who want to transfer from other colleges and universities. Transfer students who would like to join Alfaisal University should provide the following:

- Studied at recognized university or college for two semester at least.
- Meet the College admissions criteria
- Submit original transcripts.
- Minimum 2.0 /4 or 3.0/5 GPA for all colleges, for College of Medicine 4.5/5 or 3.5/4 and for College of Clinical Pharmacy 3.5/5 or 2.5/4 .
- Credits Transfers must be approved initially by the prospective college in Alfaisal University, to which the student is joining and the total number of Credit Hours must not exceed 48 credit hours.
- A student can view credit transfer for the courses which are on Alfaisal University System.

Preparatory Year and Diploma courses will not be transferred to Alfaisal University courses.

## Visiting/Non-Degree Students

### Non-Degree Students Criteria

An undergraduate non-degree student takes credit bearing courses but does not pursue a baccalaureate degree. Non-degree students register for courses on a space available basis. Alfaisal University degree candidates have first priority for registration. Non-degree students must demonstrate course pre-requisites and may need approval from the respective department of the College. As a non-degree student, you may take up to 15 credits in this status. Non-degree students are not eligible for financial aid.

Alfaisal University welcomes Non- degree students for a maximum of two consecutive semesters and must fulfil the following requirements:

1. Proof of English Proficiency Test.
2. Official High school transcript and Quadrant, Tahseely, or SAT.
3. Non-degree students cannot register for a course without fulfilling its pre-requisites.
4. Students who have college credits or have completed a college degree must submit an official college transcript.
5. A Non-Degree student is allowed to register for a maximum of 15 CHs in Fall or Spring semester, and 6 CHs in Summer semester, on the condition that the student does not exceed more than 15 CHs in all semesters.
6. Advanced payment of full tuition fees.
7. For Non –Saudi students, a valid Iqama and Proof of health insurance Application Fee.

A non-refundable 600 SAR application fee is required for all applicants. The application fee will be collected at the time of application.

### **Visiting Students Admission Criteria**

Alfaisal University welcomes visiting students for a maximum of two consecutive semesters. To apply as a visiting student you must fulfil the following requirements:

1. Letter of permission from your current university that includes the courses you plan to take at Alfaisal University.
2. Minimum of 30 credit hours attended in a recognized college or University.
3. Minimum GPA of 2.5 out of 4 or 3 out of 5.
4. Proof of English Proficiency Test.
5. Official Transcripts.
6. Advanced payment of full tuition fees.
7. For Non –Saudi students, a valid Iqama and health insurance.

A non-refundable 600 SAR application fee is required for all applicants. The application fee will be collected at the time of application.

## **For Alfaisal University Students Taking Courses Outside the University**

1. The student cannot take any course that is currently offered at Alfaisal University.
2. The student cannot take any other courses outside the University if he/she is taking the maximum course.
3. The student cannot take/repeat a course that is already taken in Alfaisal in any other university.
4. The student should provide detailed descriptions and/or syllabus for the courses he/she intends to take in another university.

5. The request must be approved by the College Dean and Deanship of Student Affairs, Admissions and Registration.
6. Student must fill the Courses Pre-Approval form for Study Abroad.

## Visiting Students Criteria

Alfaisal University welcomes visiting students for a maximum of two consecutive semesters. To apply as a visiting student, you must fulfil the following requirements:

1. Letter of permission from your current university that includes the courses you plan to take at Alfaisal University.
2. Minimum of 30 credit hours attended in a recognized college or University.
3. Minimum GPA of 2.5 out of 4 or 3 out of 5.
4. Proof of English Proficiency Test.
5. Official Transcripts.
6. Advanced payment of full tuition fees.
7. For Non-Saudi students, a valid Iqama and health insurance.

## Non-Degree Students Criteria

An undergraduate non-degree student takes credit bearing courses but does not pursue a baccalaureate degree. Non-degree students register for courses on a space available basis. Alfaisal University degree candidates have priority for registration.

Non-degree students must demonstrate course pre-requisites and may need approval from the respective department of the College. As a non-degree student, you may take up to 24 credits in this status. Non-degree students are not eligible for financial aid.

Alfaisal University welcomes non-degree students for a maximum of two consecutive semesters and must fulfil the following requirements:

1. Proof of English Proficiency Test.
2. Official High school transcript and Quadrant, Tahseely, or SAT.
3. Non-degree students cannot register for a course without fulfilling its pre-requisites.
4. Students who have college credits or have completed a college degree must submit an official college transcript.
5. A Non-Degree student is allowed to register for a maximum of 12 CHs in Fall or Spring semester, and 9 CHs in Summer semester, on the condition that the student does not exceed more than 24 CHs in both semesters.
6. Advanced payment of full tuition fees.
7. For Non-Saudi students, a valid Iqama and proof of health insurance.

## Application Fee

A 600 SR non-refundable application fee is required for all applicants. The application fee will be collected at the time of application.

# Registration

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## Registration General Information

Office of the Registrar manages the registration of students and provides the following services:

- Verifying and issuing of official transcripts.
- Certifying student enrolments.
- Confirming awarding of degrees and managing the registration of current students.
- Maintaining and providing the timely and accurate official records of the academic progress and accomplishments of the students and helping them in graduation process.

## Registration Policies

- Student is responsible for registering the correct courses on time following the study plan, receiving academic advice from the academic advisor is recommended.
- Student will not be allowed to attend classes without being officially registered for them; student cannot receive credit for courses in which he/she is not registered for.
- Students are not allowed to register or add courses retroactively.
- The University reserves the right to cancel class/section, change instructor/class time and classroom faculty assignments, and does not guarantee seats in any class.

## Registration Period

Actual registration starts at the beginning of each academic or summer session, as specified in the academic calendar. Each student must complete his/her own registration by him/herself through the portal (Netclassroom), registration via mail or other means is not allowed.

## Add Course

- Student are expected to register courses during registration period for each semester.
- Student may add a course if it's not full and does not conflict with another course in his/her schedule as well as examination schedule and if he/she fulfilled its pre-requisite/s.

- Student should check the academic calendar periodically for add/drop deadlines.
- Student can personally add classes online through NetClassroom.

## Drop Course

- A course may be dropped during the first 4 weeks of the semester without affecting the student's academic record.
- If the course to be dropped is a co-requisite, the student either must drop both co-requisite courses or complete both courses concurrently.
- Student can personally drop classes online through NetClassroom.

## Withdraw from a Class or Program

- Student can withdraw from a class or a semester without being considered as having failed in the classes.
- Withdraw period starts by the end of 4th week until the end of 9th week.
- Withdrawn courses will appear in the transcript (W) but will not affect the GPA
- Withdrawn courses will be counted financially.
- Student can withdraw from university at any time and if the request initiated during/after the withdraw period, courses will be counted financially.

## Late Registration

- Late registration opens available only for a week after the end of adding period.
- Student must pay late registration penalty of 500 SAR.
- Registration committee and course instructor must approve the late registration.

## Changing Selections

- Students should choose a section that will not create a time conflict with his/her current schedule.
- Change of section only allowed during the add period following the academic calendar.
- Student can change section through NetClassroom.

## Course Substitution

A student qualifies for graduation when he/she has fulfilled all the requirements for the degree program in which he/she enrolled when admitted to the University. If he/she is unable to complete the requirements of any program (due to termination of a course, the changing of its content, or when accrediting new programs that comprise courses the student has not studied), he/she can substitute or compensate for these courses with other equivalent courses, in terms of level, content, and credit hours. The Admission and Registration Deanship must be informed of the substitution or compensation after the student has obtained the approval of the Admission and Registration Deanship for graduation requirements.

## Repeating a Course

Any undergraduate student may retake a course for which he/she received a grade below B-. (A student may exercise this option for no more than four courses, totaling no more than 18CH for College of Medicine and Pharmacy and 12CH for other undergraduate colleges. student may use this option only once for a given course within two years. For the course retaken, the lower grade will show as "R" in the transcript. Only the higher grade shall be counted in the determination of the student's grade-point average (GPA). The course retake policy will not be applied automatically to a student's GPA. After completing the second attempt of a course, a student must submit a request to the University Registrar's Office. Retake course policy will apply for courses taken at Alfaisal University only. (Retake courses policy will not apply for courses taken outside Alfaisal University). Student to benefit from the retake policy his/her new grade must not be F or DN.

## Academic Advisor

The University assigns an academic advisor to each student for assistance in matters that relate to academic progress, such as:

1. Selecting the academic major that best suits the student's preferences and capabilities.
2. Understanding and interpreting the academic regulations.
3. Informing the student of the sequence of the required and elective courses and suggesting suitable elective courses.
4. Following up on the academic progress of the student.
5. Assisting in early registration and the various stages of registration.
6. Assisting in course substitution if necessary.
7. The academic advisor is chosen from the faculty members of the department or the college. The academic advisor for the UPP students is the director of the UPP or someone appointed by him/her or acting on his/her behalf.

## Prerequisites for Courses Policy

- Registration in a course may be cancelled if the student does not satisfy all published pre-requisites.
- Students should check course pre-requisites in their program guides (study plan) before registering for a course.
- If there is an exceptional case in which the prerequisite might be waived, the instructor and the College Dean need to send his/her approval to the registrar.
- Student must fill prerequisite form.
- Students must check with their instructor to ensure that his/her name is on the class roster.

## Transfer Credits

- Student must submit official transcript to the Deanship of Student Affairs, Admissions and Registration.
- The department head, and/or college dean determine if and how credit transfer may be used to satisfy baccalaureate requirements.
- All courses that are approved and evaluated by the concerned college will be added to the database.
- New students should fill the transfer credit form and submit it with the admission form.
- A maximum of 40% of any program total credits may be applied toward the baccalaureate to be transferred.
- Credits Transfers must be approved initially by the prospective college in Alfaisal University to which the student is joining, and the total number of Credit Hours must not exceed 48 credit hours. The process of credit transfer will begin after the acceptance to the college.
- Undergraduate course work completed at regionally accredited degree-granting institutions

that is comparable in character, content, and quality to courses offered by the University and in which a minimum grade of "C" has been earned (College of Medicine is exception as it accepts minimum B, will be considered for transfer credit.)

- The student's quality point average at the University is calculated solely based on work taken at Alfaisal University.
- Transfer credits are posted on the transcript and assigned the grade "CR"
- The number of transfer credits a student receives depends primarily on the educational quality of the work and the comparability of the courses taken in content, scope, and level to those offered by the University.
- Transfer course work is evaluated on an individual basis and assigned an equivalent University course number whenever possible. If no equivalent course can be designated, and the work is deemed to be comparable to university-level work, then general elective credits in the discipline may be awarded.
- If a student fails to indicate on the admission application that s/he has completed course work at another college or university and later requests to have that work evaluated for transfer, credit for such work will be denied. Students can also be subject to dismissal for failure to disclose postsecondary institution enrolment.
- The Registrar Office requests that departments review and/or re-evaluate courses offered by public and private institutions so that Transfer Courses Data base may be kept up to date with new offerings, content change, etc. Colleges might also request additional review of Transfer Courses Database in accordance with college regulations and standards. In this regard, the Registrar Office makes students aware of regulations through the university website.

## Non-Transferable Credit

- Credit earned in colleges and universities that are not regionally accredited.
- Courses on a transcript where no credit or grade is given.
- Career, vocational, or technical courses.
- Distance learning courses.
- Pre-collegiate/remedial courses, e.g., reading improvement, English/Math skills courses,

developmental courses, or courses classified by as below freshman level or not applicable to the degree, etc.

- Personal development/self-improvement courses, e.g., career counseling, interpersonal relationships, college success courses, etc.
- Courses not offered at the undergraduate level by the University.
- Credit given by another college for life/work experience.
- Co-op, internship, and practicum credit.
- Courses graded 'P.'

## Taking Course in Another University

- Student must fill the transfer form and submit it with the syllabus to the college, he/she must be sure the course planned to take at the other university is on Alfaisal syllabus and approved by the college. Student must take a course approval letter from registrar office containing the courses that he/she will take.

## Independent Study

Independent Study allows students to initiate, develop and complete courses under the supervision of a faculty member.

**Independent Study** is intended to be an extension of a traditional course. It provides the student with an opportunity to pursue/research a subject in more depth and in a more independent manner than would be possible in a traditional course. Independent study requires an outline form, developed through consultation between the student and the instructor/sponsor, which serves as the official course description.

**The purpose of the Independent Study program is to allow students to:**

- Pursue learning outcomes that extend beyond those normally taught in the classroom.
- Pursue studies independent of the classroom schedule.
- Have prior learning recognized for a course they may not have completed.
- A primary goal is to encourage independent study under the supervision of faculty members. In addition to research projects, internships and



practicums, the different programs use individual study, case studies and directed readings as the basis for various independent study offerings.

## Policy

- An Independent Study course must be undertaken with a view to specified learning outcomes.
- The course may be taken for variable credit and not more than twice and for no more than 6 credit hours. One, two or three credits of selected studies may be earned for each Independent Study course reported. Independent Study courses should not be taken to replace required courses.
- The following requirements govern enrolment for credit in independent study:
  - The consent of the instructor and college dean must be obtained before enrolment.
  - The content of the study should differ from the content of the regular course offerings.
  - The contact hours between student and faculty member must be sufficient to ensure consistency with credit earned in regular course offerings.
  - Students must have at least junior standing (i.e., 3<sup>rd</sup> year), including transfer students, who have earned at least a 2.75 cumulative GPA at Alfaisal University and who give sufficient evidence of initiative, originality, and intellectual maturity to warrant the expectation of distinction in the program. Students may do Independent Directed Studies in any discipline in which they obtain the required permission.

## Procedure

- Students wishing to take an independent directed study must complete the Directed Studies Application Form and have it approved by the faculty member most familiar with the topic of study and obtain further approval from the dean of the college in which the student is enrolled.
- The dean of the college may form a committee to recommend the approval at the college level.
- The faculty will work with the student to select a reading list, projects, and evaluations appropriate to the topic and the credit level chosen.
- All needed materials will be presented in a syllabus attached to the application form.

# Guidance on Enrolment for Summer Courses

It is recognized that for various reasons, Alfaisal University students may wish to take academic courses over the summer. In such cases, the following conditions exist:

1. If a student wishes to improve an earlier grade by summer study, registration and payment of fees must be made by the first day of the summer session. One repeat is allowed if a passing grade was obtained on the first taking of the course. Attendance at all class meetings is compulsory, as is the completion of all course work if the student is to be allowed to sit the final examination for the course.
2. If a student wishes to take a course over the summer from another university, this will be allowed only if that course is not offered during the summer session at Alfaisal University. The dean of the college in which the course is normally offered may with appropriate justification, grant exception to the foregoing rule. In such cases, the college dean must give permission which will be based on information provided by the student. This information must demonstrate that at least 80% of the Alfaisal University course content and mode of evaluation is covered by the course at the university where summer study is proposed.
3. A student is allowed to register a maximum of 6 credit hours in Summer Semester.

## Extensions

Students are expected to complete all course work by the end of a semester. When this is not possible because of illness or other circumstances, an incomplete grade may be considered. The University distinguishes between two types of extensions: personal and academic. Only in the most unusual circumstances can an extension, either personal or academic, be granted. Personal Extensions are appropriate for students coping with end-of-semester illness or other personal circumstances beyond their control.

## Policy

- In certain cases, the student may not wish this documentation to be placed in his or her student file. In this case, the student should confer

confidentially with the relevant faculty member, and with the agreement of the dean of the college, such material can be excluded from the student's file.

- The due date for completed work will be set at the time the extension is granted. For the fall and spring semesters it is expected that all written work and projects will be completed no later than four weeks from the last day of exams. Earlier deadlines may be set by the instructor. The Dean of the College and the student will agree on the specified deadline.
- An incomplete (I) grade will be given to the student if the instructor is unable to submit the final exam before the final grade deadline and submit a Grade Change Authorization Form to the College Dean for approval and processing to the Office of the Registrar.

### Procedure

- Request forms for these extensions are available from the Office of Registrar.
- The Dean of the College will be required to receive and judge the validity of these requests.
- Documentation from a doctor, hospital or other appropriate institution is required to consider an extension. All documentation will be placed in the student's permanent academic record. This verification is required to document circumstances that have had an impact on a student's ability to finish course work or finals.
- Students must submit all requests before the last day of classes.
- Faculty will submit extension grades no later than the fifth (5th) week following the last day of exams unless special arrangements are made with the College Dean and the University Registrar.

## Academic Extensions

Academic extensions are appropriate when something non-personal interferes with a student's ability to complete work.

### Policy

- "Normal" computer failures are not covered by this policy; it is expected that students will back up their files.
- Only rarely will extensions be granted for academic reasons.

- The due date for completed work will be set at the time the extension is granted. The Instructor, the College Dean, and the student must agree in writing on the due date.

## Enrolment in the Summer Internship Program

Depending on the major, a student may be required to spend summer training. The student should complete the summer training period prior to his/her last semester at the University. A student is qualified to enrol in this program if he/she meets the following conditions:

1. Complete the required credit hours in the degree program in which he/she is registered. The program must be completed before the end of the last semester at the University.
2. Complete all the courses required by the department. Earn a major GPA of 2.00 or above.
3. Have not been suspended from the University.
4. Studying in some colleges may be on a full academic year basis, according to the rules and procedures approved by the University Council. An academic year comprises two levels.

## Alfaisal University Waitlist Policy

- **Availability of Waitlists:**
  - Waitlists are available for certain courses depending on the course type and capacity.
  - Not all courses will offer a waitlist option.
- **Activation of Waitlists:**
  - A waitlist is activated when a course reaches its maximum enrollment based on the number of students, not room capacity.
  - The waitlist option will be available for one week during the Fall and Spring semesters, starting with the (add) period.
- **Enrollment in Waitlists:**
  - Students may add themselves to the waitlist when a course reaches its maximum enrollment.
  - A student cannot be on a waitlist for more than one section with the same course code.
  - Students who no longer wish to be considered for an open space in a waitlisted course should remove it from the waitlist.

- **Notification Process:**
  - When a seat becomes available, an email notification is sent to the first student on the waitlist.
  - The notified student has 24 hours to register for the available seat.
- **Action Requirement:**
  - If the student does not register within the 24-hour period, the opportunity to enroll is offered to the next student on the waitlist.
  - A student who placed his/her name on a waitlist for enrollment services managed courses agreed to be registered in the section if space becomes available or if new section is opened at a time/day identical to that existing in waitlisted section.
- **Credit Load Consideration:**
  - Courses for which students are waitlisted do not count towards their credit load until the students are officially registered.
- **Waitlisting Restriction:**
  - The same standers of pre-requisite and time conflict checking will apply to waitlisted courses.
  - Students may be waitlisted for both a course and its lab if one or both components are full, and the waiting option is available for both courses.
  - Students must meet prerequisites or obtain permission to register for waitlisted courses.
- **No Guarantee of Enrollment:**
  - There is no assurance that a seat will become available for students on the waitlist.
  - Students are responsible for enrolling in the class before the registration period ends.

#### 9- Implement the waiting list:

- The college scheduler is responsible for defining the waitlist within the room's capacity if the course needs a waitlist.
- The college has the right to view the list of students waiting in the specific section.

## Academic Policies

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### Class Attendance Policy

Students expected to attend all classes. An excuse of absence is required for a student who does not attend in classes due to personal or family health reasons.

#### Policy

- Students are expected to attend all classes. They are allowed 15% absence without excuses and 25% absence with excuses.
- An absence for a non-acute medical service does not constitute an excused absence.
- Among the reasons of absences that are considered excused by the university are the following:
  - Death or major illness in a student's first-degree relative family. First-degree family may include mother, father, sister, brother, grandparents, spouse, child, spouse's child, grandparents, legal guardian and should submit a death certificate.
  - Illness of a dependent family member.
  - Participation in legal proceedings or administrative procedures that require a student's presence.
  - Injury or Illness that is too severe or contagious for the student to attend class.
  - Injury or illness of three or more days. For injury or illness that requires a student to be absent from classes for three or more business days, the student should obtain a medical confirmation note from his or her medical provider. The medical confirmation note must contain the date and time of the illness and medical professional's confirmation of needed absence and it must be from a certified hospital.
- Mandatory admission interviews for professional or graduate school which cannot be rescheduled.
- The College Council or whatever body it delegates its authority to, may exempt a denied student from the provisions of attendance and allow him/her to take the examination, provided that the student presents an acceptable excuse to the council. The University Council determines the percentage of attendance, which must not be less than 25% of the lectures and laboratory sessions specified for the course
- If needed, the student must provide additional documentation substantiating the reason for the

absence with the filled form of absence that is satisfactory to the instructor, within one week of the last date of the absence.

- Each faculty member will refer to the attendance policy, which will be stated in the course syllabus and shared at the first-class meeting. Certain courses may have more stringent attendance policies. Students should be aware of differences and plan accordingly.
- When the number of absences exceeds 15 % with no excuse of the scheduled classes, the faculty may issue a failing grade (DN), the student can use the retake available hours to replace the DN with R.

## Hold Status

Students' records will be placed on "Hold Status" if they incur any type of outstanding obligation (either financial or otherwise) to the university.

Some typical reasons for holds are:

1. Outstanding fees or other unpaid university fees
2. Outstanding library books and/or fines
3. Counselling.
4. Expired Iqama.
5. Outstanding transcripts or documents.
6. Student's record pending disciplinary action.
  - No administrative or academic services will be provided to students on Hold Status until the specific obligations have been met.
  - Students who have not cleared their "Hold Status" from previous registrations will not be permitted to register again until the hold has been cleared.

## Declaration of Concentration, Track, Minor and Major

A student may declare from one major to another within a college, in accordance with the policy below:

1. A student must meet the college requirements for the requested concentration, track, minor and major.
2. A student first must apply to his/her collage of choice then he/she can change.
3. A student changing a major will start the new major with the beginning of next semester.

4. The changing must be approved by the college dean.
5. All courses that have been studied by a student who has transferred from one concentration, track, minor and major.
6. To another are recorded in his/her academic record, including the grades and CGPAs obtained throughout his/her study at the University.
7. Student must submit the Declaration of Concentration, Track, Minor and Major [e-form](#).

The form should be submitted during the 12<sup>th</sup> week of fall and spring semester.

## Registration Time Guidelines

	Semester		
	Fall	Spring	Summer
<b>Adding</b>	The First <b>2 weeks</b> of the semester	The First <b>2 weeks</b> of the semester	The First <b>2 weeks</b> of the semester
<b>Dropping</b>	The First <b>4 weeks</b> of the semester	The First <b>4 weeks</b> of the semester	
<b>Withdrawal</b>	The First <b>5 weeks</b> after the drop period	The First <b>5 weeks</b> after the drop period	

## Examination, Grades, and Grades Appeal

Students are expected to meet examination schedules as determined by registrar office. Retaking final exams is not permitted. For students who missed a final exam, however, the University recognizes that unforeseen circumstances do occur and have instituted the following policies for final exam make-ups, as well as for examinations scheduled during the semester.

## Make-up Exams

### Make-up Final Examinations

Alfaisal University policies do not allow students who miss their final exam to request an alternate arrangement to make-up the exam except for one of the following reasons only – medical illness, or compassionate grounds. Alternate arrangements must be made prior to the scheduled examination date and time. Unless it is an extended illness, the missed final

exam must be completed as soon as possible after the scheduled exam date. The following guidelines are to be followed:

1. The student makes the request in writing and in a timely manner before the scheduled exam, to request an opportunity to complete a makeup exam.
2. The student provides the instructor with the required originally signed documentation regarding the reason he is not able to complete the test on the originally scheduled exam date. Without this documentation, the student will not be granted an accommodation to complete a makeup exam and will be assigned a zero grade for the exam. No incomplete (I) grade can be assigned in this situation.
3. The makeup exam does not have to be identical to the original final exam, but it must cover the same material.
4. All communications with the student must be via e-mail, with the University Registrar copied on each exchange.

**It is the instructor's responsibility to:**

- Validate (approve or refuse) the student's request and include the final exam details if approving the student's request. The instructor will copy the Registrar on all communication with students regarding their missed final exams.
- Retain documentation provided by the student with the course records.
- E-mail the University Registrar immediately, but no later than five business days prior to the date of the final exam, with the following information for each student approved for a final make-up exam:
  - The student's name
  - The student's Alfaisal University ID number
  - The course and section number
  - The duration of the final exam
  - A list of all the aids/resources permitted the student during the taking of the final exam
- Coordinate with the University Registrar the due date of submission of the student's final grade.
- Assign an incomplete (I) grade to the student if unable to grade the final exam before the final grade deadline and submit a Grade Change Authorization Form to the College Dean for approval and processing to the Office of the Registrar.

## Make-up Examinations (Other than Finals)

Alfaisal University requires that students be permitted to make up examinations missed because of illness, other unavoidable circumstances, or University activities. Therefore, instructors must offer reasonable options without penalty to students who have missed examinations for legitimate reasons.

It is the student's responsibility to contact the instructor as soon as possible before the exams about the reasons for a missed exam and if the instructor wishes to provide appropriate documentation.

Makeup examinations will be scheduled at a reasonable time and location. The makeup examination, if different, will be equivalent to the original in form, content, difficulty, and time limits, and the standards for scoring and grading will be equivalent to those used for the original examination.

## Grade Appeal

Students are responsible for fulfilling the academic requirements for a course, as established by the instructor in the course syllabus. The instructor is responsible for evaluation of student performance and for determining a student's course grade. The following procedures are designed to provide a means for students to seek review of final course grades alleged to be arbitrary and capricious, or based on clerical error. In a grade appeal, only arbitrariness, prejudice, and/or error will be considered as legitimate grounds for an appeal.

**Arbitrariness:** The grade awarded represents such a substantial departure from accepted academic norms as to demonstrate that the instructor did not actually exercise professional judgment.

**Prejudice:** The grade awarded was motivated by ill will and is not indicative of the student's academic performance.

**Error:** The instructor made a mistake in fact.

## Grade Re-evaluation Based on Exceptions to University Policy

In those cases, in which the grade received by the student is the result of the University policy (e.g., an

"F" resulting from failure to remove an Incomplete grade in the time allowed or failure to officially withdraw from a course) rather than a faculty member's evaluation of performance in a course, the student's written appeal must be directed to the Office of the registrar. Such appeals will be considered by registration Committee. This process cannot be used for students appealing a failing grade (F) assigned due to academic dishonesty.

## Academic Progress and Placement on Probation

The student is expected to maintain good academic standing throughout his studies by keeping his cumulative Grade Point Average (GPA) above 2.00 out of 4.00.

## Dismissed Students Transferring Policy

Alfaisal University allows student who is on verge of dismissal to transfer to another college according to the below policy.

### Policy

Allowing dismissed students to transfer to other college if they meet below requirements:

- Studied three semesters or less.
- Having 1.70 CGPA or more.
- Approval of new college's dean.

Student will be given two semesters to raise his/her CGPA above 2.0 otherwise he/she will be finally dismissed. To achieve this, student also to maintain semester GPA above 2.5 otherwise he/she will be instantly finally dismissed by end of the first extra semester.

### Procedure

Student must fill the change college form, and have it approved by the dean of the college which the student wants to transfer to.

## Grading System

The proposed grading system is aligned with Ministry of Education guidelines and similar to government Universities like King Saud University, Imam Mohammed Ibn Saud Islamic University, and many

other Universities inside Saudi Arabia. The new proposed grading system does not include minus letter grades.

GPA calculations at Alfaisal University will be computed on the 4-point system as explained in the table below:

Letter Grade	Grade Point	Percentile Range	Description
A+	4.00	95%-100%	High Excellent
A	3.75	90%-94%	Excellent
B+	3.50	85%-89%	High Very Good
B	3.00	80%-84%	Very Good
C+	2.50	75%-79%	High Good
C	2.00	70%-74%	Good
D+	1.50	65%-69%	High Pass
D	1.00	60%-64%	Pass
F	0.00	0%-59%	Fail
W	-	-	Withdrawn
WP	-	-	Withdrawn Penalty
P	-	-	Pass
NP	-	-	No Grade Pass
AU	-	-	Audit
I	-	-	Incomplete
CR	-	-	Credit Transfer
R	-	-	Retake
CC	-	-	Continual Course
DN	0.00	-	Denial
S/U	-	-	Satisfactory/Unsatisfactory
NC	-	-	No Credit

All grades (A, A-, B+, B, B-, C+, C, C-, D+, D, F, DN) are included in grade-point average calculation. Other grades (W, WP, P, NP, AU, I, CR, R, CC, DN, S/U, NC) may be used in certain situations, but are not included in the determination of the grade point average.

### Example of Grade Point Average (GPA) Calculation\*\*\*

The following example illustrates the calculation of a student's GPA:

Course	Awarded Credit Hours	Letter Grade	Grade Points	Quality Points
BIO 345	4	A	4.00	16.00
CHM 211	3	B+	3.50	10.50
ISL 112	2	C+	2.50	5.00
ACC 201	3	C	2.00	6.00

Total	12			37.50
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## Graduation Requirements

A complete listing of graduation requirements will be available in the University catalogue. Students are responsible for fulfilling these requirements and are encouraged to consult with their academic advisors/faculty advisors in planning their course schedules. Students are encouraged to check their transcript, program evaluation, and degree audit each semester for completeness and accuracy.

## General Education Requirements (GERs)

General Education Requirements (GER) are a set of courses designed to provide students with introductory level instruction in core disciplines that broaden a student's education and are intended to develop critical thinking abilities. A student should check his/her major academic plan.

## Major Field Requirements

A maximum number of designated hours will be required for individual majors, including the comprehensive examinations and/or projects and required courses offered by other departments. The requirements for majors are outlined in the University Catalogue. For established departmental majors, this authority resides with the Dean of the College. Substitutes in the general education portion of the degree requirements must be approved by the Vice dean of Academic Programs.

## Graduating with Honors

The transcripts of graduating students show honors categories based on the following scale:

- First Honor 3.75 through 4.0 GPA
- Second Honor 3.25 through 3.74 GPA

These honors categories are based on a student's cumulative average at the end the graduation semester. Student who are eligible for first or second honors also must meet the following criteria:

- He/she must not have failed any course completed at the University or any other university.

- He/she must have completed all graduation requirements within a specified period, the maximum of which is the average of the maximum and minimum limits for completing his/her degree program.
- He/she must have completed 60 percent or more of the graduation requirements at the university from which he/she is graduating.

## Transcripts

Official transcripts will be released only with signed authorization of the individual student. Requests for transcripts must be submitted in writing to the Office of the Registrar. The charge for each Official Transcript is SAR 100. Unofficial transcripts may be obtained through NetClassroom.

## Tuition, Fees, & Scholarships

### Tuition & Fees

Alfaisal University tuition fees are:

- Preparatory Program yearly tuition fees: SR 60,000
- Undergraduates yearly tuition fees: SR 94,000 for all degrees
- Graduate programs full tuition fees: SR 200,000
- Summer tuition fees: 3,133 SR per CH (Exclusive of 15% VAT).

Tuition and Fees	SAR
Application fee (non-refundable) (UPP graduates are exempted)	600
Seat Reservation and Tuition fee first instalment paid before the beginning of the Academic year/Registration.	20,000
Preparatory Program tuition fee per semester	30,000
Undergraduate tuition fee per semester	47,000
Cost of credit hour for undergraduate students enrolling in 11 or fewer credit hours	3,917
Cost of all Graduate Programs	200,000
Cost of credit hour for Graduate Programs	4,762
Late registration fees (Third week of classes)	500
Late tuition processing fee	1000
Official transcript	100
Graduation Certificate Replacement	500
Student medical insurance (per academic year for international students)	Varies
Student visa (for international students)	Varies



## Note: VAT is applicable

### Important Notes:

- Late payment fee of 1,000 SR will be charge after instalment due date
- Payments due date are fixed.
- Student is expected to meet all his/her financial obligations to the University by the appropriate due dates.
- Dropping courses might affect tuition fees if the credit hours fell below 12 credit hours.

## Payment

### 1. Bank Check

**Note: If the check rejected from the bank student's application status will be incomplete.**

### 2. Direct deposit

**Note: The voucher must contain student full name, university ID and National ID or Iqama.**

**The university bank account details for direct deposit as following:**

Bank Name	Saudi British Bank (SABB)
Name of Account	Alfaisal University
Branch	Al Faisaliah Branch
IBAN NO	SA39 4500 0000 1540 0011 1002
Swift Code	SABBSARI

All fees must be paid in Saudi Riyal.

## Policies

Upon receiving an Acceptance letter, Students are required to pay the amount of SR 20,000 (Exclusive of 15% VAT). This non-refundable deposit will be applied to the total amount due for their respective tuition fees.

## Payment Guide

- Check payment on tuition and fees is acceptable and should be payable to the order of "Alfaisal University.
- Direct deposit payment is also accepted with the following bank details, and to state the full name of the student or student ID:

Organization Name	Alfaisal University	جامعة الفيصل	اسم المنشأة
Organization Address	Aljawnhri St, Al Ma'ather District, P.O.Box 50927 Riyadh 11533 Kingdom of Saudi Arabia	شارع الجوهرري، المعذر، ص.ب 50927 الرياض 11533 المملكة العربية السعودية	عنوان المنشأة
Organization Tel. No.	920 000570 — (Local), +966 11 215 7777 (International)	من داخل السعودية 920 000570، من خارج السعودية 966 11 215+	هاتف المنشأة
Commercial Registration (CR) No.	1010900434		رقم السجل التجاري
VAT Registration No.	310147785500003		الرقم الضريبي
Website	<a href="http://www.alfaisal.edu">www.alfaisal.edu</a>		الموقع الإلكتروني
Bank Account Information (1)			معلومات الحساب البنكي (1)
Beneficiary Name	Alfaisal University	جامعة الفيصل	اسم صاحب الحساب/ المستفيد
Bank Name	SAB – الأول	SAB – الأول	اسم البنك
Bank Address	Al Faisaliyah Tower Branch, King Fahd Road, P.O.Box 2907 Riyadh 11461 Kingdom of Saudi Arabia	فرع برج الفيصلية، طريق الملك فهد، ص.ب 2907 الرياض 11461، المملكة العربية السعودية	عنوان البنك
Account Currency	Saudi Riyal (SAR)	ريال سعودي	عملة الحساب
Account No.	154 000111 002		رقم الحساب
IBAN	SA39 4500 0000 1540 0011 1002		أيبان
SWIFT Code	SABBSARI		رمز سويفت
Bank Account Information (2)			معلومات الحساب البنكي (2)
Beneficiary Name	Alfaisal University	جامعة الفيصل	اسم صاحب الحساب/ المستفيد
Bank Name	Saudi National Bank	البنك الأهلي السعودي	اسم البنك
Account Currency	Saudi Riyal (SAR)	ريال سعودي	عملة الحساب
Bank Address	AlTakhassousi Branch 246, Takhassusi St, Al Mather Ash Shamali, Riyadh 12314 Kingdom of Saudi Arabia	فرع التخصصي 246، شارع التخصصي، المعذر، الشمالي، الرياض 12314، المملكة العربية السعودية	عنوان البنك
Account No.	24679777000106		رقم الحساب



IBAN	SA32 1000 0024 6797 7700 0106	ايبان
SWIFT Code	NCBKSAJE	رمز سويقت

1. Settlement of fees should be made in Saudi Riyals.

## Tuition and other fees schedule

Tuition and Fees	SAR
Application fee (non-refundable) (UPP graduates are exempted)	600
Seat Reservation and Tuition fee first instalment paid before the beginning of the Academic year/Registration.	20,000
Preparatory Program tuition fee per semester	30,000
Undergraduate tuition fee per semester	47,000
Cost of credit hour for undergraduate students enrolling in 11 or fewer credit hours	3,917
Cost of all Graduate Programs	200,000
Cost of credit hour for Graduate Programs	4,762
Late registration fees (Third week of classes)	500
Late tuition processing fee	1000
Unofficial transcript	Free
Student medical insurance (per academic year for international students)	varies
Student visa (for international students) (Not applicable for 1st year)	varies

## Scholarships and Discounts

### Scholarships and Discounts

Alfaisal University has developed a comprehensive system of scholarships that will provide the opportunity for qualified students to pursue their higher education in the university, develop into excellent scholars and researchers, and significantly contribute to the well-being future of our kingdom and the region.

\*Please be advised that if you are currently sponsored by a third party for your studies at Alfaisal University, you are not eligible to apply for or receive any of the scholarships offered by the university. Third-party sponsorship includes, but is not limited to, financial support provided by governments, organizations, or other external entities.\*

Available scholarships and discounts at Alfaisal University:

1. **College of Science and General Studies Scholarships**

College of Science and General Studies scholarship offers a 50% reduction of the University tuition fees for selected high achiever students.

### Eligibility Criteria

- The applicant must be accepted in the College of Science and General Studies.
- Prospective applicant must possess outstanding academic records as demonstrated by grades, extra-curricular activities that show social engagement or leadership, standardized test scores (such as Qudrat, Tahseely, SAT, ACT, ACT Subjects, AP, or IB)
- The College of Science and General Studies Distinguished Science Scholarship is available for both domestic and International students.
- Maintain a minimum of 2.50 CGPA while enrolled in the University.

### Guidelines

Students must maintain continuous enrollment of 12 or more credit hours and maintain the minimum required GPA as specified in the scholarship guidelines. Enrollment and GPA are reviewed at the end of each semester. Students are placed on probation during the first semester when they fail to meet scholarship requirements. This probationary period is granted to allow the student time to regain eligibility. If the student does not regain eligibility within the probationary period, the scholarship is revoked.

### Application Process

There are no applications for this scholarship.

The Distinguished Science Scholarship will be automatically awarded to the student's account after meeting all criteria listed above and registering for a minimum of 12 credit hours.

### 2. The Athletic Scholarships

The Athletic Scholarships aims to recognize and support outstanding student-athletes who demonstrate exceptional talent and commitment in their respective sports.

### Athletic Award Categories

- Olympic Medal 100% (Full Scholarship)

- Olympic Qualified 50% of the university tuition fees
- Regional Medal 50% of the university tuition fees
- National Medal 50% of the university tuition fees
- Member of any Saudi National Team 30% of the university tuition fees

### Eligibility Criteria

To be eligible for an athletic scholarship, applicants must meet the following criteria:

- Be admitted to or currently enrolled in a full-time undergraduate program at Alfaisal University.
- The student must gain their award representing the Saudi Federation.
- Demonstrate outstanding athletic performance and potential in their respective sport.
- To qualify for and to maintain an athletic scholarship, students must demonstrate ongoing active participation in their respective sport.
- Maintain a minimum cumulative GPA of 2.5 on a 4.0 scale.
- Exhibit leadership qualities and a commitment to community service.
- Comply with all university policies and regulations, including those related to athletics.

**\*All students who receive the Alfaisal Athletic Scholarship are required to compete under the university's name in their respective sport, provided the sport is offered and supported by Alfaisal University.**

### 3. Need-based Scholarships

Alfaisal University offers a scholarship program to help the undergraduate students who have financial difficulties from all countries to achieve their academic goals based on the following criteria:

#### Criteria

- Student must be an undergraduate student.
- Student must meet admission criteria of Alfaisal University

- Student must apply for Need-Based form through admission application.
- Student must confirm his/her admission acceptance in Alfaisal University (paying seat confirmation fees and submitting the original documents).
- Providing a proof of financial need.
- Demonstrated academic excellence Academic (standardized tests (Qudrat, Tahseely, SAT, ACT, ACT Subjects, AP, or IB tests).

### Application Process

- Fill out the [\(Need-Based\) e-form available](#) on the Online Admission Application.

### Scholarship Coverage

- Bachelor: 20% of the tuition fees

### Required Documents

- Fill out the "[Need-Based E-Form](#)" and upload it to the Online Admission Application.
- Salary certificate contains (total salary plus all allowances in details, Employer stamp, Employer Signature, Chamber of commerce stamp and the date of the letter issuance should not exceed one month, Salary letters should be issued from same sponsor mentioned on Iqama).
- Account Bank Statement for last 3 months with bank stamp
- Family National ID/Family Members IQAMA including parents
- House Rent Contract If property not owned or Electricity/Water Bill If you own the property.

### Important Notes

- Applying for this scholarship does not mean being awarded; scholarships seats and funds are limited. Only top students will be rewarded based on the above criteria and the availability of seats and funds.
- All applications will be thoroughly reviewed and evaluated. Scholarships results require the approval of multiple parties, which might delay the final results. Therefore, Alfaisal University will not be held liable for any delay.
- Students cannot get both Need-Based & Merit-Based scholarships at the same time.
- Scholarships Office will evaluate your performance (CGPA) by the end of every Fall &

Spring semester. If your CGPA drops below 3.50 but still above 3.00, you will be given one semester to raise it. If you fail to do so or your CGPA drops below 3.00 at the end of any semester, the scholarship will be completely terminated.

- Summer semester tuition fees are not covered by the scholarship.

#### 4. Merit-based Scholarships

##### Criteria

The following table shows the minimum criteria for merit scholarship nomination of undergraduate students. However, meeting these criteria does not mean being awarded a scholarship as the scholarship seats and funds are limited. Only a limited number of students will be awarded based on below criteria and the availability of funds.

College	Minimum Required Scores					
	Saudi Education Curriculum		American Education Curriculum		British Education Curriculum	
	Qudurat	Tahsily	SAT I	*SATII Alternatives	AS	A2
Medicine	95	95	1400/1600	AP 2 subjects biology and chemistry(4), ACT 2 subjects biology and chemistry(28), IB, A2, or Tahsily	3 subjects (A) at least 2 of them biology and chemistry	2 subjects (A*) biology and chemistry
Pharmacy	90	90	1300/1600	-	2 subjects (A) biology and chemistry	-
Engineering	90	90	1300/1600	-	2 subjects (A)	-
Science	90	90	1300/1600	-	2 subjects (A)	-
Law	90	-	1300/1600	-	2 subjects (A)	-
Business	90	-	1300/1600	-	2 subjects (A)	-

\*Since SATII is canceled, student must provide one alternative score equal to the college requirement. Achieving the minimum required scores does not necessarily mean receiving the scholarship.

\*Since SATII is canceled, students must provide one alternative score equal to the college requirement.

Achieving the minimum required scores does not necessarily mean receiving the scholarship.

##### Note:

- College of Business: Tahsily, SAT II or AS scores will be considered as an additional factor.

##### Application Process

- The Deanship of Student Affairs will process the merit-based Scholarship following student's confirmation of acceptance and paying the 20,000 SAR for Seat Reservation and Tuition fee first instalment.

#### Scholarship Coverage

- Bachelor: 20% of the tuition fee.

##### Important Notes:

- Scholarship funds are limited; being nominated for a scholarship doesn't mean being awarded; priority will be given to students with good academic standing.
- Student cannot get both Need & Merit-Based scholarships at the same time.
- Scholarship Office will evaluate your performance (CGPA) by the end of every Fall & Spring semester. If a student fails to attain a cumulative GPA of 3.50 out of 4.00 by the end of any of the two semesters, the scholarship will be terminated immediately.
- Summer semester tuition fees are not covered by the scholarship.
- The University reserves the right to cancel the scholarship program without any prior notice and without any liability.

#### 5. Dean's List

Dean's List is awarded at the end of each academic year for continued students with 3.75 GPA and its 20% of tuition fees.

- Student's must complete at least 30 CH of AU courses (UPP courses are excluded).
- Student's must obtain a CGPA of 3.75/4.00 or above by the end of each academic year.
- Summer semester tuition fees are excluded.

**The University reserves the right to cancel Dean's List program without any prior notice and without any liability.**

The College of Science and General Studies offers the Distinguished Science Scholarship opportunities for excellent students pursuing a College of Science and General Studies degree.

#### 6.Sibling discount

The Sibling Discount is granted to siblings enrolled in Alfaisal University based on the following criteria:

- All siblings must be enrolled in full-time undergraduate degree in Alfaisal University (master's degree siblings are excluded)
- The sibling discount is applicable in Fall and Spring semesters only.
- The sibling must provide evidence of relationships.
- The new applicant can apply through the admission application attaching a copy of national IDs or Iqama's of both siblings.
- 15% discount will be granted to the second sibling and 25% for each successive siblings.
- There is no need to re-apply each year.

**The University reserves the right to cancel Sibling Discounts program without any prior notice and without any liability.**

## 5. Duration of scholarships

The student must maintain scholarship requirements throughout his/her study to sustain the scholarship. The scholarship will continue until the student graduates from Alfaisal University and will cover:

- One year for the University Preparatory Program.
- Four years for the College of Engineering, Business, Law or Science.
- Six years for the College of Medicine or Pharmacy

## 6. Change of specialization

The student is not permitted to change his/her major without approval from the Academic Deans of the colleges concerned and the Scholarship Awards Committee.

## 7. Termination of scholarships

The Office of Scholarship and Financial Assistance may terminate a student's scholarship on the recommendation of a college or the Scholarships Committee under any of the following conditions:

- Unsatisfactory academic progress by not maintaining the required CGPA
- Personal or disciplinary issues that prevent continued attendance as reported by the Dean of the student's college.
- Withdrawal from the university.

- Not graduating within the recommended timeframe specified for completing the bachelor's degree program

# Student Life

## Student Employment

Student Part-Time Employment represents an important and valuable experience for the student, in addition to other benefits for student and the university. Alfaisal University Program for student employment is implemented to encourage them to be effective and proactive in the university community and provide them with the financial assistance that they may need; as well as give them the chance develop experience.

## Policy

Student compensation as following:

- An hourly rate: 30 SAR (calculation is based on working a total of 2 semesters).
- The maximum allowed working hours is 15 hours/week.
- The contract duration is one semester only and can be renewed for one semester each time.
- There should not be any conflict between the student classes and the working hours.
- A student can only be employed with one Department/College during the same semester.
- Student Requirements to be fulfilled:
  - The student must be enrolled during the Employment semester.
  - The Student Cumulative GPA must be 2.5 and above.

## Procedure

To employ a student at your Department/College please follow the steps below:

### Step One Request

- Ask the requested student to:
  - Fill "*Student Employment Application (SA-SE02)*"
  - Attach a copy of his/her ID/Iqama and his Student ID.

- The requester must prepare the Student Contract and have the requested student sign it.

### Step Two Approvals

- The requester must *submit* the above forms and documents to Finance for Approval.
- If approved By *Finance Dept.* (Request can be accommodated (within budget)) the request will be handed over to *Student Affairs*.
- If approved by *Student Affairs* (Student fulfilled the Employment requirements) the request will be handed over back to *Finance Dept.* and a confirmation email will be sent to the requester.

### Step Three Payment

- After each employment month ends the employed student must fill a soft copy of the "*Student Employment Time Sheet (SA-SE03)*"
- They employed student must print and sign the Time Sheet, then submit it to Finance Department for the payment to be processed.

### Step Four Extension

A contract can be extended for one additional semester each time, this form "*Student Employment - Agreement Extension Request*" must be filled and submitted to Finance Department.

## University Student Counseling

### Preamble

We, the members of the Alfaisal University Student Council, in recognition of the importance of student representation and the vital role of student governance in fostering a supportive and thriving university environment, hereby establish this Council. Acknowledging our responsibility to advocate for the interests of the student body, we are dedicated to upholding the principles of democracy, inclusivity, and integrity.

Our commitment is to create a cohesive and collaborative community that promotes academic excellence, personal growth, and social responsibility. We pledge to work tirelessly to ensure that every student at Alfaisal University has a voice in the decision-making processes that affect their educational experience and well-being. By fostering an environment of mutual respect, innovation, and

continuous improvement, we aim to leave a lasting positive impact on our university and prepare our fellow students to become influential leaders in their future endeavors.

### Vision

The vision of the Alfaisal University Student Council is to foster an inclusive, dynamic, and engaging academic community that empowers students to excel academically, personally, and professionally. We envision a university where every student feels valued, supported, and inspired to become proactive leaders and global citizens, contributing positively to society and the world at large.

### Mission

The mission of the Alfaisal University Student Council is to represent and advocate for the diverse interests of the student body, ensuring their voices are heard and their needs are addressed. We are committed to:

1. Provide Constructive Feedback: Regularly gather and synthesize student feedback on academic programs, campus facilities, student services, and overall university policies. Present this feedback in a constructive manner to college and university leaders to inform and influence policy changes, improvements, and strategic planning.
2. Promoting Student Welfare: Prioritizing student well-being through initiatives that enhance their academic, social, and mental health.
3. Encouraging Student Engagement: Fostering a vibrant campus life by supporting extracurricular activities, clubs, and events that reflect the interests and passions of the student body.
4. Enhancing Communication: Serving as a transparent and effective conduit between the students, faculty, and administration to facilitate open dialogue and collaboration.
5. Cultivating Leadership: Developing leadership skills among students by providing opportunities for involvement in governance, decision-making processes, and community service.
6. Advocating for Equity and Inclusion: Ensuring that all students, regardless of background, have equal access to opportunities and resources within the university community.

### 1. Introduction

The establishment of a University Student Council (USC) at Alfaisal University aims to enhance student representation, foster leadership skills, and promote a collaborative environment between students, faculty,

and administration. This council will serve as a vital platform for students to voice their concerns, participate in decision-making processes, and contribute to the overall improvement of university life.

## 2. Objectives

The primary objectives of the University Student Council are as follows:

1. **Representation:** To provide a formal structure through which students can express their views and influence university policies.
2. **Leadership Development:** To cultivate leadership skills and provide opportunities for personal growth among students.
3. **Communication:** To enhance communication between the student body, faculty, and administration.
4. **Advocacy:** To advocate for the interests and welfare of the student community.
5. **Community Engagement:** To foster a sense of community and encourage student participation in university events and activities.

## 3. Structure and Composition

The USC will comprise elected representatives from each college and year level, ensuring diverse representation across the university. The USC will be structured the following:

1. **Executive Committee:** Comprising the President, Vice President, Secretary, and Treasurer.
2. **College Representatives:** One representative from each college.
3. **Year Representatives:** One representative from each year level (freshman, sophomore, junior, senior).
4. **Sub-committees:** Formed as needed, focusing on specific areas such as academic affairs, student welfare, extracurricular activities, and community service.

## 4. Roles and Responsibilities

- **Executive Committee:**
  - **President:** Leads the USC, represents the student body in meetings with the administration, and oversees all council activities.
  - **Vice President:** Assists the President, oversees sub-committees, and steps in during the President's absence.

- **Secretary:** Maintains records, schedules meetings, and ensures effective communication within USC.
- **Treasurer:** Manages the USC's budget, oversees fundraising activities, and ensures financial transparency.

- **College Representatives:** College Representatives: Act as liaisons between their respective colleges and the USC, gathering and conveying college concerns and suggestions.
- **Year Representatives:** Represent the interests of their respective year levels, ensuring that issues pertinent to different stages of academic progress are addressed.

## 5. Election Process

Elections for USC will be conducted annually during the month of October, and it will be supervised by the Deanship of Student Affairs, Admissions, and Registration, with all registered students eligible to vote. The election process will include:

- **Nomination:** Open to all students in good academic standing and who have not been subject to any disciplinary sanctions.
- **Campaigning:** Candidates will be given a specified period to campaign and present their platforms.
- **Voting:** Conducted through a secure online system to ensure fairness and accessibility.
- **Announcement of Results:** Results will be announced promptly after the voting period ends.

## Election Methods

- **Executive Committee:** members of the Executive Committee will be directly elected by the students, nominees for the Executive Committee must meet the following conditions:
  1. Good Academic Standing (minimum 2.5 CGPA).
  2. Finished at least 60 credit hours in Alfaisal.
  3. Able to collect 200 student signatures to support their candidacy from all the colleges in the university.
  4. Students in their final year in Alfaisal are not eligible to hold positions in USC.
- **Year Representatives:** Year Representatives will be selected by the Deanship of Student Affairs, Admissions, and Registration.
- **College Representatives:** will be nominated by each college professional association.

## 6. Training & Supervising

The Deanship of Student Affairs, Admissions, and Registration will provide training for USC members on leadership, governance, and their specific roles and help the newly elected USC in initiating regular meetings and starting the council's activities.

## 7. Budget & Resources

The USC will require an initial budget to cover the costs of elections, training sessions, promotional materials, and operational expenses. Funding will be sourced from the Deanship of Student Affairs, Admissions, and Registration budget, sponsorships, and fundraising activities organized by the council.

## 8. Membership Term

The term of membership in the Student Council is a full academic year.

## 9. Meeting

1. USC shall meet at least twice per semester.
2. Meeting quorum is set at two thirds (2/3) of the members.
3. At least one general students meeting should be held during the academic year.
4. Minutes of USC minutes must be submitted to Vice dean of Student Affairs, Admissions, and Registration within two days from the meeting.

## 10. Removal From Office

Any USC member may be removed from office under the following conditions:

1. Member is no longer in Good Academic Standing
2. Member was involved in inappropriate action as determined by the Deanship of Student Affairs, Admission, and Registration.
3. Member is no longer full-time student.
4. Member is regularly absent from USC meeting without excuses (3 times).
5. The member was a representative of a specific college but changed to another college.

## 11. Suspension

At Alfaisal University, the University Student Council is an essential body that represents the student voice, fosters community, and facilitates a vibrant campus life. However, it is imperative that all actions and activities undertaken by the University Student Council adhere strictly to the university's policies, rules, and regulations. The administration holds the University Student Council to the highest standards of conduct. Consequently, if the actions of the University Student

Council are deemed inappropriate and in violation of these established guidelines, the university reserves the right to suspend its activities. This measure ensures the integrity of the university environment and upholds the principles upon which Alfaisal University is founded.

## 11. Evaluation and Feedback

To ensure the USC's effectiveness, regular evaluation mechanisms will be implemented, including:

- Annual Reports: Documenting the council's activities, achievements, and challenges.
- Surveys: Collecting feedback from the student body, faculty, and administration.
- Review Meetings: Periodic meetings with university officials to discuss progress and areas for improvement.

## Student Activities

Alfaisal University is keen in involving all students in every kind of activities through college's associations or clubs. It Allows students to participate in the Kingdom's national and international events in the campus. The clubs' events aim at serving the campus life and the international community in general. The activity department at Deanship of Student Affairs, Admissions and Registration support and sponsor all approved proposals.

**Association:** each college has one association established and supervised by the Deanship of Student Affairs, Admissions and Registration (activity office), the members must be from the same college.

**Club:** established by the students and supervised by Deanship of Student Affairs, Admissions and Registration, the club members can be from all the students in the campus.

## Policy

- Must be approved by Deanship of Student Affairs, Admissions and Registration.
- All clubs should represent Alfaisal vision and mission.
- All events must be in compliance with MoE and Alfaisal regulations.
- Head of association or club must spend a year at Alfaisal as a student and be aware of all regulations.
- A head of a club and its members should have no conduct or academic warning.



- No racial or religious discussions or debates.
- Should not duplicate either in function or purpose an existing club.
- No event that may endanger the mental, physical health or safety of students or endanger a public property on campus.
- Any club that inactive for whole year will be cancelled.
- All recognized student organizations (association and club) will be held responsible by the University for abiding by Alfaisal, and governmental laws. The University is involved in the off-campus event of recognized student organizations when such event is under Alfaisal name.
- Only currently registered students shall be eligible for active membership status in student organizations.
- The purpose of student organizations must not conflict with the educational functions or established policies of the University.
- The University offers several ways for student organizations to market themselves to students who want to become involved.
- All recognized student organizations are given space on the sites. <https://ea.alfaisal.edu/site/>
- The Office of Student Activities coordinates associations and clubs Fair at the beginning of the fall semester. All recognized student organizations are given an opportunity to register for the fairs during which they can set up a table with information about their groups.
- Student organizations can place flyers/materials on general purpose bulletin boards throughout campus after the approval of SA & PR.
- The Head of a club's responsibilities:
  - Represent the club.
  - Enforce the regulations on the club's activities.
  - Contact Student Affairs for any issues.
  - Submit all financial receipts to the activity's office.
  - Submit comprehensive report for each event with pictures.
  - Must be enrolled full time student.
  - Must train the next president before he/she leaves.
- The University's recognition to a student association or club, the club is accorded a number of benefits, including:
  - Use of the University's logo and insignia is subject to university regulations.
  - Ability to book space for the activity.

- Right to hold Events.
- The use of the clubs' name on campus.
- Access and ability to use university property and equipment.
- Access to send email to all students.
- Partial financial support for the activities.
- Email address for the club.

## Smoking Policy

### Alfaisal University Smoking Policy for Students and Visitors

#### Policy Overview:

Alfaisal University is committed to maintaining a safe, healthy, and smoke-free environment for all members of our community, including students, faculty, staff, and visitors. In alignment with our commitment to public health and the University's role as a leader in health promotion, smoking is strictly prohibited in all indoor and outdoor areas of Alfaisal University premises.

#### Policy Details:

1. **Scope:** This policy applies to all students, visitors, faculty, staff, and any other individuals present on Alfaisal University premises.

2. **Prohibited Areas:** Smoking is not permitted in any part of the University's property, including but not limited to:

- Academic and administrative buildings
- Dining areas and lounges
- Sports facilities and recreational areas
- Open outdoor spaces within campus boundaries, including courtyards, walkways, parking, and entrances.

3. **Definition of Smoking:** For the purposes of this policy, smoking includes the use of cigarettes, cigars, pipes, electronic cigarettes (e-cigarettes), vaping devices, and any other tobacco or nicotine products.

4. **Compliance and Enforcement:** All members of the University community, including students and visitors, are expected to comply with this policy. Violation of the smoking policy may result in the following actions:



- **First Violation:** Written warning and education on the University's smoking policy.

- **Subsequent Violations:** Further disciplinary actions as outlined in the **Student Handbook** and in accordance with University regulations, up to and including fines, community service, or other measures as deemed appropriate by the **Deanship of Student Affairs, Admission, and Registration** .

5. **Disciplinary Action:** Any failure to adhere to this policy will result in disciplinary action by the Deanship of Student Affairs , Admission, and Registration in accordance with the Student Handbook and University regulations. The University reserves the right to implement sanctions proportionate to the frequency and severity of the violation.

6. **Exceptions:** There are no exceptions to this policy for any individual on University premises.



# College of Business

# College of Business

## CoB General Information

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<b>Dr. Dr. Mohammad Alshallaqi</b> Vice Dean Quality Assurance & Accreditation	<b>Ph:</b> +966 11 215 7678 <b>E:</b> malshallaqi@alfaisal.edu
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<b>Dr. Ibrahim Abosag</b> Vice Dean Executive Education & Development	<b>Ph:</b> +966 11 215 7961 <b>E:</b> iabosag@alfaisal.edu

### Address: College of Business

Alfaisal University, P.O. Box 50927  
Takhassusi Road, Riyadh, 11533, Kingdom of Saudi Arabia.

**Tel:** + 966 11 215 7700

**Email:** cob@alfaisal.edu

**Website:** <http://cob.alfaisal.edu/>

## College of Business vision, mission, and values

### College of Business Vision

We aspire to become a leader in business education and research in the Kingdom of Saudi Arabia and the MENA region.

### College of Business Mission

COB develops business leaders through quality education and research and fosters partnerships with local and international stakeholders.

In this context, quality education means:

1. providing students with the necessary knowledge and skills to succeed in a highly competitive global marketplace.

2. pushing the frontiers of business knowledge, creating new opportunities, and promoting economic growth and business sustainability.
3. educating the next generation of business leaders and pioneers that dream big, take risk, and shape the future of the ever-changing business landscape.
4. connecting with the Kingdom's ongoing economic changes and promoting entrepreneurship and innovation.

## College of Business Values

- **Quality:** We are committed to excellence in and passionate about high-quality teaching and research, which we continually strive to improve.
- **Integrity:** We hold ourselves to the highest ethical standards, value personal integrity and transparency, and take responsibility for our actions.
- **Diversity:** We take pride in promoting inclusiveness and diversity, which is reflected in the diverse background of our faculty, committed to training the next generation of business and community leaders regardless of their background, gender, economic status, and national origin.
- **Collegiality:** We are committed to faculty governance and a collegial system in which proposed new policies are institutionalized and principle-based, guided by our vision, and consistent with our strategic objectives.
- **Engagement:** Our focus is to build and maintain a strong relationship with our stakeholders, including alumni, businesses, and professional communities, and to provide guidance and thought leadership on business issues that the stakeholders value.

## About College of Business

The CoB at AU is a young and fast-growing institution. It is one of six colleges at AU. AU is a private non-profit university where English is the official language of the university. It is in the heart of the city of Riyadh, the capital of the Kingdom of Saudi Arabia, built around the palace of the former King of Saudi Arabia, King Faisal Bin Abdulaziz Al Saud. The college admitted its first batch of 24 male and female undergraduate students in the Fall of 2008. Whereas the first male and female cohort of MBA students was admitted in the Fall of 2010. It offers a vibrant undergraduate business administration degree that is grounded in liberal arts

education with six majors (Accounting, Entrepreneurship and Family Business, Finance, Human Resource Management, Marketing, and Operations and Project Management). The college also offers an MBA program that is directed toward middle managers. Six tracks are available: MBA- General, MBA-Accounting/Taxation, MBA-Digital Marketing, MBA-Finance, MBA-Healthcare Management, and MBA-Human Capital Management. The College, as part of its commitment to serving the community, also offers active Executive Education programs. The college's pioneering curriculum and its diverse faculty are attracting the best and the brightest students in the Kingdom of Saudi Arabia. Students learn from distinguished scholars and practitioners who have excellent academic credentials.

Students, at the College of Business, learn the skills necessary to confront and manage the challenges of modern businesses. They are well trained to recognize change and growth and equipped with the right skills to deal with them. In-class lectures and case analysis, executive lectures involving well-accomplished executives and government officials, and internship experiences with diverse businesses give students the edge needed to help companies compete in today's global marketplace. It graduates leaders with exceptional abilities to manage and sustain growth in public and private organizations through critical thinking, analytical decision-making, information technology, and collaborative execution. Through such a well-rounded education, Alfaisal business students become not only leaders of profitable family enterprises and public corporations but, also, capable societal leaders contributing to the growth and development of the Kingdom of Saudi Arabia and the region. They are well suited for the operationalization of the Saudi 2030 Vision.

## College of Business Approach

The College achieve its ideals by

- maintaining a small class size in order to maximize student participation inside the classroom and faculty/student interaction.
- using problem-based pedagogy including case studies and experiential learning activities.
- curriculum grounded in liberal arts education that promotes independence and critical thinking.

- helping students to develop quantitative, technological, and leadership competencies.
- encouraging student participation in learning outside the classroom through Business Club activities, internships, research projects, field trips, and so on.
- working closely with the local business community to ensure the relevance of student learning opportunities.
- conducting high-quality research with applicability to the Kingdom of Saudi Arabia and the global business community.
- engaging in selective consulting projects to increase faculty and student exposure to significant business and development issues inside the Kingdom of Saudi Arabia.
- connecting students to the business and public communities through an active Executive Lecture Series and at least a four-months internship program.

## National and International Recognition

The College of Business (CoB) programs are approved and recognized by the Ministry of Education in Saudi Arabia. Alfaisal University opened its doors for instructions in 2008. Despite its young age, Alfaisal University (AU) is recognized as one of the best universities in the Kingdom of Saudi Arabia (KSA). Many of our students, including graduates of the CoB, are regularly accepted in top international universities around the world and many are currently pursuing their graduate degrees.

The CoB is an active member of the Association to Advance Collegiate Schools of Business (AACSB) and, recently, fulfilled the AACSB eligibility requirements for working toward AACSB full accreditation within the next few years. Only 6% of business schools worldwide hold AACSB accreditation. The College of Business was featured in Newsweek as one of the ten Leading Business Schools in 2017; please see the link <http://www.newsweek.com/insights/leading-business-schools-2017/alfaisal-university>.

## College of Business Faculty

<b>Dr. Abdel Monim Shaltoni</b>	Associate Professor, Department of Marketing, College of Business. Ph.D., University of Birmingham, UK.
<b>Dr. Adnan Abo Al Haija</b>	Associate Professor, Department of Finance, College of Business, Ph.D., University of Vienna, Austria.
<b>Dr. Ahmed Alanazi</b>	Assistant Professor, Department of Finance, College of Business. Ph.D., Griffith University, Australia.



<b>Dr. Ahmed Moustafa Elemer</b>	Associate Professor, Department of Accounting, College of Business. PhD Univ. of Huddersfield, UK.
<b>Dr. Amina Raza Malik</b>	Associate Professor, Department of Management, College of Business. Ph.D., York University, Canada
<b>Dr Anfaal Ahmed Khan</b>	Senior Lecturer, Department of Accounting, College of Business. Ph.D., University of Glasgow, UK.
<b>Dr. Andrew Richard Timming</b>	Professor of Management, College of Business. PhD, University of Cambridge, UK
<b>Dr. Ashley Carreras</b>	Assistant Professor, Department of Operations and Project Management, College of Business. Ph. D., Leicester University, UK.
<b>Dr. Bajis Dodin</b>	Professor and Dean, College of Business. Department of Operations and Project Management, Ph.D., North Carolina State University, USA.
<b>Dr. Brendan Lambe</b>	Associate Professor, Department of Finance, College of Business, Ph.D., University of Leicester, UK.
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<b>Dr Ernest Gyapong</b>	Associate Professor, Department of Accounting, College of Business, Ph.D., Griffith University, Australia.
<b>Dr. Fahad Alammam</b>	Assistant Professor, Department of Management, College of Business. Ph.D., Massey University, Auckland.
<b>Dr. Francesco Cannas</b>	Assistant Professor, Department of Accounting, College of Business. PhD Univ. of Economics & Business, Vienna.
<b>Dr. Haitham A. AL-Zoubi</b>	Professor, Department of Finance, College of Business. Ph.D., University of New Orleans, USA.
<b>Dr. Hayat Khan</b>	Associate Professor, Department of Finance, College of Business. Ph.D., University of Melbourne, Australia.
<b>Dr. Hesham Albarrak</b>	Assistant Professor, Department of Accounting, College of Business. Ph.D., Griffith University, Australia.
<b>Dr. Ibrahim Abosaq</b>	Professor, Department of Marketing, College of Business, Ph.D., University of Nottingham, UK.
<b>Dr. Izedin El Kalak</b>	Associate Professor, Department of Finance, College of Business. PhD, University of Hull, UK
<b>Dr. James Ryan</b>	Associate Professor, Department of Management, College of Business. Ph.D., Dublin City University, Ireland.
<b>Dr. Jan Smolarski</b>	Associate Professor, Department of Accounting, College of Business. Ph.D., University of North Texas, USA.
<b>Dr. Johann Nikolai Giertz</b>	Senior Lecturer of Marketing, College of Business
<b>Dr. Julian Waters-Lynch</b>	Assistant Professor, Department of Management, College of Business. PhD, RMIT University, Australia.
<b>Dr. Mahmoud Fallatah</b>	Associate Professor, Department of Management, Ph.D., University of Texas at Arlington, USA.
<b>Dr. Mario A. Ferrer</b>	Assistant Professor, Department of Operations and Project Management, College of Business. Ph.D., CQ University in Queensland, Australia.

<b>Dr. Mevludin Memedi</b>	Assistant Professor, Department of Operations and Project Management, College of Business. Ph.D., Örebro University, Sweden.
<b>Dr. Michael Muchiri</b>	Associate Professor, Department of Management, College of Business. Ph.D., University of New England, Australia
<b>Dr. Mishal Ahmed</b>	Assistant Professor, Department of Finance, College of Business. Ph.D., Georgia Institute of Technology, US.
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## College of Business Degree Programs

The CoB offers two dynamic programs: an MBA Program with six tracks, and a bachelor's degree in business administration (BBA) with seven majors and minors. Details of the undergraduate business administration programs are given below. Details about the MBA program are available on Alfaisal University's [Graduate catalogue](#).

### The Bachelor of Business Administration (BBA) program

**Vice Dean of Undergraduate Programs and**

**Internship:** Dr. Hayat Khan, Ph.D., College of Business.

### BBA Vision and Mission

**BBA Vision:** We aim to be the first choice for students who strive to be business leaders.

**BBA Mission:** *To cultivate ethical business leaders capable of driving excellence in the business world through rigorous business education, impactful research, and community engagement.*

The BBA program mission is translated to the following goals:

- **Goal #1:** Provide students with a rigorous and comprehensive business education in the core business disciplines of Finance, Marketing, Operations and Project management, Accounting, Entrepreneurship and Family Business, and Human Resources Management.
- **Goal #2:** Cultivate ethical and socially responsible business leaders who demonstrate integrity, professional responsibility, and a commitment to sustainable and ethical practices.
- **Goal #3:** Produce high-quality research that advances knowledge in business administration and contributes to the development of the business community.
- **Goal #4:** Engage with the local community through internships, guest lectures, and collaborative projects.

The BBA program offers the following seven majors and seven minors. Students may also opt for a double major instead of adding a minor:

- [BBA with major in Accounting](#)
- [Major in Business Analytics](#)
- [BBA with major Entrepreneurship and Family Business](#)
- [BBA with major in Finance](#)
- [BBA with major in Human Resources Management](#)
- [BBA with major in Marketing](#)
- [BBA with major in Operations and Project Management](#)
- [Minor in Accounting](#)
- [Minor in Business Analytics](#)
- [Minor Entrepreneurship and Family Business](#)
- [Minor in Finance](#)
- [Minor in Human Resources Management](#)
- [Minor in Marketing](#)
- [Minor Operations and Project Management](#)

## BBA Degree Requirements

To obtain a Bachelor of Business Administration degree in one major, the student must complete a total of **130 credit hours** that are distributed as follows:

- A. **General Education Requirement (GER):** Courses adding to 44 credit hours; some of these are mandated by the Ministry of Education, which are mostly completed in the first two years of the program. These courses provide students with a good foundation in humanities, and in social and natural sciences.
- B. **Business Common Core (BCC):** Courses adding to 44 credit hours. These courses provide students with a strong foundation in quantitative and qualitative decision methods and information technology along with a broad core of business education. These courses are mostly completed before the end of the third year.
- C. **Major Core Courses (MCC):** These consist of 36 credit hours including 12 for internship completed in the final semester in the corresponding major.
- D. **Business Electives Courses (BEC):** consisting of 6 credit hours and completed within the third and fourth year. The College of Business regularly introduces new courses as Business electives to keep up with the market needs which are later

converted to a common core course if the skill is broadly needed by the market

## Bachelor CoB General Education Requirement Courses (GER)

Bachelor

### Ministry of Education Required courses

Item #	Title	Credits
ARB 101	Arabic Language I	2
ARB 112	Arabic Language II	2
ISL 101	Islamic Studies I	2
ISL 112	Islamic Studies II	2
ENG 101	Freshman English 1	3
ENG 103	Foundation of English Communication	3
ENG 201	Business Communication	3

1. Instead of ARB 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University
2. Instead of ISL 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University
3. ENG 103 is a required course for those whose grade in ENG 101 is B or lower. Those with a grade of B or higher can go directly to ENG 201. They will however need to complete any other 3 credit hour course offered at Alfaisal University as a replacement for ENG 103.

## The Mathematics and Computing COURSES

Item #	Title	Credits
MAT 100	Pre-calculus	3
MAT 111	Business Calculus	3
OPM 110	Introduction to Management Information Systems	3
OPM 211	Business Statistics	3

The Natural Sciences courses (3 credits) selected from:

Item #	Title	Credits
BIO 103	Introduction to Human Biology	3
CHM 107	Chemistry in the Environment and Everyday Living	3
PHU 101	Astronomy	3
PHU 102	Science of Energy and the Environment	3

The Social Sciences courses (6 credits) selected from:

Item #	Title	Credits
ANT 101	Introduction to Sociocultural Anthropology	3
ANT 102	Entrepreneurial Multiculturalism	3
HIS 101	Islamic Civilization and Mediaeval Europe	3
PSY 101	Introduction to Psychology	3
SOC 101	Introduction to Sociology	3

The General Electives Courses (6 credits) selected from the social and/or natural science courses.

This could be any course offered at the university which is not taken as part of any other requirements of the degree.

Item #	Title	Credits
	These can be from any of the following courses:	
		53

## Bachelor CoB Business Common Core Courses (BCC)

Bachelor

All CoB students must complete the following courses. These are mostly completed before the end of junior year.

### Business Core Courses

*Excluding the internship which is part of the major core courses.*

Item #	Title	Credits
COB 100	Student Orientation and Academic Success	1
ECO 101	Microeconomics	3
ECO 102	Macroeconomics	3
MGT 125	Principles of Management	3
ACC 201	Introduction to Financial Accounting	3
FIN 201	Principles of Finance	3
ACC 202	Introduction to Management Accounting	3
MGT 210	Business Ethics	3
MKT 201	Principles of Marketing	3
MGT 230	Organizational Behavior	3
MGT 301	Business Law	3
OPM 240	Principles of Operations Management	3
MGT 300	Executive Lecture	1
BAN 310	Business Analytics and Visualization	3
OPM 330	Quantitative Methods for Business	3
MGT 490	Strategic Management	3

*COB 100 Student Orientation and Academic Success is a formal one-credit hour course on student orientation and academic success. This course introduces students in the College of Business (COB) to their rights and responsibilities as a student at the COB and develops their skills to foster academic success and enhance their learning experience. It gives the students a chance to get a thorough understanding of academic policies and procedures applicable to the COB Students, including policies and procedures related to attendance vs participation, academic misconduct, academic probations, outside studies programs and credit transfers, grade appeals, GPA calculations, repeating courses, make-up exams, sick-leave, student advising, etc. The course familiarizes students with their study plans, including adding a minor or a double major and related requirements; equipping them with the skills required to access and utilize the rich library resources; introducing them to the set of extracurricular activities available at Alfaisal, and enhancing their time management and study skills.*



## CoB Major Core Courses (MCC)

Students are required to complete 24 credit hours, plus a 12 credit hours internship (coop) relevant to their majors. Students may also add a minor or a double major provided they meet the minimum requirement to add a double major or a minor. These details and requirements are listed below.

### The Internship

The [Internship Program](#) is designed to provide the College of Business students with a practical, on-the-job experience, which makes a valuable contribution to their academic and career development. The internship program is mandatory for all undergraduate students. The duration of the internship program is at least four (4) months and students can earn twelve (12) credits towards their final degree requirements. The Internship is normally conducted in the final semester unless approved otherwise by the Undergraduate Business Office. Students are not allowed to enroll in any other course within the duration of the coop.

Students will gain practical skills and experience to reinforce and expand what they learned in the classroom and increase their employability skills in an ever-competitive job market. Due to the growing reputation of Alfaisal University, several organizations approach the College of Business to send its students to participate in their internship programs. The College of Business has worked with over 100 national and international organizations to host the internships; many of these organizations end up hiring the CoB student interns.

Please go to the major core courses (MCC) for each department below for more details.

## CoB Business Electives Courses (BEC)

These are 2 courses selected from the set of courses listed below.

### Business Elective Courses (BEC)

**All CoB students must complete 6 credits selected from the list of courses below or any of the other majors' core courses:**

Item #	Title	Credits
	Multiple	
ACC 495	Accounting Theory and contemporary Issues	3
ECO 310	International Economics	3
ECO 320	Islamic Economics & Finance	3
FIN 330	Financial Planning	3
FIN 340	Contemporary Financial Issues	3
FIN 377	Fixed Income Securities	3
FIN 380	Corporate Governance:	3
FIN 450	Financial Trading Strategies	3
MGT 374	Real Estate	3
OPM 315	E-Commerce (BE)	3
		6

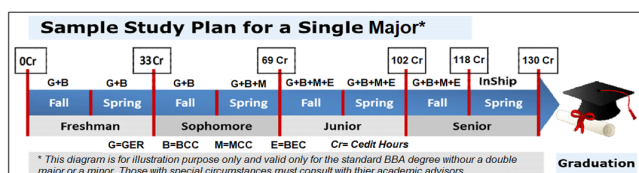
*Any CoB course which is not on the student's study plan is considered a business elective.*

## General Notes about College of Business Degree Requirements

- A minimum of 130 credit hours is required to graduate with one major.
- Course Load Per Semester:** The Ministry of Education requires students to enrol in at least 12 credit hours to be considered full-time students. It also states that the normal load for the full-time student is 15-16 credit hours per semester. However, a student with a very good cumulative GPA can be allowed to enrol in **18 credit hours per semester, which is the maximum allowed.** Furthermore, a student is not allowed to enrol in a course in another university if the course is offered at Alfaisal University in the same semester. Also, if a student has a grade of "F" in a course he/she cannot complete this course in another university, then transfer the grade to AU.
- Students on probation can register in a maximum of 13 credit hours
- Students can repeat a maximum of four courses within the duration of his/her BBA degree at AU.
- All students must consult their respective advisor/s throughout their full study cycle with due approvals at specific milestones.
- The CoB strictly applies the policies listed under the "[Student Affairs Deanship Policies and Procedures](#)." Please make sure to orient yourself with policies applicable to you.
- Similarly, students and faculty are required to implement the **CoB "Teaching Guidelines"**.

- All courses are 3 credits unless stated otherwise.
- All students must follow their study plans. Any deviation from the study plan must be discussed and approved by the student's Academic Supervisor to avoid delay in graduation.
- **Students must complete all BCC and MCC courses in the CoB.** Exceptions can be made by a petition that needs to be approved by the Dean.
- The teaching schedule for the Freshman year of CoB students is presented in Figure 2 below. Students must enroll in these courses as they are pre-requisites for many business courses required in the second year and thereafter. Not doing so may result in delaying the graduation of the student beyond the end of the fourth year of study.

**Figure 1: Timeline for completing the BBA degree**



**Figure 2: Schedule of courses for the freshman year**

First Semester		CHs	Type	Second Semester		CHs	Type
<b>ARB 101</b>	Arabic Language I	2	GER	<b>ISL 112*</b>	Islamic Studies II	2	GER
<b>ISL 101</b>	Islamic Studies I	2	GER	<b>ENG 103**</b>	Foundation of English Communication	3	GER
<b>ENG 101</b>	University Writing	3	GER	<b>MAT 11</b>	Business Calculus	3	GER
<b>MAT 100</b>	Pre-Calculus	3	GER	<b>OPM 110</b>	Intro. to Management Information Sys.	3	GER
<b>MGT 125</b>	Principles of Management	3	Core	<b>ACC 201</b>	Introduction to Financial Accounting	3	Core
<b>ECO 101</b>	Microeconomics	3	Core	<b>ECO 102</b>	Macroeconomics	3	Core
<b>COB 100</b>	Student Orientation and Academic Success	1	Core				
17 Credits				17 Credits			

\*Instead of ISL 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University

\*\*Students with a B or higher grade in ENG 101 may replace ENG 103 with 3Cr course offered by ANY college at Alfaisal University.

## Adding a Double Major

The College of Business very good performing students are rewarded by given the opportunity of adding a minor or a second major. A student can add a second major to his/her main degree subject to the following conditions/requirements:

1. Students can add a double major only after successfully completing a minimum of 60 credit hours. Hence, the double major can be added if (qualified) at the end of the 4th. semester.
2. The student's cumulative GPA must be 3.3 or above at the time of adding the double major. Such students must maintain a cumulative GPA of 3.3 or above until graduation. Those who fail to maintain the minimum required cumulative GPA will receive a minor in place of the additional major instead of a double major.
3. Students can add only one double major (or a minor but not both).
4. Students are free to choose any major/minor offered by the CoB (not any other AU college) as a double major or a minor, irrespective of their current major.
5. A double-major student is required to complete a minimum of 154 credit hours comprising of the following.
  - i. a minimum of 130 Cr in the standard (first major) degree, plus;
  - ii. additional 24 Cr comprising of the 8 Major Common Courses (MCCs) of the second major.
6. **No double Counting.** Courses common between the two majors will be counted only once. Such students will be required to complete replacement courses for the courses common between the two majors as approved by the COB.
7. A double-major student is required to do an internship in only one major. **The Internship must be in the primary major selected by the student, which is the major a student started with.**

## Adding a Minor

Instead of adding a second major, students also have the opportunity of adding a minor subject to the following conditions/requirements.

1. Students can add a minor only after successfully completing a minimum of 60 credit hours.
2. The student's cumulative GPA must be 3.0 or above at the time of adding the minor. Such students must maintain a minimum cumulative GPA of 3.0 until graduation to receive a minor; otherwise the minor will be cancelled.
3. A student can add only one minor. Double major students are not allowed to add a minor.
4. A minor comprises of five additional courses, equivalent to 15 credit hours. The minimum requirement for BBA with a minor is therefore 145 credit hours comprising of the following
  - i. a minimum of 130 Cr in the standard degree, plus
  - ii. additional 15 Cr comprising of five additional courses listed under each minor offered by the College of Business below.
  - iii. No double counting: Courses common between the major and the minor will be counted only once. Such students will be required to complete replacement courses for the courses common between the major and the minor as approved by the COB.

The college currently offers minors in 7 areas (accounting, business analytics, entrepreneurship and family business, finance, human resource management, marketing, and operations and project management). Please refer to the list of courses offered under each minor below.

## Changing Major or Minor

A student can start his/her academic study (in the first semester) with or without declaring a major. Within the first three semesters, a student can change major/s as the curriculum (courses) are the same for all majors. However, by the end of the third semester (before the start of the fourth semester) each student must select a major (department). Once the major is selected a student **can change the major a maximum of two times: the first at the end of the fourth semester, and the second at the end of the fifth semester**. Thereafter a student may be allowed to change a major, but that may delay his/her graduation due to the possible deviation from the study plan of the selected major.

In case of a double major or minor, a student can change it but must be aware of the impact on the completion of the degree. A later change may result in delaying the graduation by one or more semester/s.

Change of a major or minor is allowed only after the completion of a semester and at least a week before the beginning of the succeeding semester. In all cases changing the major or minor requires the approval of the first (current) major academic advisor, the Undergraduate Business Program Vice Dean, and the Dean of CoB.

## Advising and the Assignment of an Academic Advisor (Supervisor)

Each student must have a supervisor at all times. Students in the first four semesters (Freshman and Sophomore years) are advised by the Vice Dean for Undergraduate Business Programs and Internships and his/her assistants (students' counselors). However, thereafter (within the junior and senior years) each student must be assigned to a faculty member in his/her department. The student stays with this academic advisor until graduation (including the supervision of the Internship). An academic advisor can be changed only based on justifiable reasons. In this case, the student must petition such a change, and it must be approved by the Vice Dean of the Undergraduate Business Programs and Internship and the Dean.

## Major Minor Accounting Program

College of Business  
Major  
Minor

## Accounting Major

## Major Core Courses

Accounting major must complete all the courses below. For double major, see [general notes](#).

Item #	Title	Credits
ACC 301	Intermediate Financial Accounting I	3
ACC 302	Intermediate Financial Accounting II	3
ACC 320	Cost Accounting	3
ACC 330	Zakat and Income Taxes	3
ACC 390	Financial Statement Analysis and Valuation	3
ACC 410	Advanced Financial Accounting	3
ACC 420	Auditing and Assurance Services	3
ACC 425	Special Topics in Taxation	3
ACC 498	COOP Training Internship	12

**Notes:** Students on old study plans (ACC 390) will need to complete [OPM 340](#) as a common core course instead of [ACC 390](#), (ACC 425) may choose to complete a Business elective ([ACC 390](#) and [ACC 425](#) may also be chosen as Business electives), ([ACC 498](#)) will need to complete ACC 499, which is 9 credit hours.

## Accounting Minor

### Minor Courses

Students from other majors can add a minor in accounting and must complete the following courses:

Item #	Title	Credits
ACC 301	Intermediate Financial Accounting I	3
ACC 302	Intermediate Financial Accounting II	3
ACC 390	Financial Statement Analysis and Valuation	3
ACC 425	Special Topics in Taxation	3
	ONE course from the following list	3

Students majoring in Finance must complete ACC 320 and ACC 420 as ACC 301/ACC 390 are required courses in the finance major.

## Study Plan (Major in Accounting)

### Fall (Year 1)

Item #	Title	Credits
ARB 101	Arabic Language I	2
ISL 101	Islamic Studies I	2
ENG 101	Freshman English 1	3
MAT 100	Pre-calculus	3
MGT 125	Principles of Management	3
ECO 101	Microeconomics	3
COB 100	Student Orientation and Academic Success	1

### Spring (Year 1)

Item #	Title	Credits
ISL 112	Islamic Studies II	2
ENG 103	Foundation of English Communication	3
MAT 111	Business Calculus	3
OPM 110	Introduction to Management Information Systems	3
ACC 201	Introduction to Financial Accounting	3
ECO 102	Macroeconomics	3

\*Instead of ISL 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University  
 \*\*Students with a B or higher grade in ENG 101 may replace ENG 103 with 3Cr course offered by ANY college at Alfaisal University.

### Fall (Year 2)

Item #	Title	Credits
OPM 211	Business Statistics	3
FIN 201	Principles of Finance	3
MGT 210	Business Ethics	3
MKT 201	Principles of Marketing	3
ACC 202	Introduction to Management Accounting	3
ENG 201	Business Communication	3

### Spring (Year 2)

Item #	Title	Credits
MGT 230	Organizational Behavior	3
OPM 240	Principles of Operations Management	3
OPM 330	Quantitative Methods for Business	3
ACC 301	Intermediate Financial Accounting I	3
	Social Science - I	3
ARB 112	Arabic Language II	2

\*Instead of ISL 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University

### Fall (Year 3)

Item #	Title	Credits
BAN 310	Business Analytics and Visualization	3
ACC 302	Intermediate Financial Accounting II	3
ACC 320	Cost Accounting	3
ACC 330	Zakat and Income Taxes	3
	Business Elective - I	3
	Natural Science - I	3

### Spring (Year 3)

Item #	Title	Credits
MGT 301	Business Law	3
ACC 390	Financial Statement Analysis and Valuation	3
ACC 420	Auditing and Assurance Services	3
ACC 425	Special Topics in Taxation	3
	Social Science - II	3

BAN 310 used to be OPM 460. Also fine if a student completed OPM 460.

### Fall (Year 4)

Item #	Title	Credits
MGT 490	Strategic Management	3
ACC 410	Advanced Financial Accounting	3
	Business Elective - II	3
	General Elective - I	3
	General Elective - II	3
MGT 300	Executive Lecture	1

### Spring (Year 4)

Item #	Title	Credits
ACC 498	COOP Training Internship	12

## Major Minor Business Analytics Program

[College of Business](#)

Major  
Minor

## Business Analytics Major

### Major Core Courses

Students from other majors can add a major in Business Analytics and must complete the following courses.

Item #	Title	Credits
BAN 320	Business Data Analytics with Excel	3
BAN 350	Predictive Analytics and Data Mining	3
BAN 370	Business Big Data Intelligence	3
BAN 380	People Analytics and strategy	3
BAN 401	AI and Machine Learning for Bus. Data Analytics	3
BAN 402	Financial Data Analytics	3
BAN 410	Applied Business Analytics Project	3
BAN 403	Supply Chain Analytics	3

## Business Analytics Minor

### Minor Courses

Students from other majors can add a minor in Business Analytics and must complete the following courses.

Item #	Title	Credits
BAN 350	Predictive Analytics and Data Mining	3
BAN 410	Applied Business Analytics Project	3
BAN Electives	Select three electives from the given list	9

### THREE course from the following list

ANY course listed in the major in Business Analytics, MKT 330 or any other 3rd/4th year course approved by the department chair.

Students from the College of Engineering are required to complete BAN 310 as well. They will need two other courses from the above list.

## Study Plan (Major in Business Analytics)

### Fall (Year 1)

Item #	Title	Credits
ARB 101	Arabic Language I	2
ISL 101	Islamic Studies I	2
ENG 101	Freshman English 1	3
MAT 100	Pre-calculus	3
MGT 125	Principles of Management	3
ECO 101	Microeconomics	3
COB 100	Student Orientation and Academic Success	1

### Spring (Year 1)

Item #	Title	Credits
ISL 112	Islamic Studies II	2
ENG 103	Foundation of English Communication	3
MAT 111	Business Calculus	3
OPM 110	Introduction to Management Information Systems	3
ACC 201	Introduction to Financial Accounting	3
ECO 102	Macroeconomics	3

### Fall (Year 2)

Item #	Title	Credits
OPM 211	Business Statistics	3
FIN 201	Principles of Finance	3
MGT 210	Business Ethics	3
MKT 201	Principles of Marketing	3
ACC 202	Introduction to Management Accounting	3
ENG 201	Business Communication	3

### Spring (Year 2)

Item #	Title	Credits
MGT 230	Organizational Behavior	3
OPM 240	Principles of Operations Management	3
OPM 330	Quantitative Methods for Business	3
BAN 320	Business Data Analytics with Excel	3
	Social Science - I	3
ARB 112	Arabic Language II	2

### Fall (Year 3)

Item #	Title	Credits
BAN 310	Business Analytics and Visualization	3
BAN 350	Predictive Analytics and Data Mining	3
BAN 370	Business Big Data Intelligence	3
BAN 380	People Analytics and strategy	3
	Business Elective - I	3
	Natural Science - I	3

### Spring (Year 3)

Item #	Title	Credits
MGT 301	Business Law	3
BAN 401	AI and Machine Learning for Bus. Data Analytics	3
BAN 402	Financial Data Analytics	3
BAN 403	Supply Chain Analytics	3
	Social Science - II	3

## Fall (Year 4)

Item #	Title	Credits
MGT 490	Strategic Management	3
BAN 410	Applied Business Analytics Project	3
	Business Elective - II	3
	General Elective - I	3
	General Elective - II	3
MGT 300	Executive Lecture	1

## Spring (Year 4)

Item #	Title	Credits
BAN 498	COOP Training Internship	

## Major

## Minor

## Entrepreneurship and Family Business Program

College of Business

Major

Minor

## Entrepreneurship and Family Business Major

We designed the major in Entrepreneurship and Family Business according to world-class standards to develop the skills, knowledge, and confidence to prepare our students for a career as autonomous entrepreneurs, family-business owners, or innovators in new ventures.

The focus on entrepreneurship and family business studies provides the opportunity to develop entrepreneurial talents while providing a solid intellectual foundation to confront the challenges facing a business owner. The study plan includes courses from different business areas such as management, finance, legal expertise, innovation, and human resources management to help students to prepare for a leadership role in a family business or as an entrepreneur.

Courses in the major have an experiential learning perspective; by using case studies and experiential activities, students will have the opportunity to develop their business acumen under the guidance of their instructors.

## Major Core Courses

Entrepreneurship and Family Business major must complete all the courses below.

Item #	Title	Credits
MGT 350	Human Resources Management	3
MGT 373	Negotiation	3
MGT 375	Introduction to Entrepreneurship	3
MGT 376	Entrepreneurial Finance	3
MGT 393	Managing Organizational Change	3
MGT 395	Design Thinking	3
MGT 401	Family Business Management	3
OPM 450	Management of Innovation	3
MGT 499/HRM 498	COOP Training Internship	12

## Entrepreneurship and Family Business Minor

## Minor Courses

Students from other majors can add a minor in EFB and must complete the following courses.

Item #	Title	Credits
MGT 375	Introduction to Entrepreneurship	3
MGT 373	Negotiation	3
MGT 393	Managing Organizational Change	3
MGT 401	Family Business Management	3
	ONE course from the following list	3

Students majoring in HRM must complete a replacement course for [MGT 373](#) as recommended by the department chair.

## Study Plan (Major in Entrepreneurship and Family Business)



### Fall (Year 1)

Item #	Title	Credits
ARB 101	Arabic Language I	2
ISL 101	Islamic Studies I	2
ENG 101	Freshman English 1	3
MAT 100	Pre-calculus	3
MGT 125	Principles of Management	3
ECO 101	Microeconomics	3
COB 100	Student Orientation and Academic Success	1

### Spring (Year 1)

Item #	Title	Credits
ISL 112	Islamic Studies II	2
ENG 103	Foundation of English Communication	3
MAT 111	Business Calculus	3
OPM 110	Introduction to Management Information Systems	3
ACC 201	Introduction to Financial Accounting	3
ECO 102	Macroeconomics	3

\*Instead of ISL 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University.

\*\*Students with a B or higher grade in ENG 101 may replace ENG 103 with 3Cr course offered by ANY college at Alfaisal University.

### Fall (Year 2)

Item #	Title	Credits
OPM 211	Business Statistics	3
FIN 201	Principles of Finance	3
MGT 210	Business Ethics	3
MKT 201	Principles of Marketing	3
ACC 202	Introduction to Management Accounting	3
ENG 201	Business Communication	3

### Spring (Year 2)

Item #	Title	Credits
MGT 230	Organizational Behavior	3
OPM 240	Principles of Operations Management	3
OPM 330	Quantitative Methods for Business	3
MGT 350	Human Resources Management	3
	Social Science - I	3
ARB 112	Arabic Language II	2

\*Instead of ARB 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University.

### Fall (Year 3)

Item #	Title	Credits
BAN 310	Business Analytics and Visualization	3
MGT 373	Negotiation	3
MGT 375	Introduction to Entrepreneurship	3
MGT 376	Entrepreneurial Finance	3
	Business Elective - I	3
	Natural Science - I	3

### Spring (Year 3)

Item #	Title	Credits
MGT 301	Business Law	3
MGT 393	Managing Organizational Change	3
MGT 395	Design Thinking	3
MGT 401	Family Business Management	3
	Social Science - II	3

### Fall (Year 4)

Item #	Title	Credits
MGT 490	Strategic Management	3
OPM 450	Management of Innovation	3
	Business Elective - II	3
	General Elective - I	3
	General Elective - II	3
MGT 300	Executive Lecture	1

### Spring (Year 4)

Item #	Title	Credits
MGT 499/ HRM 498	COOP Training Internship	12



## Major Minor Finance Program

College of Business

Major  
Minor

## Finance Major

### Major Core Courses

Finance major students must complete all the courses below.

Item #	Title	Credits
ACC 301	Intermediate Financial Accounting I	3
FIN 320	Corporate Finance	3
FIN 350	Financial Markets and Institutions	3
FIN 310	Financial Modelling	3
FIN 410	Investments	3
ACC 390	Financial Statement Analysis and Valuation	3
FIN 420	International Finance	3
FIN 467	Banking Management	3
FIN 498	COOP Training Internship	12

\*Those who joined in the Fall 2024-25 are required to take FIN 415 Derivative Securities instead of FIN 467

## Finance Minor

### Minor Courses

Students from other majors can add a minor in Finance and must complete the following courses.

Item #	Title	Credits
FIN 310	Financial Modelling	3
FIN 320	Corporate Finance	3
FIN 350	Financial Markets and Institutions	3
FIN 410	Investments	3
	ONE course from the following list	3

Students from other colleges will be required to take FIN 201 as the fifth course and complete other prerequisites if needed

## Study Plan (Major in Finance)

### Fall (Year 1)

Item #	Title	Credits
ARB 101	Arabic Language I	2
ISL 101	Islamic Studies I	2
ENG 101	Freshman English 1	3
MAT 100	Pre-calculus	3
MGT 125	Principles of Management	3
ECO 101	Microeconomics	3
COB 100	Student Orientation and Academic Success	1

### Spring (Year 1)

Item #	Title	Credits
ISL 112	Islamic Studies II	2
ENG 103	Foundation of English Communication	3
MAT 111	Business Calculus	3
OPM 110	Introduction to Management Information Systems	3
ACC 201	Introduction to Financial Accounting	3
ECO 102	Macroeconomics	3

\*Instead of ISL 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University  
 \*\*Students with a B or higher grade in ENG 101 may replace ENG 103 with 3Cr course offered by ANY college at Alfaisal University.

### Fall (Year 2)

Item #	Title	Credits
OPM 211	Business Statistics	3
FIN 201	Principles of Finance	3
MGT 210	Business Ethics	3
MKT 201	Principles of Marketing	3
ACC 202	Introduction to Management Accounting	3
ENG 201	Business Communication	3

### Spring (Year 2)

Item #	Title	Credits
MGT 230	Organizational Behavior	3
OPM 240	Principles of Operations Management	3
OPM 330	Quantitative Methods for Business	3
FIN 320	Corporate Finance	3
	Social Science - I	3
ARB 112	Arabic Language II	2

\*Instead of ARB 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University

### Fall (Year 3)

Item #	Title	Credits
BAN 310	Business Analytics and Visualization	3
ACC 301	Intermediate Financial Accounting I	3
FIN 350	Financial Markets and Institutions	3
FIN 410	Investments	3
	Business Elective - I	3
	Natural Science - I	3

### Spring (Year 3)

Item #	Title	Credits
MGT 301	Business Law	3
FIN 310	Financial Modelling	3
ACC 390	Financial Statement Analysis and Valuation	3
FIN 420	International Finance	3
	Social Science - II	3

### Fall (Year 4)

Item #	Title	Credits
MGT 490	Strategic Management	3
FIN 467	Banking Management	3
	Business Elective - II	3
	General Elective - I	3
	General Elective - II	3
MGT 300	Executive Lecture	1

**FIN 467:** Students commencing the Fall 2024-25 onwards are required to complete FIN 415 Derivative Securities instead of FN 467

### Spring (Year 4)

Item #	Title	Credits
FIN 498	COOP Training Internship	12

## Major Minor Human Resource Management Program

College of Business

Major

Minor

### Human Resource Management Major

The major in Human Resource Management develops students who understand human behavior in organizations and how employees represent an asset that must be leveraged to generate organizational value.

With strong social awareness, students in this major learn how to handle various human resources management functions to implement organizational strategies with a critical understanding of professional practices in human resource management that are recognized internationally.

With theoretical foundation and hands-on practical experience, students learn the functional aspects of human resource management such as HR planning, compensation, recruitment, training and development, career planning, and performance management while emphasizing the integration of Human Resource management and organizational strategic planning process.

Our study plan covers topics that ensure the development of leadership skills to implement organizational effectiveness and manage organizational change.

Throughout their study, our students will have the opportunity to engage with HR professionals through departmental events and external networking opportunities.

### Major Core Courses

Human Resource Management major must complete all the courses below.

Item #	Title	Credits
MGT 350	Human Resources Management	3
MGT 360	Employee learning and development	3
MGT 370	Human Resource Planning, Recruitment and Selection	3
MGT 380	Employee Relations & Engagement	3
MGT 383	Organizational Leadership	3
MGT 390	Total Reward Management	3
MGT 393	Managing Organizational Change	3
MGT 443	Comparative Management	3
MGT 499/ HRM 498	COOP Training Internship	12

## Human Resources Management Minor

### Minor Courses

Students from other majors can add a minor in HRM and must complete the following courses.

Item #	Title	Credits
MGT 350	Human Resources Management	3
MGT 370	Human Resource Planning, Recruitment and Selection	3
MGT 380	Employee Relations & Engagement	3
MGT 383	Organizational Leadership	3
	ONE course from the following list	3

## Study Plan (Major in Human Resource Management)

### Fall (Year 1)

Item #	Title	Credits
ARB 101	Arabic Language I	2
ISL 101	Islamic Studies I	2
ENG 101	Freshman English 1	3
MAT 100	Pre-calculus	3
MGT 125	Principles of Management	3
ECO 101	Microeconomics	3
COB 100	Student Orientation and Academic Success	1

### Spring (Year 1)

Item #	Title	Credits
ISL 112	Islamic Studies II	2
ENG 103	Foundation of English Communication	3
MAT 111	Business Calculus	3
OPM 110	Introduction to Management Information Systems	3
ACC 201	Introduction to Financial Accounting	3
ECO 102	Macroeconomics	3

\*Instead of ISL 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University  
 \*\*Students with a B or higher grade in ENG 101 may replace ENG 103 with 3Cr course offered by ANY college at Alfaisal University.

### Fall (Year 2)

Item #	Title	Credits
OPM 211	Business Statistics	3
FIN 201	Principles of Finance	3
MGT 210	Business Ethics	3
MKT 201	Principles of Marketing	3
ACC 202	Introduction to Management Accounting	3
ENG 201	Business Communication	3

### Spring (Year 2)

Item #	Title	Credits
MGT 230	Organizational Behavior	3
OPM 240	Principles of Operations Management	3
OPM 330	Quantitative Methods for Business	3
MGT 350	Human Resources Management	3
	Social Science - I	3
ARB 112	Arabic Language II	2

\*Instead of ARB 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University

## Fall (Year 3)

Item #	Title	Credits
BAN 310	Business Analytics and Visualization	3
MGT 360	Employee learning and development	3
MGT 370	Human Resource Planning, Recruitment and Selection	3
MGT 380	Employee Relations & Engagement	3
	Business Elective - I	3
	Natural Science - I	3

## Spring (Year 3)

Item #	Title	Credits
MGT 301	Business Law	3
MGT 383	Organizational Leadership	3
MGT 390	Total Reward Management	3
MGT 393	Managing Organizational Change	3
	Social Science - II	3

## Fall (Year 4)

Item #	Title	Credits
MGT 490	Strategic Management	3
MGT 443	Comparative Management	3
	Business Elective - II	3
	General Elective - I	3
	General Elective - II	3
MGT 300	Executive Lecture	1

## Spring (Year 4)

Item #	Title	Credits
MGT 499/ HRM 498	COOP Training Internship	12

## Major

## Minor

## Marketing

### Program

College of Business

Major

Minor

## Marketing Major

## Major Core Courses

Marketing major must complete all the courses below.  
For double major, see [general notes](#).

Item #	Title	Credits
MKT 301	E-Marketing	3
MKT 310	Consumer Behavior	3
MKT 315	Services Marketing	3
MKT 320	International Marketing	3
MKT 330	Marketing Research	3
MKT 401	Brand Strategy	3
MKT 410	Integrated Marketing Communications	3
MKT 420	Marketing Strategy	3
MKT 498	COOP Training Internship	12

## Marketing Minor

## Minor Courses

Students from other majors can add a minor in Marketing and must complete the following courses.

Item #	Title	Credits
MKT 310	Consumer Behavior	3
MKT 315	Services Marketing	3
MKT 330	Marketing Research	3
MKT 420	Marketing Strategy	3
	ONE course from the following list	3

## Study Plan (Major in Marketing)

## Fall (Year 1)

Item #	Title	Credits
ARB 101	Arabic Language I	2
ISL 101	Islamic Studies I	2
ENG 101	Freshman English 1	3
MAT 100	Pre-calculus	3
MGT 125	Principles of Management	3
ECO 101	Microeconomics	3
COB 100	Student Orientation and Academic Success	1

## Spring (Year 1)

Item #	Title	Credits
ISL 112	Islamic Studies II	2
ENG 103	Foundation of English Communication	3
MAT 111	Business Calculus	3
OPM 110	Introduction to Management Information Systems	3
ACC 201	Introduction to Financial Accounting	3
ECO 102	Macroeconomics	3

\*Instead of ISL 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University

\*\*Students with a B or higher grade in ENG 101 may replace ENG 103 with 3Cr course offered by ANY college at Alfaisal University.

## Fall (Year 2)

Item #	Title	Credits
OPM 211	Business Statistics	3
FIN 201	Principles of Finance	3
MGT 210	Business Ethics	3
MKT 201	Principles of Marketing	3
ACC 202	Introduction to Management Accounting	3
ENG 201	Business Communication	3

## Spring (Year 2)

Item #	Title	Credits
MGT 230	Organizational Behavior	3
OPM 240	Principles of Operations Management	3
OPM 330	Quantitative Methods for Business	3
MKT 301	E-Marketing	3
	Social Science - I	3
ARB 112	Arabic Language II	2

\*Instead of ARB 112, a student may choose an alternative 3 Cr courses offered by Alfaisal University

## Fall (Year 3)

Item #	Title	Credits
BAN 310	Business Analytics and Visualization	3
MKT 310	Consumer Behavior	3
MKT 315	Services Marketing	3
MKT 320	International Marketing	3
	Business Elective - I	3
	Natural Science - I	3

## Spring (Year 3)

Item #	Title	Credits
MGT 301	Business Law	3
MKT 330	Marketing Research	3
MKT 401	Brand Strategy	3
MKT 410	Integrated Marketing Communications	3
	Social Science - II	3

## Fall (Year 4)

Item #	Title	Credits
MGT 490	Strategic Management	3
MKT 420	Marketing Strategy	3
	Business Elective - II	3
	General Elective - I	3
	General Elective - II	3
MGT 300	Executive Lecture	1

## Spring (Year 4)

Item #	Title	Credits
MKT 498	COOP Training Internship	12

## Major

## Minor

## Operations and Project Management Program

College of Business

Major

Minor

## Operations and Project Management Major

## Major Core Courses

Operations and Project Management major must complete all the courses below. For double major, see [general notes](#).

Item #	Title	Credits
OPM 310	Introduction to Project Management and Tools	3
OPM 340	Operations Management	3
OPM 360	Principles of Logistics and Supply Chain Management	3
OPM 370	Quality Management	3
OPM 380	Advanced Project Management	3
OPM 450	Management of Innovation	3
OPM 485	Project Risk Management	3
OPM 425	Special Topics in Operations Management	3
OPM 498	Operations and Project Management Internship	12

**Notes:** Students on old study plans ([OPM 425](#)) may choose to complete a Business elective instead of [OPM 425](#). [OPM 425](#) may also be chosen as Business electives, ([OPM 498](#)) will need to complete OPM 499, which is 9 credit hours).

## Operations and Project Management Minor

### Minor Courses

Students from other majors can add a minor in OPM and must complete the following courses.

Item #	Title	Credits
MGT 350	Human Resources Management	3
MGT 370	Human Resource Planning, Recruitment and Selection	3
MGT 373	Negotiation	3
MGT 383	Organizational Leadership	3
	ONE course from the following list	3

## Study Plan (Major in Operations and Project Management)

### Fall (Year 1)

Item #	Title	Credits
ARB 101	Arabic Language I	2
ISL 101	Islamic Studies I	2
ENG 101	Freshman English 1	3
MAT 100	Pre-calculus	3
OPM 101	Introduction to Computing	3
ECO 101	Microeconomics	3
COB 100	Student Orientation and Academic Success	1

Students on old study plans are not required to complete [COB 100](#).

### Spring (Year 1)

Item #	Title	Credits
ARB 112	Arabic Language II	2
ISL 112	Islamic Studies II	2
ENG 112	Freshman English II	3
MAT 111	Business Calculus	3
ECO 102	Macroeconomics	3

### Fall (Year 2)

Item #	Title	Credits
OPM 211	Business Statistics	3
MGT 201	Business Communication	3
MGT 210	Business Ethics	3
FIN 201	Principles of Finance	3
ACC 202	Introduction to Management Accounting	3
	Natural Science - I	3

### Spring (Year 2)

Item #	Title	Credits
MKT 201	Principles of Marketing	3
OPM 230	Management Information Systems	3
MGT 230	Organizational Behavior	3
OPM 310	Introduction to Project Management and Tools	3
OPM 330	Quantitative Methods for Business	3
	Social Science - I	3

### Fall (Year 3)

Item #	Title	Credits
MGT 301	Business Law	3
OPM 340	Operations Management	3
OPM 360	Principles of Logistics and Supply Chain Management	3
OPM 380	Advanced Project Management	3
	Business Elective - I	3
	Natural Science - II	3

### Spring (Year 3)

Item #	Title	Credits
BAN 310	Business Analytics and Visualization	3
OPM 370	Quality Management	3
OPM 425	Special Topics in Operations Management	3
OPM 485	Project Risk Management	3
	Social Science - II	3

- [BAN 310](#) used to be OPM 460. Also fine if a student completed OPM 460.
- Students on old study plans may choose another business elective instead of [OPM 425](#).
- [OPM 485](#) used to be OPM 480. Also fine if a student completed OPM 480.

### Fall (Year 4)

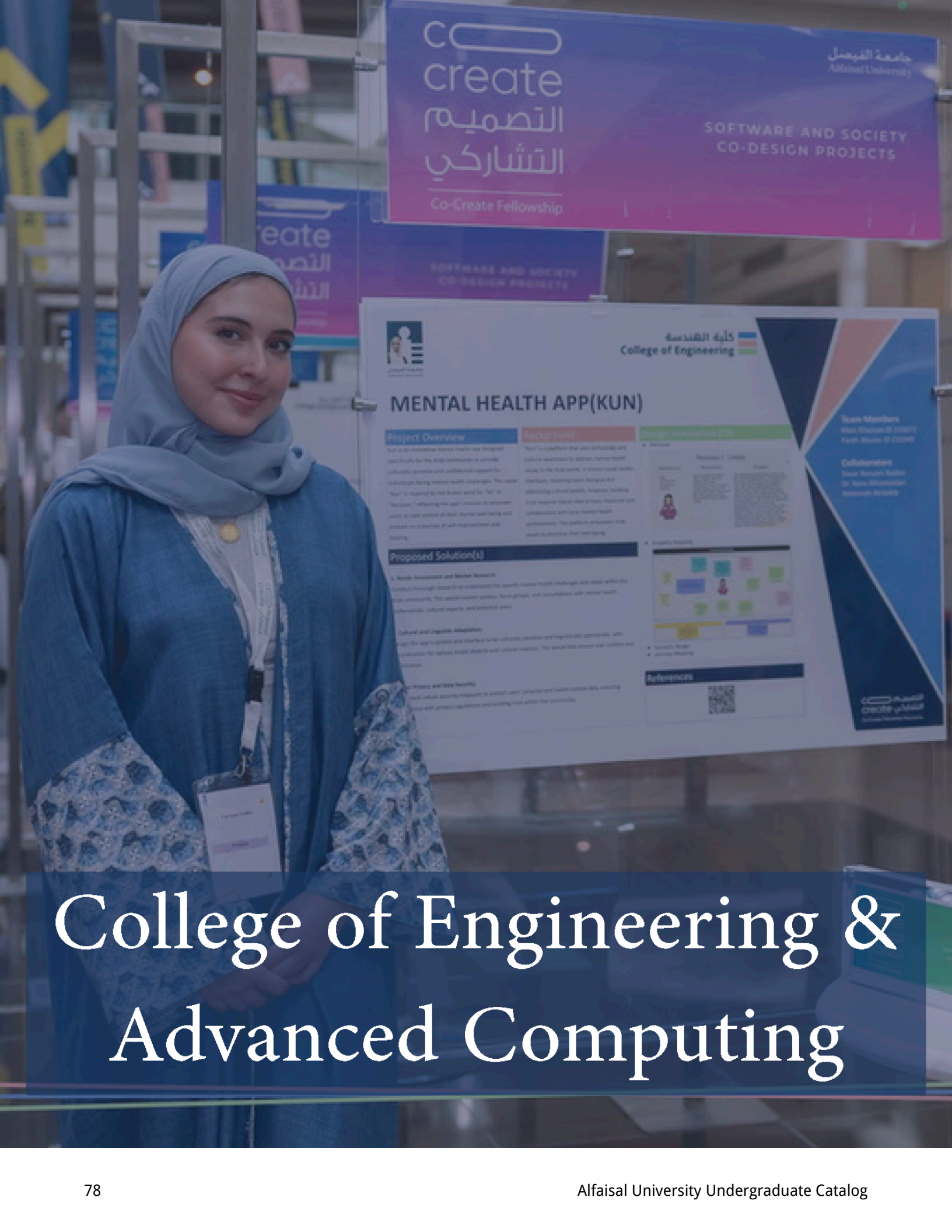
Item #	Title	Credits
MGT 490	Strategic Management	3
OPM 450	Management of Innovation	3
	Business Elective - II	3
	General Elective - I	3
	General Elective - II	3
MGT 300	Executive Lecture	1

### Spring (Year 4)

Item #	Title	Credits
OPM 498	Operations and Project Management Internship	12

Students on old study plans complete OPM 499 which is 9 credit hours.





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جامعة الفيصل  
Alfaisal University

SOFTWARE AND SOCIETY  
CO-DESIGN PROJECTS

كلية الهندسة  
College of Engineering

### MENTAL HEALTH APP(KUN)

**Project Overview**  
KUN is an innovative mental health app designed specifically for the Arab community to provide culturally sensitive and confidential support for individuals facing mental health challenges. The name "KUN" is inspired by the Arabic word for "I" or "You", reflecting the app's mission to empower users to take control of their mental well-being and embark on a journey of self-discovery and healing.

**Background**  
Mental health is a significant global issue, and cultural awareness is essential to address mental health issues in the Arab world. A mental health app can provide a safe space for users to seek help and support, breaking down cultural barriers and promoting mental health awareness. The app is designed to be culturally sensitive and confidential, ensuring that users feel safe and supported in their journey towards mental well-being.

**Design Innovation (UI)**  
The app features a user-friendly interface with a clean, modern design. It includes a home screen with a welcome message, a navigation menu, and a main content area. The app is designed to be accessible to users with varying levels of digital literacy and includes a help section for users who need assistance.

**Proposed Solution(s)**  
1. Needs Assessment and Market Research: Conduct thorough research to understand the specific mental health challenges and needs within the Arab community. This would involve surveys, focus groups, and consultations with mental health professionals, cultural experts, and potential users.  
2. Cultural and Linguistic Adaptation: Design the app's content and interface to be culturally sensitive and linguistically appropriate, with consideration for various Arabic dialects and cultural nuances. This would help ensure that the app is relevant and useful to a wide range of users.  
3. Privacy and Data Security: Implement robust security measures to protect users' personal and health-related data, ensuring compliance with privacy regulations and building trust within the community.

**Team Members**  
Wahid Alsharif ID: 2200072  
Fahad Alsharif ID: 2200070

**Collaborators**  
Dr. Samir Alsharif  
Dr. Youssef Alsharif  
Dr. Amr Alsharif

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# College of Engineering & Advanced Computing



# College of Engineering and Advanced Computing

## College of Engineering and Advanced Computing General Information

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### College of Engineering and Advanced Computing

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## College of Engineering and Advanced Computing Vision and Mission

### College of Engineering and Advanced Computing Vision

The College of Engineering and Advanced Computing aspires to be recognized for Engineering education, research and community service both nationally and internationally.

### College of Engineering and Advanced Computing Mission

To deliver world-class engineering education at undergraduate and graduate levels, and enabling graduates to contribute to the welfare of Saudi Arabia and the world.

## About College of Engineering and Advanced Computing

College of Engineering and Advanced Computing at Alfaisal University offers degree programs in six undergraduate engineering disciplines that answer the growing needs of Saudi Arabia in realizing its vision 2030. These programs include [architectural](#), [electrical](#), [mechanical](#), [industrial](#), [biomedical](#), and [software engineering](#), all of which are fully accredited by the Engineering Accreditation Commission of ABET.

With our newly offered concentration tracks and minors, our programs also allow for pursuing interests in emerging areas including artificial intelligence, cybersecurity, robotics, renewable energy, construction management, sustainable development, and digital design and manufacturing.

At the graduate level, we offer a master program focused on [Engineering and System Management](#) – which is made in response to advances in decision making, analytics, and industry 4.0. This program is being offered in collaboration with the Centre for Complex Engineering Systems (CCES) at KACST (King Abdulaziz City for Science & Technology) and MIT (Massachusetts Institute of Technology). In addition, the college a [MSc in Applied Artificial Intelligence](#) and a [MSc in Cybersecurity](#).

Our distinguished faculty and effective industrial partnerships, college of engineering prepares engineers with the theory and practical application necessary to meet tomorrow's challenges.

All of this is possible through an environment that fosters innovation and creativity, continuously updated curricula, and emphasis on relatable and practical engineering education.

## College of Engineering and Advanced Computing Faculty

<b>Dr. Abdalla Alrashdan</b>	Assistant Professor, Department of Industrial Engineering, College of Engineering and Advanced Computing. Ph.D., Wichita State University, USA
<b>Dr. Abdelghani Bouras</b>	Professor, Department of Industrial Engineering, College of Engineering and Advanced Computing. Ph.D., Université Joseph Fourier, France

<b>Dr. Abdel Naser Daoud</b>	Lecturer, Department of Mechanical Engineering, College of Engineering and Advanced Computing. Ph.D., Teesside University, UK
<b>Dr. Abdulrahman Alymani</b>	Assistant Professor, Department of Architectural Engineering, College of Engineering and Advanced Computing. PhD. Cardiff university, UK
<b>Dr. Abd-Elhamid Taha</b>	Associate Professor, Department of Electrical Engineering, College of Engineering and Advanced Computing. Ph.D., Queen's University, Canada
<b>Dr. Ahmad Sawalmeh</b>	Senior Lecturer, Department of Software Engineering, College of Engineering and Advanced Computing. Ph.D., Universiti Tenaga Nasional, Malaysia
<b>Eng. Ahmed Hamidaddin</b>	Lecturer, Department of Electrical Engineering, College of Engineering and Advanced Computing. M.Sc., University of Southern California, USA
<b>Dr. Ahmed Oteafy</b>	Assistant Professor, Department of Electrical Engineering, College of Engineering and Advanced Computing. Ph.D., Boise State University, USA
<b>Dr. Aliaa Elabd</b>	Assistant Professor, Department of Architectural Engineering, College of Engineering and Advanced Computing. Ph.D., North Carolina State University, USA
<b>Eng. Aliaa Elamin</b>	Instructor, Department of Mechanical Engineering, College of Engineering and Advanced Computing. M.Sc., Khartoum University, Sudan
<b>Eng. Aljawharah AlMuaythir</b>	Instructor, Department of Software Engineering, College of Engineering and Advanced Computing. M.Sc., King Saud University, Saudi Arabia
<b>Dr. Almeهدي Ibrahim</b>	Senior Lecturer, Department of Industrial Engineering, College of Engineering and Advanced Computing. Ph.D., University of Manitoba, Canada
<b>Dr. Anis Koubaa</b>	Professor, Department of Software Engineering, College of Engineering and Advanced Computing. Ph.D., University of Lorraine, France
<b>Eng. Aram Monawar</b>	Instructor, Department of Electrical Engineering, College of Engineering and Advanced Computing. M.Sc., Georgia Institute of Technology, USA
<b>Dr. Areej Al-Wabil</b>	Assistant Professor, Department of Software Engineering, College of Engineering and Advanced Computing. Ph.D., School of Informatics, City University London, UK
<b>Dr. Asem Alawan</b>	Senior Lecturer, Department of Electrical Engineering, College of Engineering and Advanced Computing. Ph.D., King Abdullah University of Science and Technology, Saudi Arabia
<b>Eng. Asfa Javed</b>	Instructor, Department of Industrial Engineering, College of Engineering and Advanced Computing. M.Sc., University of the Punjab, Pakistan
<b>Dr. Atef Ghaleb</b>	Lecturer, Department of Industrial Engineering, College of Engineering and Advanced Computing. Ph.D., King Saud University, Saudi Arabia
<b>Eng. Athiq Ahamed</b>	Lab Technician, Department of Mechanical Engineering, College of Engineering and Advanced Computing. MBA, London Metropolitan University, UK
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## College of Engineering and Advanced Computing Degree Programs

- [Bachelor of Architectural Engineering](#)
- [Bachelor of Electrical Engineering](#)
- [Bachelor of Industrial Engineering](#)
- [Bachelor of Mechanical Engineering](#)
- [Bachelor of Software Engineering](#)
- [Bachelor of Biomedical Engineering](#)
- [Artificial Intelligence](#)
- [Cybersecurity](#)
- [Data Sciences](#)

**Bachelor  
Major  
Track  
Bachelor of Architectural Engineering  
Program**  
College of Engineering and Advanced Computing  
Bachelor  
Major  
Track

## Bachelor of Architectural Engineering Study Plan

### Fall (Year 1)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
CHM 102	Introduction to Chemistry	3
CHM 102 L	Introduction to Chemistry lab	1
MAT 101	Calculus I	3
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
ENG 101	Freshman English 1	3

### Spring (Year 1)

Item #	Title	Credits
ARE 110	Architectural History and Theories	3
ARE 120	Drafting and Drawing	1
ARE 120-S	Drafting and Drawing Lab	2
ME 201	Materials Science and Engineering	3
ME 201 L	Materials Science and Engineering Lab	1
MAT 112	Calculus II	3
PHU 124	Electromagnetism and Waves for Engineers	3
PHU 124 L	Electromagnetism and Waves for Engineers Labs	1
	ENG Elective	3

### Fall (Year 2)

Item #	Title	Credits
ARE 201	Architectural Design I	3
ARE 231	Building Materials and Construction Technology	3
ARE 231 L	Building Materials and Construction Technology Lab	1
ARE 232	Building Construction	3
EE 207	Foundation of Electrical Engineering	3
EE 207 L	Foundation of Electrical Engineering Lab	1
ME 203	Applied Mechanics I: Statics	3
MAT 211	Calculus III	3

### Spring (Year 2)

Item #	Title	Credits
ARE 202	Architectural Design II	3
ARE 220	Construction Drawing (CAD)	2
ARE 220 S	Construction Drawing (CAD) Studio	2
ARE 297	Architecture and Buildings	3
ME 206	Thermal Fluids Engineering I	3
ME 206 L	Thermal Fluids Engineering I Lab	1
ARB 101	Arabic Language I	2
ENG 222	Technical Writing	3

### Fall (Year 3)

Item #	Title	Credits
ARE 303	Interior Design	2
ARE 303 S	Interior Design Studio	1
ARE 355	Quantity Surveying	3
ARE 341	The Built Environment	3
ME 407	Heating, Ventilation, and Air-Conditioning	3
MAT 212	Linear Algebra	3
MAT 213	Differential Equations	3
ISL 101	Islamic Studies I	2

### Spring (Year 3)

Item #	Title	Credits
ARE 311	Building Acoustics	3
ARE 313	Electrical Installations	3
ARE 315	Lighting Systems and Applications	3
ARE 321	Structural Mechanics	3
ARE 321 L	Structural Mechanics Lab	1
ARE 232	Building Construction	3
ARE 332 L	Building Services Engineering Lab	1

### Summer (Year 3)

Item #	Title	Credits
ARE 390	Architectural Engineering Summer Internship	0

## Fall (Year 4)

Item #	Title	Credits
ARE 405	Structural Analysis	3
ARE 409	Project Management and Economics	3
ARE 410	Contracts and Liabilities for Buildings and Construction	3
ARE 412	Environmental Management and Policy	3
	ARE *** - Technical Elective I	3
	ARE 4** - Technical Elective II	3
ARE 491	Architectural Engineering Capstone Project I	2

## Spring (Year 4)

Item #	Title	Credits
ARE 406	Fundamentals of Reinforced Concrete Design	3
ARE 465	Management Principles in Building Engineering	3
ARE 492	Architectural Engineering Capstone Project II	2
	ARE 4 ** - Technical Elective III	3
MAT 224	Numerical Methods	3
	General Education Elective I	2
	General Education Elective II	2

## Technical Electives

Item #	Title	Credits
ARE 302	Indoor Air Quality Engineering	3
ARE 314	Architectural Design III	2
ARE 314 S	Architectural Design III Studio	1
ARE 400	Special Topics in Architectural Engineering	3
ARE 435	Undergraduate Research in Architectural Engineering	0
ARE 452	Soil Mechanics and Foundations	3
ARE 455	Sustainable Buildings	3
ARE 460	Waste Management in Buildings	3
ARE 470	Building Automation and Control	3
ARE 475	Building Energy Management	3
ARE 477	Smart Buildings	3
ARE 480	Construction Economics and Finance	3
ARE 482	Operation Analysis in Building Construction	3
ARE 484	Construction Professional Practice	3

## Architectural Engineering Tracks:

### Construction Management Track

Construction management is primarily concerned with getting the project completed on time, budget and to the desired and stated specification. The course teaches the students how to manage and lead a construction project, using technical and leadership skills, within a multi-organizational team that work on a project's lifecycle. Construction Management looks at engineering management as a cohesive process, examining projects from initiation through to completion, directing, planning and scheduling and communication which are key for the project success. Students get grips with a wide range of project management tools and techniques that are commonly used in the industry. Students who successfully complete the course will have gained practical experience with project management, allowing them to excel within their current role or in the next job. The construction management course offers:

- Get a critical understanding of the social, economic and environmental issues commonly affecting construction problems and the practical means to address them. Practical case studies will be presented to examine how project sites are equipped, manned and managed. Site visits will also be part of the teaching activities.
- Gain experience with important project management tools, techniques and software.
- Become contractually familiar with laws surrounding construction, particularly construction contract law.
- Examine case studies and develop appropriate project management processes and strategies.
- Gain an understanding of financial planning (planned and earned values).

### Track Course Requirements (15 CRHs)

In addition to completing the core courses [ARE 409 – Project Management and Economics](#) and [ARE 465 – Management Principles in Building Engineering](#), students should complete the following three technical electives courses:

Item #	Title	Credits
ARE 480	Construction Economics and Finance	3
ARE 482	Operation Analysis in Building Construction	3
ARE 484	Construction Professional Practice	3

## Track Plan

### Fall (Year 4)

Item #	Title	Credits
ARE 480	Construction Economics and Finance	3
ARE 482	Operation Analysis in Building Construction	3

### Spring (Year 4)

Item #	Title	Credits
ARE 484	Construction Professional Practice	3

## Sustainable Development Track

Reducing building energy consumption through adaptive and sustainable design has become a basic criterion of architectural practice. The aim of this track is to deepen students' understanding and knowledge about basic principles and best practices of sustainability and high-performance buildings. Through this track, students will be able to develop problem-solving skills and market-driven solutions, which will help them become leaders in sustainable design and better serve their society. Emphasis will be placed on the analysis of the environmental impacts of buildings, and how we can mitigate these impacts through various and innovative design solutions/practices.

Through three electives students will be equipped with knowledge related to creating sustainable building structures and using processes and systems that are environmentally responsible and resource-efficient. These courses will address a full range of issues associated with sustainable building including energy and water efficiency, materials, waste and storm-water management, and the building operational efficiency in relation to the use of advanced and smart technologies. There will be also a focus on principles

of smart (IoT) and green building systems, and how the components of these two systems can integrate and interact with one another.

## Track Course Requirements (15 CRHs)

In addition to completing the core courses [ARE 341 – The Built Environment](#) and [ARE 412 – Environmental Management and Policy](#), students should complete the following three technical elective courses:

Item #	Title	Credits
ARE 455	Sustainable Buildings	3
ARE 475	Building Energy Management	3
ARE 477	Smart Buildings	3

## Track Plan

### Fall (Year 4)

Item #	Title	Credits
ARE 455	Sustainable Buildings	3
ARE 475	Building Energy Management	3

### Spring (Year 4)

Item #	Title	Credits
ARE 477	Smart Buildings	3

## Bachelor

### Bachelor of Architecture (B. Arch)

#### Program

[Bachelor of Architecture \(B. Arch\)](#)

Bachelor

The Bachelor of Architecture program prepares future architects by fostering creativity, critical thinking, and design excellence. Through an interdisciplinary curriculum, students are equipped to address global challenges with a focus on sustainability, innovation, digital technologies, and cultural awareness.

0

## 5 Year Curriculum

### Fall (Year 1)

Item #	Title	Credits
ARC 100	Architectural Design Studio 1	4
ARC 130	Hand and Digital Sketching	2
MAT 101	Calculus I	3
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
ARB 101	Arabic Language I	2
COE 100	Student Orientation and Academic Success	1
ARE 120	Drafting and Drawing	1
ARE 120-S	Drafting and Drawing Lab	2

### Spring (Year 1)

Item #	Title	Credits
ARC 101	Architecture Design Studio 2	4
ENG 101	Freshman English 1	3
ARC 140	Introduction to Architecture and the Built Environment	3
ARC 132	Digital Drawing and Modelling	3
ARE 110	Architectural History and Theories	3
ISL 101	Islamic Studies I	2

### Fall (Year 2)

Item #	Title	Credits
ARC 202	Architectural Design Studio 3	4
ARC 233	Advanced Digital Visualization	2
ARC 211	Architectural History and Theory II	3
ARC 220	Structure Systems I	3
ARE 231	Building Materials and Construction Technology	3
ARE 231 L	Building Materials and Construction Technology Lab	1
ARC 222	Building Construction I	3

### Spring (Year 2)

Item #	Title	Credits
ARC 203	Architectural Design Studio 4	4
ARC 223	Structure Systems II	3
ARC 234	Integrated Visual Design	3
ARC 241	Sustainability and Environmental Design	3
ARC 212	Architectural History and Theory III	3
ARC 224	Building Construction II	3

### Fall (Year 3)

Item #	Title	Credits
ARC 304	Architectural Design Studio 5	4
ARC 342	Computational Architecture I	3
ARC 325	Environmental Control	3
ARC 326	Acoustics and lighting	3
ARC 350	Surveying	3

### Spring (Year 3)

Item #	Title	Credits
ARC 305	Architectural Design Studio 6	4
ARC 327	Envelope System Design	3
ENG 222	Technical Writing	3
ARE 220	Construction Drawing (CAD)	2
ARE 220 S	Construction Drawing (CAD) Studio	2
ARC 343	Urban Design	3

### Summer

Item #	Title	Credits
ARC 390	Internship I	

### Fall (Year 4)

Item #	Title	Credits
ARC 406	Architectural Design Studio 7	5
	General Elective - I	3
ARC 451	Contract and Quantity Surveying	3
ARC 444	Computational Architecture II	3
ARC 445	Urban Planning	3

### Spring (Year 4)

Item #	Title	Credits
ARC 407	Architectural Design Studio 8	5
	General Elective - II	3
ARC 452	Professional Practice	3
ARC 436	Construction Drawings II	2
ARC 436 S	Construction Drawings II Studio 2	

### Fall (Year 5)

Item #	Title	Credits
ARC 508	Architectural Studio 9	6
ARC	Elective I: Concentration Track	3
ARC	Elective II: Concentration Track	3
ARC 598	Pre-Undergraduate Design Project	2



## Spring (Year 5)

Item #	Title	Credits
ARC 599	Undergraduate Design Project	6
ARC	Elective III: Concentration Track	3
ARE 401	Ethics and Professional Development	1
ARC	Elective III	3
ARC	Elective IIII	3

## Bachelor

## Bachelor of Artificial Intelligence

### Program

College of Engineering and Advanced Computing  
Bachelor

### Curriculum Structure and Study Plan

The Artificial Intelligence program curriculum is composed of 133 Credit Hours (CRHs) divided as follows:

#### I. General Education Requirements (30 CRHs)

1. Mathematics & Statistics (12 CRHs)
2. Basic Sciences (4 CRHs)
3. Humanities (14 CRHs)

#### II. Core Requirements (103 CRHs)

1. Software Engineering Courses (87 CRHs)
2. College of Engineering & Advanced Computing Courses (4 CRHs)
3. Technical Electives (12 CRHs)
4. Summer Internship (0 CRHs)

#### I. General Education Requirements (30 CRHs)

0

#### 1. Mathematics & Statistics (12 CRHs)

Item #	Title	Credits
MAT 101	Calculus I	3
MAT 112	Calculus II	3
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3

#### 2. Basic Sciences (4 CRHs)

Item #	Title	Credits
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1

#### 3. Humanities (14 CRHs)

Item #	Title	Credits
ENG 101	Freshman English 1	3
ENG 222	Technical Writing	3
ISL 101	Islamic Studies I	2
ARB 101	Arabic Language I	2

#### II. Core Requirements (103 CRHs)



## 1. Software Engineering Courses (87 CRHs)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
SE 120	Object-Oriented Programming I	3
SE 120 L	Object-Oriented Programming I Lab	
SE 151	Discrete Mathematics	3
DSE 200	Introduction to Data Science	3
DSE 201	Data Visualization	3
SE 201	Introduction to Software Engineering	3
DSE 212	Probability and Statistics for Engineers	3
AI 213	Introduction to Artificial Intelligence	3
SE 215	Algorithms and Data Structures	3
SE 215L	Algorithms and Data Structures Lab	
SE 239	Computer Networks	
SE 252	Database Management Systems	3
SE 252 L	Database Management Systems Lab	
SE 254	Operating Systems	3
SE 254 L	Operating Systems Lab	
SE 301	Analysis of Algorithms	3
SE 316	Application Development	3
AI 317	Computer Vision	3
AI 320	Data Mining	3
CSE 330	Introduction to Cybersecurity	3
AI 346	Introduction to Big Data	3
AI 347	Introduction to Machine Learning	3
AI 360	Agent Based Systems	3
AI 361	Human-Centered AI	3
SE 400	Theory of Computation	3
AI 455	Generative AI	3
AI 475	Game Theory	3
AI 480	Natural Language Processing	3
SE 481	Ethics for Engineers	1
AI 495	Capstone Project I	6
AI 496	Capstone Project II	6

## 2. College of Engineering & Advanced Computing Courses (4 CRHs)

Item #	Title	Credits
EE 210	Digital Logic Systems	3
EE 210 L	Digital Logic Systems Lab	1

## Technical Electives (12 CRHs)

Item #	Title	Credits
AI 362	Technical Elective 1 (Product Management for AI)	3
AI 471	Technical Elective 2 (Deep and Reinforcement Learning)	3
AI 472	Technical Elective 3 (Expert Systems)	3
AI 483	Technical Elective 4 (AI in Robotics)	3

## 4. Summer Internship (0 CRHs)

Item #	Title	Credits
AI 390	Software Engineering Summer Internship	

## 4-Year Curriculum

### Fall (Year 1)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
MAT 101	Calculus I	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
PHU 103	Mechanics and Waves for Engineers	3
ENG 101	Freshman English 1	3
ISL 101	Islamic Studies I	2
	General Education Elective I	2

### Spring (Year 1)

Item #	Title	Credits
SE 120	Object-Oriented Programming I	3
SE 120 L	Object-Oriented Programming I Lab	
SE 151	Discrete Mathematics	3
MAT 112	Calculus II	3
EE 210	Digital Logic Systems	3
EE 210 L	Digital Logic Systems Lab	1
ENG 222	Technical Writing	3

## Fall (Year 2)

Item #	Title	Credits
DSE 200	Introduction to Data Science	3
DSE 212	Probability and Statistics for Engineers	3
SE 215	Algorithms and Data Structures	3
SE 215L	Algorithms and Data Structures Lab	1
SE 239	Computer Networks	
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3

## Spring (Year 2)

Item #	Title	Credits
SE 252	Database Management Systems	3
SE 252 L	Database Management Systems Lab	
SE 254	Operating Systems	3
SE 254 L	Operating Systems Lab	
DSE 201	Data Visualization	3
AI 213	Introduction to Artificial Intelligence	3
CSE 330	Introduction to Cybersecurity	3

## Fall (Year 3)

Item #	Title	Credits
SE 201	Introduction to Software Engineering	3
SE 301	Analysis of Algorithms	3
SE 316	Application Development	3
AI 317	Computer Vision	3
AI 320	Data Mining	3
ARB 101	Arabic Language I	2

## Spring (Year 3)

Item #	Title	Credits
AI 346	Introduction to Big Data	3
AI 347	Introduction to Machine Learning	3
AI 360	Agent Based Systems	3
AI 361	Human-Centered AI	3
AI 362	Technical Elective 1 (Product Management for AI)	3

## Summer

Item #	Title	Credits
AI 390	Software Engineering Summer Internship	

## Fall (Year 4)

Item #	Title	Credits
SE 400	Theory of Computation	3
AI 455	Generative AI	3
AI 475	Game Theory	3
AI 471	Technical Elective 2 (Deep and Reinforcement Learning)	3
AI 495	Capstone Project I	6

## Spring (Year 4)

Item #	Title	Credits
AI 480	Natural Language Processing	3
SE 481	Ethics for Engineers	1
AI 472	Technical Elective 3 (Expert Systems)	3
AI 483	Technical Elective 4 (AI in Robotics)	3
AI 496	Capstone Project II	6
	General Education Elective II	2

## Bachelor Major Track

### Bachelor of Biomedical Engineering Program

College of Engineering and Advanced Computing  
Bachelor  
Major  
Track

The Biomedical Engineering curriculum is composed of 138 Credit Hours (CRHs) divided as follows:

#### I. General Education Requirements (44 CRHs)

1. Mathematics & Statistics (18 CRHs)
2. Basic Sciences (12 CRHs)
3. English & Humanities (14 CRHs)

#### II. Core Requirements (94 CRHs)

1. Engineering Courses (15 CRHs)
2. Medical Courses (7 CRHs)
3. Biomedical Engineering Courses (51 CRHs)
4. Technical Electives (21 CRHs)
5. Summer Internship (0 CRHs)

## General Education Requirements

### Mathematics & Statistics

Item #	Title	Credits
MAT 101	Calculus I	3
MAT 112	Calculus II	3
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3
MAT 213	Differential Equations	3
STA 212	Probability and Statistics for Engineers	3

### Basic Sciences

Item #	Title	Credits
CHM 102	Introduction to Chemistry	3
CHM 102 L	Introduction to Chemistry lab	1
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
PHU 124	Electromagnetism and Waves for Engineers	3
PHU 124 L	Electromagnetism and Waves for Engineers Labs	1

### English & Humanities

Item #	Title	Credits
ENG 101	Freshman English 1	3
	English EI	3
ISL 101	Islamic Studies I	2
ARB 101	Arabic Language I	2
	GEE I	2
	GEE II	2

## Core Requirements

### College of Engineering Courses

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
ME 201	Materials Science and Engineering	3
ME 201 L	Materials Science and Engineering Lab	1
BME 207	Electrical Circuits in Biomedical Engineering	3
BME 207 L	Electrical Circuits in Biomedical Engineering	1
EE 209	Applied Electromagnetics	3

## College of Medicine Courses

Item #	Title	Credits
COM 200	Human Structure & Functions	4
COM 201	Principles of Disease	3

### Biomedical Engineering Core Courses

Item #	Title	Credits
BME 100	Introduction to Biomedical Engineering	3
BME 100 L	Introduction to Biomedical Engineering Lab	1
BME 201	Bio Fluid Dynamics	3
BME 202	Biomechanics	3
BME 301	Biomedical Signals and Systems	3
BME 302	Biomedical Digital Signal Processing	3
BME 303	Biomedical Electronics	3
BME 303 L	Biomedical Electronics Lab	1
BME 304	Biomedical Image processing	4
BME 305	Biomedical Imaging Systems I	3
BME 305 L	Biomedical Imaging Systems I Lab	1
BME 306	Biomedical Imaging Systems II	4
BME 307	Information Technology for Biomedical Engineers	3
BME 308	Biomedical Instrumentation I	3
BME 308 L	Biomedical Instrumentation I Lab	1
BME 310	Healthcare Management System	3
BME 402	Bioinformatics	3
BME 495	Capstone Project I	3
BME 496	Capstone Project II	3

### Technical Electives

Select three courses with their labs and two courses without labs from the following list:

Item #	Title	Credits
BME 401	Undergraduate Research in Biomedical Engineering	3
BME 411	Computed Tomography (CT) Angiography Block	3
BME 413	MR Block	3
BME 415	Nuclear Block	3
BME 417	ST & Fluoroscopy Block	3
BME 421	Robotics	3
BME 423	Bio Prosthetic Systems	3
BME 425	Perfusion & Pumping Engineering	3
BME 427	Biomedical Instrumentation II	3
BME 430	Special Topics in Biomedical Engineering	3
BME 431	Artificial Intelligence	3
BME 433	Machine Learning	3
BME 435	Cognitive Neuroscience	3
BME 404	Cardiovascular Instrumentation	3
BME 406	Quality Engineering	3
BME 408	Lasers and Coherent Optics	3
BME 410	Radiation Therapy	3
BME 412	Data Mining and Application in Engineering	3
BME 414	3D Med. Printing	3
BME 416	Biomedical Materials	3
BME 418	Internet of Things	3
BME 420	Prosthetics and Orthotics	3
BME 422	Medical Device Innovation and Entrepreneurship	3
BME 424	Biomedical Sensors	3
BME 426	Tissue Engineering	3
BME 428	Human Limbs and Their Artificial Replacements	3
BME 430	Genetics and Molecular Biology	3
BME 432	Biomechanics of Movement	3
BME 434	Medical Devices, Disease, and Global Health	3
BME 436	Photonic Information Processing	3
BME 438	Nanotechnology	3
BME 440	Introduction to BioMEMS, and Bio Nanotechnology	3
IE 315	Engineering Economy and Cost Analysis	3
<b>Summer Internship</b>		
BME 390	Biomedical Engineering Summer Internship	0
		138

## Study Plan-Biomedical Engineering Program

### First Year: Fall

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
CHM 102	Introduction to Chemistry	3
CHM 102 L	Introduction to Chemistry lab	1
MAT 101	Calculus I	3
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
ENG 101	Freshman English 1	3

### First Year: Spring

Item #	Title	Credits
ME 201	Materials Science and Engineering	3
ME 201 L	Materials Science and Engineering Lab	1
MAT 112	Calculus II	3
PHU 124	Electromagnetism and Waves for Engineers	3
PHU 124 L	Electromagnetism and Waves for Engineers Labs	1
BME 100	Introduction to Biomedical Engineering	3
BME 100 L	Introduction to Biomedical Engineering Lab	1
ENG Elective		3

### Second Year: Fall

Item #	Title	Credits
BME 201	Bio Fluid Dynamics	3
BME 207	Electrical Circuits in Biomedical Engineering	3
BME 207 L	Electrical Circuits in Biomedical Engineering	1
COM 200	Human Structure & Functions	4
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3

## Second Year: Spring

Item #	Title	Credits
BME 202	Biomechanics	3
EE 209	Applied Electromagnetics	3
STA 212	Probability and Statistics for Engineers	3
MAT 213	Differential Equations	3
COM 201	Principles of Disease	3
ISL 101	Islamic Studies I	2

## Third Year: Fall

Item #	Title	Credits
BME 301	Biomedical Signals and Systems	3
BME 303	Biomedical Electronics	3
BME 303 L	Biomedical Electronics Lab	1
BME 305	Biomedical Imaging Systems I	3
BME 305 L	Biomedical Imaging Systems I Lab	1
BME 307	Information Technology for Biomedical Engineers	3
ARB 101	Arabic Language I	2

## Third Year: Spring

Item #	Title	Credits
BME 302	Biomedical Digital Signal Processing	3
BME 304	Biomedical Image processing	4
BME 306	Biomedical Imaging Systems II	4
BME 308	Biomedical Instrumentation I	3
BME 308 L	Biomedical Instrumentation I Lab	1
BME 310	Healthcare Management System	3

## Third Year: Summer

Item #	Title	Credits
BME 390	Biomedical Engineering Summer Internship	0

## Fourth Year: Fall

Item #	Title	Credits
	BME Technical Elective	3
	BME Technical Elective	3
	BME Technical Elective	3
	BME Technical Elective	3
BME 495	Capstone Project I	3
	General Education Elective I	2

## Fourth Year: Spring

Item #	Title	Credits
BME 402	Bioinformatics	3
	BME Technical Elective	3
	BME Technical Elective	3
	BME Technical Elective	3
BME 496	Capstone Project II	3
	General Education Elective II	2

## Imaging Track

### Fourth Year: Fall

Item #	Title	Credits
BME 411	Computed Tomography (CT) Angiography Block	3
BME 413	MR Block	3
BME 415	Nuclear Block	3
BME 417	ST & Fluoroscopy Block	3
BME 495	Capstone Project I	3
	General Education Elective I	2

### Fourth Year: Spring

Item #	Title	Credits
BME 402	Bioinformatics	3
	BME Technical Elective	3
	BME Technical Elective	3
	BME Technical Elective	3
BME 496	Capstone Project II	3
	General Education Elective II	2

## Devices Track

### Fourth Year: Fall

Item #	Title	Credits
BME 421	Robotics	3
BME 423	Bio Prosthetic Systems	3
BME 425	Perfusion & Pumping Engineering	3
BME 427	Biomedical Instrumentation II	3
BME 495	Capstone Project I	3
	General Education Elective I	2

## Fourth Year: Spring

Item #	Title	Credits
BME 402	Bioinformatics	3
	BME Technical Elective	3
	BME Technical Elective	3
	BME Technical Elective	3
BME 496	Capstone Project II	3
	General Education Elective II	2

## Artificial Intelligence (AI) Track

### Fourth Year: Fall

Item #	Title	Credits
BME 431	Artificial Intelligence	3
BME 433	Machine Learning	3
BME 435	Cognitive Neuroscience	3
	BME Technical Elective	3
BME 495	Capstone Project I	3
	General Education Elective I	2

### Fourth Year: Spring

Item #	Title	Credits
BME 402	Bioinformatics	3
	BME Technical Elective	3
	BME Technical Elective	3
	BME Technical Elective	3
BME 496	Capstone Project II	3
	General Education Elective II	2

## Bachelor

## Bachelor of Cybersecurity

### Program

College of Engineering and Advanced Computing  
Bachelor

### Curriculum Structure and Study Plan

The Cybersecurity curriculum is composed of 132 Credit Hours (CRHs) divided as follows:

#### I. General Education Requirements (43 CRHs)

1. Mathematics & Statistics (21 CRHs)
2. Basic Sciences (8 CRHs)
3. Humanities (14 CRHs)

#### II. Core Requirements (89 CRHs)

1. Software Engineering Courses (79 CRHs)

2. College of Engineering & Advanced Computing Courses (4 CRHs)
3. Technical Electives (6 CRHs)
4. Summer Internship (0 CRHs)

## I. General Education Requirements (43 CRHs)

0

### 1. Mathematics & Statistics (21 CRHs)

Item #	Title	Credits
MAT 101	Calculus I	3
MAT 112	Calculus II	3
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3
MAT 213	Differential Equations	3
MAT 224	Numerical Methods	3
STA 212	Probability and Statistics for Engineers	3

### 2. Basic Sciences (8 CRHs)

Item #	Title	Credits
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
PHU 124	Electromagnetism and Waves for Engineers	3
PHU 124 L	Electromagnetism and Waves for Engineers Labs	1

### 3. Humanities (14 CRHs)

Item #	Title	Credits
ENG 101	Freshman English 1	3
ENG 222	Technical Writing	3
ISL 101	Islamic Studies I	2
ARB 101	Arabic Language I	2
	General Education Elective I	2
	General Education Elective II	2

## II. Core Requirements (91 CRHs)

## 1. Software Engineering Courses (81 CRHs)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
SE 120	Object-Oriented Programming I 3	
SE 120 L	Object-Oriented Programming I 1 Lab	
SE 151	Discrete Mathematics	3
DSE 200	Introduction to Data Science	3
SE 201	Introduction to Software Engineering	3
AI 213	Introduction to Artificial Intelligence	3
SE 215	Algorithms and Data Structures	3
SE 215L	Algorithms and Data Structures 1 Lab	
CSE 230	Programming in C	3
CSE 230 L	Programming in C Lab	2
SE 239	Computer Networks	
SE 252	Database Management Systems	3
SE 252 L	Database Management Systems Lab	
SE 254	Operating Systems	3
SE 254 L	Operating Systems Lab	
CSE 310	Linux System Administration	3
CSE 312	Computer Architecture	3
CSE 330	Introduction to Cybersecurity	3
CSE 350	Cryptography and Data Privacy	3
CSE 360	Digital Forensics	3
CSE 370	Database Security	3
CSE 380	Operating System Security	3
SE 400	Theory of Computation	3
CSE 410	Security Architecture	3
CSE 442	Network Security	3
CSE 443	Cybersecurity Risk Management and Control	3
SE 481	Ethics for Engineers	1
CSE 495	Capstone Project I	6
CSE 496	Capstone Project II	6

## 2. College of Engineering & Advanced Computing Courses (4 CRHs)

Item #	Title	Credits
EE 210	Digital Logic Systems	3
EE 210 L	Digital Logic Systems Lab	1

## 3. Technical Electives (6 CRHs)

Item #	Title	Credits
CSE 444	Technical Elective 1 (Web and mobile security)	3
CSE 451	Technical Elective 4 (Secure Software Engineering)	3
CSE 454	Technical Elective 3 (Ethical hacking)	3
CSE 472	Technical Elective 2 (Penetration Testing)	3

## 4. Summer Internship (0 CRHs)

Item #	Title	Credits
CSE 390	Software Engineering Summer Internship	

## 4-Year Curriculum

### Fall (Year 1)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
MAT 101	Calculus I	3
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
ENG 101	Freshman English 1	3
ISL 101	Islamic Studies I	2
ARB 101	Arabic Language I	2

### Spring (Year 1)

Item #	Title	Credits
SE 120	Object-Oriented Programming I 3	
SE 120 L	Object-Oriented Programming I 1 Lab	
SE 151	Discrete Mathematics	3
MAT 112	Calculus II	3
PHU 124	Electromagnetism and Waves for Engineers	3
PHU 124 L	Electromagnetism and Waves for Engineers Labs	1
ENG 222	Technical Writing	3

## Fall (Year 2)

Item #	Title	Credits
SE 215	Algorithms and Data Structures	3
SE 215L	Algorithms and Data Structures Lab	1
CSE 230	Programming in C	3
CSE 230 L	Programming in C Lab	2
SE 239	Computer Networks	
EE 210	Digital Logic Systems	3
EE 210 L	Digital Logic Systems Lab	1
STA 212	Probability and Statistics for Engineers	3

## Spring (Year 2)

Item #	Title	Credits
SE 252	Database Management Systems	3
SE 252 L	Database Management Systems Lab	
SE 254	Operating Systems	3
SE 254 L	Operating Systems Lab	
DSE 200	Introduction to Data Science	3
AI 213	Introduction to Artificial Intelligence	3
CSE 330	Introduction to Cybersecurity	3

## Fall (Year 3)

Item #	Title	Credits
SE 201	Introduction to Software Engineering	3
CSE 310	Linux System Administration	3
CSE 312	Computer Architecture	3
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3
MAT 224	Numerical Methods	3

## Spring (Year 3)

Item #	Title	Credits
CSE 350	Cryptography and Data Privacy	3
CSE 360	Digital Forensics	3
CSE 370	Database Security	3
CSE 380	Operating System Security	3
MAT 213	Differential Equations	3

## Summer

Item #	Title	Credits
CSE 390	Software Engineering Summer Internship	

## Fall (Year 4)

Item #	Title	Credits
SE 400	Theory of Computation	3
CSE 410	Security Architecture	3
CSE 442	Network Security	3
SE 495	Software Engineering Capstone Project I	3
	General Education Elective I	2

## Spring (Year 4)

Item #	Title	Credits
CSE 443	Cybersecurity Risk Management and Control	3
CSE 444	Technical Elective 1 (Web and mobile security)	3
CSE 472	Technical Elective 2 (Penetration Testing)	3
SE 481	Ethics for Engineers	1
CSE 496	Capstone Project II	6
	General Education Elective II	2

## Bachelor

### Bachelor of Data Sciences

#### Program

College of Engineering and Advanced Computing  
Bachelor

#### Curriculum Structure and Study Plan

The Data Science and Engineering program curriculum is composed of 133 Credit Hours (CRHs) divided as follows:

#### I. General Education Requirements (30 CRHs)

1. Mathematics & Statistics (9 CRHs)
2. Basic Sciences (4 CRHs)
3. Humanities (14 CRHs)

#### II. Core Requirements (103 CRHs)

1. Software Engineering Courses (87 CRHs)
2. College of Engineering & Advanced Computing Courses (4 CRHs)
3. Technical Electives (12 CRHs)
4. Summer Internship (0 CRHs)

0



## I. General Education Requirements (30 CRHs)

### 1. Mathematics & Statistics (12 CRHs)

Item #	Title	Credits
MAT 101	Calculus I	3
MAT 112	Calculus II	3
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3

### 2. Basic Sciences (4 CRHs)

Item #	Title	Credits
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1

### 3. Humanities (14 CRHs)

Item #	Title	Credits
ENG 101	Freshman English 1	3
ENG 222	Technical Writing	3
ISL 101	Islamic Studies I	2
ARB 101	Arabic Language I	2
	General Education Elective I	2
	General Education Elective II	2

## II. Core Requirements (103 CRHs)

## 1. Software Engineering Courses (87 CRHs)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
SE 120	Object-Oriented Programming I	3
SE 120 L	Object-Oriented Programming I Lab	
SE 151	Discrete Mathematics	3
DSE 200	Introduction to Data Science	3
SE 201	Introduction to Software Engineering	3
DSE 201	Data Visualization	3
DSE 212	Probability and Statistics for Engineers	3
AI 213	Introduction to Artificial Intelligence	3
SE 215	Algorithms and Data Structures	3
SE 215L	Algorithms and Data Structures Lab	
SE 239	Computer Networks	
SE 252	Database Management Systems	3
SE 252 L	Database Management Systems Lab	
SE 254	Operating Systems	3
SE 254 L	Operating Systems Lab	
DSE 300	Data Preparation and Feature Design	3
SE 301	Analysis of Algorithms	3
DSE 302	Optimization for Data Science	3
SE 316	Application Development	3
DSE 320	Data Mining	3
DSE 322	Big Data and Data Warehousing	3
DSE 323	Cloud Computing in Data Science	3
DSE 324	Social Network Analysis	3
CSE 330	Introduction to Cybersecurity	3
AI 347	Introduction to Machine Learning	3
SE 400	Theory of Computation	3
DSE 401	Optimization Techniques for ML	3
AI 480	Natural Language Processing	3
SE 481	Ethics for Engineers	1
DSE 495	Capstone Project I	6
DSE 496	Capstone Project II	6

## 2. College of Engineering & Advanced Computing Courses (4 CRHs)

Item #	Title	Credits
EE 210	Digital Logic Systems	3
EE 210 L	Digital Logic Systems Lab	1

## 3. Technical Electives (12 CRHs)

Item #	Title	Credits
AI 471	Technical Elective 2 (Deep and Reinforcement Learning)	3
DSE 451	Technical Elective 2 (Advanced Databases)	3
DSE 452	Technical Elective 3 (Data Engineering and Pipelines)	3
DSE 453	Technical Elective 4 (Generative AI and LLM)	3

## 4. Summer Internship (0 CRHs)

Item #	Title	Credits
DSE 390	Software Engineering Summer Internship	3

## 4-Year Curriculum

### Fall (Year 1)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab	1
MAT 101	Calculus I	3
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
ENG 101	Freshman English 1	3
ISL 101	Islamic Studies I	2
	General Education Elective I	2

### Spring (Year 1)

Item #	Title	Credits
SE 120	Object-Oriented Programming I	3
SE 120 L	Object-Oriented Programming I Lab	1
SE 151	Discrete Mathematics	3
MAT 112	Calculus II	3
EE 210	Digital Logic Systems	3
EE 210 L	Digital Logic Systems Lab	1
ENG 222	Technical Writing	3

### Fall (Year 2)

Item #	Title	Credits
DSE 200	Introduction to Data Science	3
DSE 212	Probability and Statistics for Engineers	3
SE 215	Algorithms and Data Structures	3
SE 215L	Algorithms and Data Structures Lab	1
SE 239	Computer Networks	
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3

### Spring (Year 2)

Item #	Title	Credits
SE 252	Database Management Systems	3
SE 252 L	Database Management Systems Lab	
SE 254	Operating Systems	3
SE 254 L	Operating Systems Lab	
DSE 201	Data Visualization	3
AI 213	Introduction to Artificial Intelligence	3
CSE 330	Introduction to Cybersecurity	3

### Fall (Year 3)

Item #	Title	Credits
SE 201	Introduction to Software Engineering	3
DSE 300	Data Preparation and Feature Design	3
SE 301	Analysis of Algorithms	3
DSE 302	Optimization for Data Science	3
SE 316	Application Development	3
ARB 101	Arabic Language I	2

### Spring (Year 3)

Item #	Title	Credits
DSE 320	Data Mining	3
AI 347	Introduction to Machine Learning	3
DSE 322	Big Data and Data Warehousing	3
DSE 323	Cloud Computing in Data Science	3
DSE 324	Social Network Analysis	3

### Summer

Item #	Title	Credits
DSE 390	Software Engineering Summer Internship	3

## Fall (Year 4)

Item #	Title	Credits
SE 400	Theory of Computation	3
DSE 401	Optimization Techniques for ML3	
DSE 495	Capstone Project I	6
CSE 444	Technical Elective 1 (Web and mobile security)	3
DSE 451	Technical Elective 2 (Advanced Databases)	3

## Spring (Year 4)

Item #	Title	Credits
AI 480	Natural Language Processing	3
SE 481	Ethics for Engineers	1
DSE 496	Capstone Project II	6
	General Education Elective II	2

## Bachelor

## Major

## Track

## Bachelor of Electrical Engineering Program

College of Engineering and Advanced Computing

Bachelor

Major

Track

## Bachelor of Electrical Engineering Study Plan

## Fall (Year 1)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
CHM 102	Introduction to Chemistry	3
CHM 102 L	Introduction to Chemistry lab	1
MAT 101	Calculus I	3
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
ENG 101	Freshman English 1	3

## Spring (Year 1)

Item #	Title	Credits
ME 201	Materials Science and Engineering	3
ME 201 L	Materials Science and Engineering Lab	1
MAT 112	Calculus II	3
PHU 124	Electromagnetism and Waves for Engineers	3
PHU 124 L	Electromagnetism and Waves for Engineers Labs	1
ARB 101	Arabic Language I	2
	ENG Elective	3

## Fall (Year 2)

Item #	Title	Credits
EE 207	Foundation of Electrical Engineering	3
EE 207 L	Foundation of Electrical Engineering Lab	1
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3
MAT 213	Differential Equations	3
ISL 101	Islamic Studies I	2
ENG 222	Technical Writing	3

## Spring (Year 2)

Item #	Title	Credits
EE 208	Electric Circuits	3
EE 209	Applied Electromagnetics	3
EE 210	Digital Logic Systems	3
EE 210 L	Digital Logic Systems Lab	1
MAT 224	Numerical Methods	3
STA 212	Probability and Statistics for Engineers	3
	General Elective - I	3

## Fall (Year 3)

Item #	Title	Credits
EE 301	Signals and Systems	3
EE 303	Introduction to Electronics	3
EE 303 L	Introduction to Electronics Lab	1
EE 305	Computer Networks	3
EE 305 L	Computer Networks Lab	1
EE 307	Computer Architecture	3
EE 307 L	Computer Architecture Lab	1
	General Elective - II	3

## Spring (Year 3)

Item #	Title	Credits
EE 302	Communications Theory	3
EE 302 L	Communications Theory Lab	1
EE 304	Microelectronics	3
EE 304 L	Microelectronics Lab	1
EE 306	Control and Feedback System Design	3
EE 306 L	Control and Feedback System Design Lab	1
EE 308	Electrical Energy Conversion	3
EE 308 L	Electrical Energy Conversion Lab	1
IE 315	Engineering Economy and Cost Analysis	3

## Summer Internship

Item #	Title	Credits
EE 390	Electrical Engineering Summer Internship	0

## Fall (Year 4)

Item #	Title	Credits
EE 405	Electric Power Systems	3
EE 413	Digital Communications	3
EE 413 L	Digital Communications Lab	1
EE 495	Electrical Engineering Capstone Project I	3
	EE 4** - Technical Elective	3
	EE 4** - Technical Elective	3

## Spring (Year 4)

Item #	Title	Credits
EE 496	Electrical Engineering Capstone Project II	3
	EE 4** - Technical Elective	3
	EE 4** L - Technical Elective Lab	1
	EE 4** - Technical Elective	3
	EE 4** L - Technical Elective Lab	1
	EE 4** - Technical Elective	3
	EE 4** L - Technical Elective Lab	1

## Technical Electives

Item #	Title	Credits
EE 401	Special Topics in Electrical Engineering	3
EE 401 L	Special Topics in Electrical Engineering Lab	1
EE 402	Introduction to Wireless Networks	3
EE 403	Wireless Communications	3
EE 403 L	Wireless Communications Lab	1
EE 404	Data Engineering in Electrical Systems	3
EE 404 L	Data Engineering in Electrical Systems Lab	1
EE 406	Digital Electronics	3
EE 406 L	Digital Electronics Lab	1
EE 408	Communication Electronics	3
EE 410	Cyber Physical Systems	3
EE 410 L	Cyber Physical Systems Lab	1
EE 411	Internet of Things	3
EE 412	Nanoelectronics	3
EE 412 L	Nanoelectronics Lab	1
EE 417	Digital Signal Processing	3
EE 417 L	Digital Signal Processing Lab	1
EE 418	Digital Image Processing	3
EE 418 L	Digital Image Processing Lab	1
EE 420	Power Electronics	3
EE 420 L	Power Electronics Lab	1
EE 422	Antennas and Wave Propagation	3
EE 423	Optical Fiber Communication Systems	3
EE 424	Optoelectronics	3
EE 424 L	Optoelectronics Lab	1
EE 425	Microwave Engineering	3
EE 426	Renewable Energy	3
EE 426 L	Renewable Energy Lab	1
EE 427	Digital Control	3
EE 428	Modern Control Theory	3
EE 435	Undergraduate Research in Electrical Engineering	3
EE 440	Machine Learning	3
EE 440 L	Machine Learning Lab	1
EE 444	Artificial Intelligence	3
EE 481	Innovations and Entrepreneurship in Engineering	3

## Electrical Engineering Tracks:

All EE students have the opportunity of selecting their electives in the fourth year according to their desired

academic objective in consultation with their academic advisor. Regular, non-track students select any of the offered EE electives in the fourth year, specifically, three electives with a lab and two electives without a lab. Students also have the option to follow one of the three tracks in the program, namely, Robotics & AI, Renewable Energy, or Innovation & Entrepreneurial tracks.

Whether selecting the regular program or one of the three tracks, the total credits of these electives is 18 CRHs. All offered technical electives are available for regular non-track students, whether or not they are associated with a given track. In summary, all EE students follow the same curriculum and take the same required courses, with the difference being the designation of the electives in the fourth year. A regular non-track student would have the electives distribution in the fourth year as shown in the above listed study plan. Per standing policy, and with the approval of the department chair, a student may opt to take one of the 3 CRH technical electives from another engineering program.

## Robotics & AI Track

Robots are automated machines that can assist humans in a variety of settings, from manufacturing processes, to working in critical conditions, unsuitable for human life. Robotics specialists aim to achieve diverse tasks by designing mechanical devices, able to complete them intelligently. Studying robotics, students will acquire information related to computer gadgetry, mobile robot programming, robotic motion methods, mathematical algorithms, social implications of technology, and more. Apart from learning specific scientific methods, graduates will gain skills that involve mathematical thinking but also artistic vision. Robotics will prepare specialists in competencies such as technology design, programming, repairing and installing equipment for machines, etc. Career paths in robotics cover a large subject palette, from medicine to engineering and IT. Robotics graduates usually engage in jobs as laboratory assistants, testing technicians, quality assurance staff, programmers, systems controllers, or researchers.

## Track Course Requirements

In addition to completing the core course: **EE 306 + L – Control and Feedback System Design**, students should complete the following four courses.

Item #	Title	Credits
EE 410	Cyber Physical Systems	3
EE 410 L	Cyber Physical Systems Lab	1
EE 411	Internet of Things	3
EE 440	Machine Learning	3
EE 440 L	Machine Learning Lab	1
EE 444	Artificial Intelligence	3

The student will need to further complete the program's elective requirements and have a capstone project themed according to the track.

## Track Plan

### Fall (Year 4)

Item #	Title	Credits
EE 410	Cyber Physical Systems	3
EE 410 L	Cyber Physical Systems Lab	1
	EE 444 or SE 444	3

### Spring (Year 4)

Item #	Title	Credits
EE 440	Machine Learning	3
EE 440 L	Machine Learning Lab	1
EE 411	Internet of Things	3
	EE 4** - Technical Elective	3
	EE 4** L - Technical Elective Lab 1	

## Renewable Energy Track

The Renewable Energy track offered at Alfaisal University is a specialization within electrical engineering concerning the generation of electrical power from a wide range of renewables. The track addresses the major topics related to power plant planning, theory and practical design of renewable and non-renewable sources, integration with the power grid, and engineering economy factors of design and deployment. Renewable energy resources covered include a wide array of established and experimental phase plants including solar, wind, hydro, tidal, wave, biomass and geothermal. This is in addition to energy storage technologies such as fuel cells and pumped hydro. The integration of these energy sources into the power grid with the power electronics theory and practice is also emphasized.

As well as having multiple technical and transferable skill competencies, graduates will gain strong analytical skills, and have the ability to lead complex design projects. Electrical renewable energy engineers

have a wide range of employment opportunities across the power generation, conversion, distribution, and management sectors, including power utilities, factories, consultancy firms as well as the domestic markets where renewable energy systems are now commonly sought and deployed.

## Track Course Requirements

In addition to completing the core course: **EE 308 + L – Electrical Energy Conversion and EE 405 Electric Power Systems**, students should complete the following four courses as technical electives:

Item #	Title	Credits
EE 410	Cyber Physical Systems	3
EE 410 L	Cyber Physical Systems Lab	1
EE 420	Power Electronics	3
EE 420 L	Power Electronics Lab	1
EE 426	Renewable Energy	3
EE 426 L	Renewable Energy Lab	1
IE 450	Management for Engineers	3

The student will need to further complete the program's elective requirements, and have a capstone project themed according to the track.

## Track Plan

### Fall (Year 4)

Item #	Title	Credits
EE 410	Cyber Physical Systems	3
EE 410 L	Cyber Physical Systems Lab	1
EE 420	Power Electronics	3
EE 420 L	Power Electronics Lab	1

### Spring (Year 4)

Item #	Title	Credits
EE 426	Renewable Energy	3
EE 426 L	Renewable Energy Lab	1
IE 450	Management for Engineers	3
	EE 4** - Technical Elective	3

## Innovation & Entrepreneurial Track

When it comes to pursuing a career in engineering, whether it is resources engineering, sustainable materials or even innovative recycling, specialist skills and knowledge are vital if you want to stand out compared to other job candidates. Much like every other industry in the world, the electrical engineering

landscape is evolving at a rapid rate, and so the demand for engineers with an innovative and entrepreneurial mindset has never been greater. Innovation and entrepreneurship are key drivers in today's engineering world, and the push for sustainable products, services and technologies is needed now more than ever.

Electrical Engineers work to improve society, and not just for the benefit of the local community, but the planet as a whole. Over the last few years, there has been a rise in developing sustainable innovative solutions, from e-mobility and new battery technologies for greener, more sustainable cities, to communications and robotics for a digital industry 4.0. Without innovation in these areas, modern life would not be possible. With this track, you will develop your expertise in Innovation and entrepreneurship; adding to this your in-depth engineering know-how and you will be well on your way to a career in research, industrial innovation, or even starting up your own business.

## Track Course Requirements

In addition to completing the core course: **IE 315 – Engineering Economy and Cost Analysis**, students should complete the following four courses as technical electives:

Item #	Title	Credits
EE 410	Cyber Physical Systems	3
EE 410 L	Cyber Physical Systems Lab	1
EE 440	Machine Learning	3
EE 440 L	Machine Learning Lab	1
EE 481	Innovations and Entrepreneurship in Engineering	3
IE 450	Management for Engineers	3

The student will need to further complete the program's elective requirements and have a capstone project themed according to the track.

## Track Plan

## Fall (Year 4)

Item #	Title	Credits
EE 410	Cyber Physical Systems	3
EE 410 L	Cyber Physical Systems Lab	1
EE 481	Innovations and Entrepreneurship in Engineering	3

## Spring (Year 4)

Item #	Title	Credits
IE 450	Management for Engineers	3
EE 440	Machine Learning	3
EE 440 L	Machine Learning Lab	1
	EE 4** - Technical Elective	3
	EE 4** L - Technical Elective Lab 1	

## Bachelor

## Major

## Minor

## Track

## Bachelor of Industrial Engineering

## Program

[College of Engineering and Advanced Computing](#)

Bachelor

Major

Minor

Track

## Bachelor of Industrial Engineering Study Plan

## Fall (Year 1)

Item #	Title	Credits
CHM 102	Introduction to Chemistry	3
CHM 102 L	Introduction to Chemistry lab	1
MAT 101	Calculus I	3
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
ENG 101	Freshman English 1	3
ARB 101	Arabic Language I	2

## Spring (Year 1)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
ME 201	Materials Science and Engineering	3
ME 201 L	Materials Science and Engineering Lab	1
MAT 112	Calculus II	3
PHU 124	Electromagnetism and Waves for Engineers	3
PHU 124 L	Electromagnetism and Waves for Engineers Labs	1
	ENG Elective	3

## Fall (Year 2)

Item #	Title	Credits
ME 203	Applied Mechanics I: Statics	3
ME 205	Introduction to Computer Aided Design	3
ME 305	Manufacturing and Workshop Training	3
ME 305 L	Manufacturing and Workshop Training Lab	1
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3
MAT 213	Differential Equations	3

## Spring (Year 2)

Item #	Title	Credits
EE 207	Foundation of Electrical Engineering	3
EE 207 L	Foundation of Electrical Engineering Lab	1
ME 206	Thermal Fluids Engineering I	3
ME 206 L	Thermal Fluids Engineering I Lab	1
ME 208	Mechanics of Materials I	3
ME 208 L	Mechanics of Materials I Lab	1
MAT 224	Numerical Methods	3
STA 212	Probability and Statistics for Engineers	3

### Fall (Year 3)

Item #	Title	Credits
IE 301	Operations Research I	3
IE 304	Production and Service Systems Planning I	3
IE 307	Work Systems Analysis and Design	3
IE 307 L	Work Systems Analysis and Design Lab	1
IE 309	Human Factors and Ergonomics	3
IE 309 L	Human Factors and Ergonomics Lab	1
ENG 222	Technical Writing	3
ISL 101	Islamic Studies I	2

### Spring (Year 3)

Item #	Title	Credits
IE 302	Operations Research II	3
IE 305	Production and Service Systems Planning II	3
IE 315	Engineering Economy and Cost Analysis	3
IE 330	Simulation	3
IE 330 L	Simulation Lab	1
ME 308	Advanced Manufacturing Processes	3
ME 308 L	Advanced Manufacturing Processes Lab	1

### Summer (Year 3)

Item #	Title	Credits
IE 390	Industrial Engineering Summer Internship	0

### Fall (Year 4)

Item #	Title	Credits
IE 401	Network Models and Project Management	3
IE 415	Production Information Systems	3
	IE 4-- (any 400-level course) Technical Elective	3
	IE 4-- (any 400-level course) Technical Elective	3
IE 495	Industrial Engineering Capstone Project I	3
	General Education Elective I	2

### Spring (Year 4)

Item #	Title	Credits
IE 406	Quality Engineering	3
IE 450	Management for Engineers	3
	IE 4-- (any 400-level course) Technical Elective	3
IE 496	Industrial Engineering Capstone Project II	3
ME 306	Instrumentation and Control Engineering	3
ME 306 L	Instrumentation and Control Engineering Lab	1
	General Education Elective II	2

### Technical Electives

Item #	Title	Credits
IE 400	Special Topics in Industrial Engineering	3
IE 420	Reliability and Maintenance Engineering	3
IE 421	Product Design and Development	3
	IE 4-- (any 400-level course) Technical Elective	3
IE 430	New Product Development	3
IE 435	Undergraduate Research in Industrial Engineering	3
IE 440	Heuristic Methods for Optimization	3
IE 455	Cognitive Ergonomics	3
IE 460	Industrial IoT	3

### Industrial Engineering Track: Digital Design and Manufacturing

Industrial Engineering (IE) students have the option to select electives in the fourth year according to their desired academic objective in consultation with their academic advisor. Regular non-track students select any three of the offered IE electives in the fourth year. IE students also have the option to follow the Digital Design and Manufacturing track in the program. Irrespective of whether a student opts for the Digital Design and Manufacturing track or not, the total credits for electives must be 9 CRHs. All offered technical electives are available for regular non-track students, whether they opt for the track or not.

In summary, all IE students follow the same curriculum and take the same required courses, with the difference being the designation of the electives in the fourth year.



Per standing policy, and with the approval of the department chair, a student may opt to take one of the 3 CRH technical electives from another engineering program.

## Digital Design and Manufacturing Track

The industrial and information revolutions made tremendous impact on manufacturing and communication systems of today. Technologies developed in those revolutions are fusing into a new industrial revolution now known as Industry 4.0 where digital information is inherent in manufacturing activities. Industry 4.0 changes the way products are designed and manufactured today and will revolutionize product development in future.

Industrial Engineering (IE) department, in conjunction with the Mechanical Engineering (ME) department, offers the Digital Design and Manufacturing track to prepare students for Industry 4.0. Students opting for this track will gain focused knowledge by taking electives offered by ME and IE departments in this interdisciplinary area.

## Track Course Requirements

Students must complete the following (6 CRHs) core courses:

Item #	Title	Credits
ME 308	Advanced Manufacturing Processes	3
IE 315	Engineering Economy and Cost Analysis	3
	Students will need to complete three courses (9 CRHs) from this list	9

A student opting for the Digital Design and Manufacturing track can take two and one electives in the Fall and Spring semesters, respectively or vice versa based on electives distribution in the fourth year.

## Minor in Industrial Engineering (for ME students)

IE department offers a minor in Industrial Engineering which is open to ME students only. Students opting for this minor will gain concentrated knowledge by taking advanced IE courses.

Students taking the IE minor are expected to take additional 15 CRHs on top of their existing ME study plan courses from the following list of existing ME courses:

## Required Courses

### 6 CRHs

Item #	Title	Credits
IE 301	Operations Research I	3
IE 304	Production and Service Systems Planning I	3

## Optional Courses

### Select 9 CRHs

Item #	Title	Credits
IE 307	Work Systems Analysis and Design	3
IE 307 L	Work Systems Analysis and Design Lab	1
IE 315	Engineering Economy and Cost Analysis	3
IE 330	Simulation	3
IE 330 L	Simulation Lab	1
IE 406	Quality Engineering	3
IE 450	Management for Engineers	3

## General Guidelines

1. The student must complete a total of additional 15 CRHs from IE department
2. Entry Point: Nominally before or at end of Year 2 (sophomore-level) to allow for sufficient time to complete all the courses.
3. The student must have a minimum GPA of 3.25. Admission to the minor is subject to the approval of the ME and IE departments.
4. The student should complete the main degree requirements before starting the minor.
5. Any of the pre-approved courses can be taken whenever the course is offered by IE department and subject to prevailing academic regulations.
6. Lab courses cannot be taken on their own. A Lab course has to be taken with or after the corresponding course has been taken.
7. Completion of a minor program is posted on the transcript alongside the main major. Minor programs are not noted on diplomas.

Bachelor  
Major  
Minor  
Track  
Bachelor of Mechanical Engineering  
Program

College of Engineering and Advanced Computing  
Bachelor  
Major  
Minor  
Track

Bachelor of Mechanical Engineering  
Study Plan

Fall (Year 1)

Item #	Title	Credits
CHM 102	Introduction to Chemistry	3
CHM 102 L	Introduction to Chemistry lab	1
MAT 101	Calculus I	3
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
ENG 101	Freshman English 1	3
ARB 101	Arabic Language I	2

Spring (Year 1)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab	1
ME 201	Materials Science and Engineering	3
ME 201 L	Materials Science and Engineering Lab	1
MAT 112	Calculus II	3
PHU 124	Electromagnetism and Waves for Engineers	3
PHU 124 L	Electromagnetism and Waves for Engineers Labs	1
ISL 101	Islamic Studies I	2

Year 2 (Fall)

Item #	Title	Credits
ME 203	Applied Mechanics I: Statics	3
ME 205	Introduction to Computer Aided Design	3
ME 305	Manufacturing and Workshop Training	3
ME 305 L	Manufacturing and Workshop Training Lab	1
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3
MAT 213	Differential Equations	3

Spring (Year 2)

Item #	Title	Credits
ME 208	Mechanics of Materials I	3
ME 208 L	Mechanics of Materials I Lab	1
ME 216	Fluid Mechanics	3
ME 216 L	Fluid Mechanics Lab	1
EE 207	Foundation of Electrical Engineering	3
EE 207 L	Foundation of Electrical Engineering Lab	1
MAT 224	Numerical Methods	3
STA 212	Probability and Statistics for Engineers	3

Fall (Year 3)

Item #	Title	Credits
ME 311	Applied Mechanics II: Dynamics	3
ME 312	Mechanics of Materials II	3
ME 312 L	Mechanics of Materials II Lab	1
ME 315	Machine Design	3
ME 316	Engineering Thermodynamics	3
ENG 222	Technical Writing	3

### Spring (Year 3)

Item #	Title	Credits
ME 306	Instrumentation and Control Engineering	3
ME 306 L	Instrumentation and Control Engineering Lab	1
ME 308	Advanced Manufacturing Processes	3
ME 308 L	Advanced Manufacturing Processes Lab	1
ME 310	Mechanical Component Design	3
ME 310 L	Mechanical Component Design Lab	1
ME 317	Heat and Mass Transfer	3
ME 317 L	Heat and Mass Transfer Lab	1
IE 315	Engineering Economy and Cost Analysis	3

### Summer (Year 3)

Item #	Title	Credits
ME 390	Mechanical Engineering Summer Internship	0

### Fall (Year 4)

Item #	Title	Credits
ME 403	Finite Element Modelling for Dynamic and Structural Analysis	3
ME 403 L	Finite Element Modelling for Dynamic and Structural Analysis	1
ME 407	Heating, Ventilation, and Air-Conditioning	3
	ME 4** Technical Elective	3
ME 495	Mechanical Engineering Capstone Project I	3
	ENG Elective	3

### Spring (Year 4)

Item #	Title	Credits
	ME 4** Technical Elective	3
	ME 4** Technical Elective	3
ME 496	Mechanical Engineering Capstone Project II	3
	General Education Elective I	2
	General Education Elective II	2

### Technical Electives

Item #	Title	Credits
ME 314	Vibration and Damping	3
ME 400	Special Topics in Mechanical Engineering	3
ME 401	Computational Fluid Dynamics and Heat Transfer	3
ME 405	Engineering Safety and Risk Analysis	3
ME 406	Mechatronics	3
ME 410	Energy Conversion and Cogeneration Systems	3
ME 412	Renewable Energy Systems	3
ME 414	Introduction to Compressible Flow Turbomachinery	3
ME 415	Incompressible Flow Machines	3
ME 416	Automotive Engineering	3
ME 418	Water Desalination	3
ME 419	Product Design and Development	3
ME 420	Advanced Visualization and Simulation	3
ME 422	Corrosion Engineering	3
ME 435	Undergraduate Research in Mechanical Engineering	3

### Mechanical Engineering Track: Digital Design and Manufacturing

ME students have the option to select electives in the fourth year according to their desired academic objective in consultation with their academic advisor. Regular, non-track students select any three of the offered ME electives in the fourth year. ME students also have the option to follow the Digital Design and Manufacturing track in the program. Irrespective of whether a student opts for the Digital Design and Manufacturing track or not, the total credits for electives must be 9 CRHs. All offered technical electives are available for regular non-track students, whether they opt for the track or not.

In summary, all ME students follow the same curriculum and take the same required courses, with the difference being the designation of the electives in the fourth year.

Per standing policy, and with the approval of the department chair, a student may opt to take one of the 3 CRH technical electives from another engineering program.

## Digital Design and Manufacturing Track (for IE students only)

The industrial and information revolutions made tremendous impact on manufacturing and communication systems of today. Technologies developed in those revolutions are fusing into a new industrial revolution now known as Industry 4.0 where digital information is inherent in manufacturing activities. Industry 4.0 changes the way products are designed and manufactured today and will revolutionize product development in future.

ME department, in conjunction with the Industrial Engineering (IE) department, offers the Digital Design and Manufacturing track to prepare students for Industry 4.0. Students opting for this track will gain focused knowledge by taking electives offered by ME and IE departments in this interdisciplinary area.

### Track Course Requirements

Students must complete the following (6 CRHs) core courses:

Item #	Title	Credits
ME 308	Advanced Manufacturing Processes	3
IE 315	Engineering Economy and Cost Analysis	3
Students will need to complete 9 three courses (9 CRHs) from this list		

A student opting for the Digital Design and Manufacturing track can take two and one electives in the Fall and Spring semesters, respectively or vice versa.

## Minor in Mechanical Engineering (for IE students)

ME department offers a minor in Mechanical Engineering which is open to IE students only. Students opting for this minor will gain concentrated knowledge by taking advanced ME courses.

### Minor Course Requirements

IE students taking the minor are expected to take additional 15 CRHs on top of their existing IE study plan courses from the following list of existing ME courses:

Item #	Title	Credits
ME 307	Thermal Fluids Engineering II	3
ME 307 L	Thermal Fluids Engineering II Lab	1
ME 310	Mechanical Component Design	3
ME 310 L	Mechanical Component Design Lab	1
ME 311	Applied Mechanics II: Dynamics	3
ME 312	Mechanics of Materials II	3
ME 312 L	Mechanics of Materials II Lab	1
ME 315	Machine Design	3
ME 407	Heating, Ventilation, and Air-Conditioning	3

### General Guidelines

1. The student must complete a total of additional 15 CRHs from IE department
2. Entry Point: Nominally before or at end of Year 2 (sophomore-level) to allow for sufficient time to complete all the courses.
3. The student must have a minimum GPA of 3.25. Admission to the minor is subject to the approval of the ME and IE departments.
4. The student should complete the main degree requirements before starting the minor.
5. Any of the pre-approved courses can be taken whenever the course is offered by IE department and subject to prevailing academic regulations.
6. Lab courses cannot be taken on their own. A Lab course has to be taken with or after the corresponding course has been taken.
7. Completion of a minor program is posted on the transcript alongside the main major. Minor programs are not noted on diplomas.

## Bachelor Major Minor Track

### Bachelor of Software Engineering Program

College of Engineering and Advanced Computing

Bachelor  
Major  
Minor  
Track

## Curriculum Structure and Study Plan

The Software Engineering curriculum is composed of **133** Credit Hours (CRHs) divided as follows:

### 1. General Education Requirements (44 CRHs)

1. Mathematics & Statistics (15 CRHs)
2. Basic Sciences (12 CRHs)
3. Humanities (17 CRHs)

### 2. Core Requirements (89 CRHs)

1. Software Engineering Courses (69 CRHs)
2. College of Engineering & Advanced Computing Courses (8 CRHs)
3. Technical Electives (12 CRHs)
4. Summer Internship (0 CRHs)

## I. General Education Requirements (44 CRHs)

### 1. Mathematics & Statistics (15 CRHs)

Item #	Title	Credits
MAT 101	Calculus I	3
MAT 112	Calculus II	3
MAT 212	Linear Algebra	3
MAT 224	Numerical Methods	3
STA 212	Probability and Statistics for Engineers	3

### 2. Basic Sciences (12 CRHs)

Item #	Title	Credits
CHM 102	Introduction to Chemistry	3
CHM 102 L	Introduction to Chemistry lab	1
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
PHU 124	Electromagnetism and Waves for Engineers	3
PHU 124 L	Electromagnetism and Waves for Engineers Labs	1

### 3. Humanities (17 CRHs)

Item #	Title	Credits
ENG 101	Freshman English 1	3
	General Education Elective I	2
ENG 222	Technical Writing	3
ISL 101	Islamic Studies I	2
ARB 101	Arabic Language I	2
	General Education Elective II	2
	ENG Elective	3

## II. Core Requirements (89 CRHs)

### 1. Software Engineering Courses (69 CRHs)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
SE 117	Software Practice and Society	3
SE 120	Object-Oriented Programming I	3
SE 120 L	Object-Oriented Programming I Lab	1
SE 201	Introduction to Software Engineering	3
SE 212	Discrete Structures for Software Engineers	3
SE 214	Algorithms and Data Structures	3
SE 214 L	Algorithms and Data Structures Lab	1
SE 220	Object-Oriented Programming II	3
SE 220 L	Object-Oriented Programming II Lab	1
SE 225	Software Requirements	3
SE 225 L	Software Requirements Lab	1
SE 310	Software Design and Architecture	3
SE 312	Database Management Systems	3
SE 312 L	Database Management Systems Lab	1
SE 314	Operating Systems	3
SE 314 L	Operating Systems Lab	1
SE 322	Internet of Things Application Development	3
SE 324	Web Application Development	3
SE 324 L	Web Application Development Lab	1
SE 328	Mobile Application Development	3
SE 328 L	Mobile Application Development Lab	1
SE 330	Introduction to Cybersecurity	3
SE 412	Software Testing and Quality Assurance	3
SE 414	Software Project Management	3
SE 423	Software Construction and Processes	3
SE 495	Software Engineering Capstone Project I	3
SE 496	Software Engineering Capstone Project II	3

## 2. College of Engineering & Advanced Computing Courses (8 CRHs)

Item #	Title	Credits
EE 210	Digital Logic Systems	3
EE 210 L	Digital Logic Systems Lab	1
EE 305	Computer Networks	3
EE 305 L	Computer Networks Lab	1

## 3. Technical Electives (12 CRHs)

Select from the following courses:

Item #	Title	Credits
SE 435	Undergraduate Research in Software Engineering	3
SE 440	Special Topics in Software Engineering	3
SE 441	Telecommunications Software Design	3
SE 442	Social Networks for Software Engineers	3
SE 443	Cloud Computing for Software Engineers	3
SE 444	Artificial Intelligence	3
SE 445	Information and Software Security	3
SE 446	Introduction to Big Data	3
SE 447	Introduction to Machine Learning	3
SE 448	Blockchain Development	3
SE 449	Data Analytics	3
SE 450	Cryptography and Data Privacy	3
SE 451	Secure Software Engineering	3
SE 452	Network Security	3
SE 453	Security Risk Management & Control	3
SE 454	Ethical Hacking and Systems Defense	3
SE 455	Generative AI	3
SE 461	Game Engine Architecture and Implementation	3
SE 462	Fundamentals of Game Design	3
SE 463	Game Mechanics, Prototyping, and Production	3
SE 464	Innovative Topics in Immersive Game Development	3

## 4. Summer Internship (0 CRHs)

Item #	Title	Credits
SE 390	Software Engineering Summer Internship	0

## Typical Study Plan-Software Engineering Program

### 4-Year Curriculum: 133 Credit Hours Total

Each course below follows the following format:

Course code, Course Title, and Course Credit Hours  
(Lecture contact hours – Lab contact hours – Tutorial contact hours)

### Fall (Year 1)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab 1	
SE 117	Software Practice and Society	3
MAT 101	Calculus I	3
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
ENG 101	Freshman English 1	3

### Spring (Year 1)

Item #	Title	Credits
SE 120	Object-Oriented Programming I	3
SE 120 L	Object-Oriented Programming I Lab	
CHM 102	Introduction to Chemistry	3
CHM 102 L	Introduction to Chemistry lab	1
MAT 112	Calculus II	3
PHU 124	Electromagnetism and Waves for Engineers	3
PHU 124 L	Electromagnetism and Waves for Engineers Labs	1
ARB 101	Arabic Language I	2

## Fall (Year 2)

Item #	Title	Credits
SE 201	Introduction to Software Engineering	3
SE 214	Algorithms and Data Structures	3
SE 214 L	Algorithms and Data Structures Lab	1
SE 220	Object-Oriented Programming II	3
SE 220 L	Object-Oriented Programming II Lab	1
MAT 212	Linear Algebra	3
ISL 101	Islamic Studies I	2

## Spring (Year 2)

Item #	Title	Credits
SE 212	Discrete Structures for Software Engineers	3
SE 225	Software Requirements	3
SE 225 L	Software Requirements Lab	1
EE 210	Digital Logic Systems	3
EE 210 L	Digital Logic Systems Lab	1
MAT 224	Numerical Methods	3
STA 212	Probability and Statistics for Engineers	3

## Fall (Year 3)

Item #	Title	Credits
SE 310	Software Design and Architecture	3
SE 312	Database Management Systems	3
SE 312 L	Database Management Systems Lab	1
SE 314	Operating Systems	3
SE 314 L	Operating Systems Lab	1
EE 305	Computer Networks	3
EE 305 L	Computer Networks Lab	1
	ENG Elective	3

## Spring (Year 3)

Item #	Title	Credits
SE 322	Internet of Things Application Development	3
SE 324	Web Application Development	3
SE 324 L	Web Application Development Lab	1
SE 328	Mobile Application Development	3
SE 328 L	Mobile Application Development Lab	1
SE 330	Introduction to Cybersecurity	3
ENG 222	Technical Writing	3

## Summer (Year 3)

Item #	Title	Credits
SE 390	Software Engineering Summer Internship	0

## Fall (Year 4)

Item #	Title	Credits
SE 412	Software Testing and Quality Assurance	3
SE 414	Software Project Management	3
	SE 4** Technical Elective	3
	SE 4** Technical Elective	3
SE 495	Software Engineering Capstone Project I	3
	General Education Elective I	2

## Spring (Year 4)

Item #	Title	Credits
SE 423	Software Construction and Processes	3
	SE 4** Technical Elective	3
	SE 4** Technical Elective	3
SE 496	Software Engineering Capstone Project II	3
	General Education Elective II	2

## Technical Electives

Item #	Title	Credits
SE 435	Undergraduate Research in Software Engineering	3
SE 440	Special Topics in Software Engineering	3
SE 441	Telecommunications Software Design	3
SE 442	Social Networks for Software Engineers	3
SE 443	Cloud Computing for Software Engineers	3
SE 444	Artificial Intelligence	3
SE 445	Information and Software Security	3
SE 446	Introduction to Big Data	3
SE 447	Introduction to Machine Learning	3
SE 448	Blockchain Development	3
SE 449	Data Analytics	3
SE 450	Cryptography and Data Privacy	3
SE 451	Secure Software Engineering	3
SE 452	Network Security	3
SE 453	Security Risk Management & Control	3
SE 454	Ethical Hacking and Systems Defense	3
SE 455	Generative AI	3
SE 461	Game Engine Architecture and Implementation	3
SE 462	Fundamentals of Game Design	3
SE 463	Game Mechanics, Prototyping, and Production	3
SE 464	Innovative Topics in Immersive Game Development	3

## Software Engineering Tracks

### Game Development and Digital Media Track

Game design is a combination of art, craft, and science. By designing, creating, and evaluating games, students in the Game Development and Digital Media Track will become experts in all three aspects. Students in this track learn the conceptual, aesthetic, and technical aspects of game creation that serve as a foundation for game design. This track provides a foundation in game design and software development principles. Students develop core competencies, collaborate on the design and development of game

projects, and engage in authentic, situated, creative problem-solving to broaden their horizons as interdisciplinary team members.

### Track Course Requirements (12 CRHs)

**The following are the core courses required in the Game Development and Digital Media Track:**

Item #	Title	Credits
SE 461	Game Engine Architecture and Implementation	3
SE 462	Fundamentals of Game Design	3
SE 463	Game Mechanics, Prototyping, and Production	3
SE 464	Innovative Topics in Immersive Game Development	3

### AI & Big Data Track

The world is growing at an exponential rate and so is the size of the data collected across the globe. Current and future sources of data are devices which utilize the Internet of Things (IoT) technology in addition to social networks and business applications. Big data infrastructure and analytics are emerging as key concepts to sorting, managing analyzing this massive amount of generated data from connected objects and applications which helps to take the initiative to improve decision making. Thus, data is becoming more meaningful and contextually relevant, breaking new grounds for new computing concepts such as Machine Learning (ML) and Artificial Intelligence (AI). These concepts will introduce a new approach to shift the traditional computing concepts related to data from just collecting structured data to understanding it, to turning this massive amount of data into knowledge, conclusions, and intelligent actions.

In this track, students will be able to study new emerging technologies in the area of Artificial Intelligence and Big Data. Students enrolled in the Software Engineering program are eligible to register in this track.

### Track Course Requirements (15 CRHs)

**The following are the core courses required in the AI and Big Data track:**



Item #	Title	Credits
SE 322	Internet of Things Application Development	3
SE 444	Artificial Intelligence	3
SE 446	Introduction to Big Data	3
SE 447	Introduction to Machine Learning	3
	One additional course may be taken from this list of track electives	3

## Cybersecurity Track

Security is a forefront concern for software vendors and customers and an indispensable quality attribute of software given the high level of interconnectivity of systems running critical software functions and storing confidential data. There is a multitude of attacks that attempt to exploit software systems to gain illegitimate access to functionalities and data. Despite the continuous exposure to threat, software systems cannot simply seize operations as a countermeasure and they are expected to be available and deliver business value to its stakeholders reliably. The Software Engineering Department, part of the College of Engineering at Alfaisal University has approved a cybersecurity track. This track will equip students with the necessary skills and respond to challenges in cybersecurity, data privacy, network security, socio-technical issues in addition to learning how to develop secure systems by practicing proper secure software engineering principles. Students in the Bachelor of Software Engineering program at Alfaisal University are eligible to opt for this track.

## Track Course Requirements (15 CRHs)

**The following are the core courses required in the Cybersecurity track:**

Item #	Title	Credits
SE 330	Introduction to Cybersecurity	3
SE 450	Cryptography and Data Privacy	3
SE 452	Network Security	3
SE 454	Ethical Hacking and Systems Defense	3
	One additional course may be taken from this list of track electives	3

**Minor in AI for NON-SE students (15 CRHs):**

## Minor's Pre-Requisite

**The following are the Pre-Requisite courses required in the Minor in AI for NON-SE students:**

Item #	Title	Credits
SE 120	Object-Oriented Programming I	3
SE 120 L	Object-Oriented Programming I Lab	1
SE 214	Algorithms and Data Structures	3
SE 214 L	Algorithms and Data Structures Lab	1
EE 305	Computer Networks	3
EE 305 L	Computer Networks Lab	1
SE 314	Operating Systems	3
SE 314 L	Operating Systems Lab	1

## Minor's Core courses

**The following are the core courses required in the Minor in AI for NON-SE students:**

Item #	Title	Credits
SE 444	Artificial Intelligence	3
SE 446	Introduction to Big Data	3
SE 447	Introduction to Machine Learning	3

## Minor's Electives (select 2)

**The following are the Electives courses to select two in the Minor in AI for NON-SE students:**

Item #	Title	Credits
SE 435	Undergraduate Research in Software Engineering	3
SE 440	Special Topics in Software Engineering	3
SE 443	Cloud Computing for Software Engineers	3
SE 448	Blockchain Development	3
SE 449	Data Analytics	3

**Minor in Cybersecurity for NON-SE students (15 CRHs):**

## Minor's Pre-Requisite

**The following are the Pre-Requisite courses required in the Minor in Cybersecurity for NON-SE students:**

Item #	Title	Credits
SE 120	Object-Oriented Programming I	3
SE 120 L	Object-Oriented Programming I Lab	1
SE 214	Algorithms and Data Structures	3
SE 214 L	Algorithms and Data Structures Lab	1
EE 305	Computer Networks	3
EE 305 L	Computer Networks Lab	1
SE 314	Operating Systems	3
SE 314 L	Operating Systems Lab	1

### Minor's Core courses

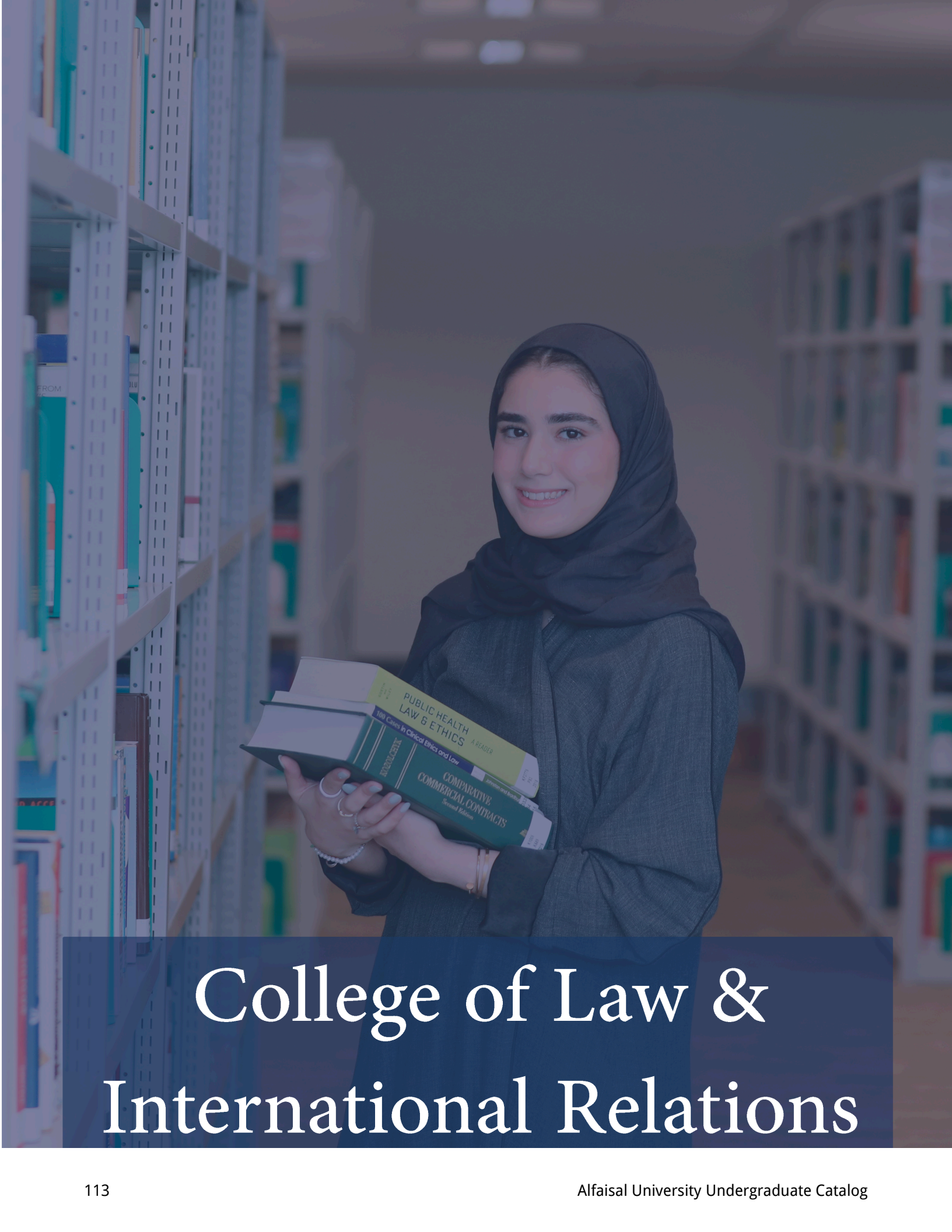
**The following are the core courses required in the Minor in Cybersecurity for NON-SE students:**

Item #	Title	Credits
SE 330	Introduction to Cybersecurity	3
SE 450	Cryptography and Data Privacy	3
SE 452	Network Security	3
SE 454	Ethical Hacking and Systems Defense	3

### Minor's Electives (select 1)

**The following are the Electives courses to select one in the Minor in Cybersecurity for NON-SE students:**

Item #	Title	Credits
SE 435	Undergraduate Research in Software Engineering	3
SE 440	Special Topics in Software Engineering	3
SE 445	Information and Software Security	3
SE 451	Secure Software Engineering	3
SE 453	Security Risk Management & Control	3



# College of Law & International Relations

# College of Law & International Relations

## Message from the College Dean

The College of Law and International Relations at Alfaisal University was established in September 2021. It aims to become one of the leading academic institutions for legal education and research at the regional and international levels.

The college is home to distinguished faculty members and internationally renowned scholars. It also engages legal practitioners with extensive expertise and qualifications in various fields to bridge the gap between legal theory and practice and to enrich students' learning outcomes. This enables the College of Law and International Relations to offer world-class academic programs, ensuring a high-quality education for its students and enhancing their career prospects.

Committed to continuous development, the college has introduced two new programs in addition to the "International Law" program: "Diplomacy & International Relations" and "Governance and Public Policy." These programs will provide students with new perspectives in their studies, expand their career opportunities, and ultimately enhance their performance and competitiveness.

The programs aim to empower students to lead transformative changes with impact and efficiency, aligning with Vision 2030.

## About the College of Law and International Relations

College of Law at Alfaisal University is a young institution. It started in the fall of 2021 with 18 freshman male and female students.

It offers a vibrant undergraduate Law degree using English as the language of instructions in most of its courses.

The college's pioneering curriculum and its diverse faculty are attracting the best and the brightest students in the Kingdom of Saudi Arabia. Students learn from distinguished scholars and practitioners who have very good academic credentials.

Through such a well-rounded education, Alfaisal Law graduates will become practitioners who are able to help government agencies, local and international law firms, and companies to manage and run their legal affairs.

## College of Law & International Relations General Information

<b>Dr. Torki A Alshubaiki</b> Dean of Law & International Relations, College of Law & International Relations BA: King Saud University, Saudi Arabia LL.M: American University, Washington College of Law, USA Ph.D.: London School of Economics (LSE), USA	<b>Ph:</b> +966 11 215 7958 <b>E:</b> TAlshubaiki@alfaisal.edu <b>Office:</b> S3-39
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### Address

College of Law & International Relations  
P.O. Box 50927  
Takhasusi Road  
Riyadh, 11533.  
Kingdom of Saudi Arabia.  
**Tel:** + 966 11 215 7700  
**Email:** [Col@alfaisal.edu](mailto:Col@alfaisal.edu)

## College of Law Vision & Mission

### College of Law & International Relations Vision

We aspire to become the leader in legal research in the Kingdom of Saudi Arabia.

### College of Law & International Relations Mission

- **Is to provide quality education, legal research, and fostering partnerships with international universities, as well as local and international law firms**
  - Providing students with the necessary knowledge and skills to work with local and international law firms.

- Providing students with the necessary knowledge and skills to work in international service and diplomacy.
- Connecting the Kingdom's with the legal changes taking place in the international community.
- Promoting legal research to be at the service of the Saudi government.
- Help in making legal reforms in different areas of law for the benefit of the Saudi Arabian government and its agencies.
- Cooperate with regional and international academic research centers.

## Values

- **Quality:** Our commitment to excellence reflects our passion for high-quality research and education as we continually strive to improve our offering.
- **Integrity:** Personal integrity, holding ourselves to the highest ethical standards, transparency, and taking responsibility for our actions.
- **Diversity:** We take tremendous pride that our college culture promotes inclusiveness and gender diversity. We strive to prepare young men and women, regardless of their background and economic status, to be the next generation of and community leaders.
- **Collegiality:** We are committed to a collegial system in which proposed new policies and changes are institutionalized, principle-based driven, guided by our vision, and consistent with our strategic objectives.
- **Engagement:** Our focus is to build and maintain strong relationships with our alumni. We will do this to provide guidance to our future graduates who can see a role model throughout their legal studies.

## College of Law & International Relations Faculty and Administrative Staff

### Faculty:

<b>Dr. Torki A Alshubaiki</b>	<b>Dean of College of Law &amp; International Relations</b> <b>BA:</b> King Saud University, Saudi Arabia <b>LL.M:</b> American University, Washington College of Law, USA <b>Ph.D.:</b> London School of Economics (LSE), U.K
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	Dean of Law & International Relations <b>Teaches:</b> The Law of Contracts, Conflict of Laws, International Arbitration  <b>Email:</b> talshubaiki@alfaisal.edu <b>Extension:</b> 7958
<b>Dr. Giovanni Chiarini</b>	<b>Assistant Professor of Law, College of Law &amp; International Relations</b> <b>LLB &amp; LL.M:</b> University of Parma, Italy <b>PhD :</b> University of Insubria, Italy <b>Professional Training</b> International Criminal Court & The Hague Assistant Professor, College of Law & International Relations <b>Teaches:</b> International Criminal Law  <b>Email:</b> gchiarini@alfaisal.edu <b>Extension:</b> 7542
<b>Dr. Osama Bin Abdullah</b>	<b>Assistant Professor of Law, College of Law &amp; International Relations</b> <b>L.L.B:</b> King Saud University, Saudi Arabia <b>LL.M ::</b> IU McKinney School of Law (IUPUI), USA <b>S.J.D:</b> Delaware Law School - Widener University, USA. Assistant Professor of Law, College of Law & International Relations <b>Teaches:</b> Company Law, Agency Law  <b>Email:</b> obinmahmoud@alfaisal.edu <b>Extension:</b> 7730
<b>Dr. Walters Nsoh</b>	<b>Associate Professor of Law, College of Law &amp; International Relations</b> Postgraduate Certificate in Learning and Teaching (Higher Education) (Anglia Ruskin University) PhD Law (University of Surrey). LLM Environmental Law & Policy (Distinction) (University of Kent) BSc Environmental Science (University of Buea, Cameroon) <b>Teaches:</b> International Economic Law, International Labour Standards  <b>Email:</b> wnsloh@alfaisal.edu <b>Extension:</b> 7766
<b>Dr. Cecile Abi Tayeh</b>	<b>Assistant Professor of Law, College of Law &amp; International Relations</b> <b>BA:</b> La Sagesse University, Beirut, Lebanon <b>LLM.:</b> Université Paul Cézanne Aix-Marseille III, Aix-en-Provence, France <b>Ph.D:</b> National & Kapodistrian University of Athens, Athens, Greece Assistant Professor, College of Law & International Relations <b>Teaches:</b> Bills of Exchange.  <b>Email:</b> cabitayeh@alfaisal.edu <b>Extension:</b> 8909
<b>Dr. Abdurahman Alfatta</b>	<b>Assistant Professor of Law, College of Law &amp; International Relations</b> <b>LLB:</b> from King Saud University <b>L.L.M:</b> in International Commercial Law from University of Westminster, London <b>Ph.D:</b> from University of Westminster, London
<b>Dr. Cécile Abi Tayeh</b>	<b>Assistant Professor of Law, College of Law &amp; International Relations</b> <b>BA:</b> La Sagesse University, Beirut, Lebanon



	<p><b>LLM.:</b> Université Paul Cézanne Aix-Marseille III, Aix-en-Provence, France</p> <p><b>Ph.D.:</b> National &amp; Kapodistrian University of Athens, Athens, Greece</p> <p>Assistant Professor, College of Law &amp; International Relations</p> <p><b>Teaches:</b> Bills of Exchange.</p> <p><b>Email:</b> cabitayeh@alfaisal.edu</p> <p><b>Extension:</b> 8909</p>
<b>Dr. Federico Fusco</b>	<p><b><u>Assistant Professor of Law, College of Law &amp; International Relations</u></b></p> <p><b>LLB &amp; LLM:</b> Federico II University, Napoli, Italy</p> <p><b>PhD in Law and Economics:</b> Scuola Normale Superiore, Pisa-Florence, Italy</p> <p>Attorney at Law, Napoli - Venice, Italy</p> <p><b>Teaches:</b> Constitutional Law, Labor Law, Insurance Law.</p> <p><b>Email:</b> ffusco@alfaisal.edu</p> <p><b>Extension:</b> 8800</p>
<b>Dr. Prince Amadi</b>	<p><b><u>Assistant Professor of Law, College of Law &amp; International Relations</u></b></p> <p><b>LLB (Hons):</b> Rivers State University, Port Harcourt Nigeria</p> <p><b>LLM:</b> University of Wolverhampton, Wolverhampton, UK</p> <p><b>PhD in Commercial Law:</b> Centre For Commercial Law Studies, Queen Mary University of London, UK</p> <p>Assistant Professor, College of Law &amp; International Relations</p> <p><b>Teaches:</b> Law of Tort, International Business Transactions Law, International Investment Law.</p> <p><b>Email:</b> pamadi@alfaisal.edu</p> <p><b>Extension:</b> 7543</p>
<b>Dr. Assil Khattar</b>	<p><b><u>Senior Professor of Law, College of Law &amp; International Relations</u></b></p> <p><b>LLB:</b> La Sagesse University, Lebanon</p> <p><b>LLM:</b> La Sagesse University, Lebanon</p> <p><b>PhD:</b> OMNES Education, France</p> <p><b>Teaches:</b> Intellectual Property Law, Capital Market and Stock Exchange Law, Islamic Finance Law, Ethical Standards in the Legal Profession</p> <p><b>Email:</b> akhattar@alfaisal.edu</p> <p><b>Extension:</b> 7763</p>
<b>Mr. Ian Parker</b>	<p><b><u>Senior Professor of Law, College of Law &amp; International Relations</u></b></p> <p><b>LLB :</b> Kingston University</p> <p><b>PhD :</b> University of Insubria, Italy</p> <p><b>FR:</b> University of Rennes</p> <p><b>Legal Practice Course (LPC):</b> College of Law</p> <p><b>CELTA:</b> University of Cambridge</p> <p><b>LLM:</b> University of Durham</p> <p>Assistant Professor, College of Law &amp; International Relations</p> <p><b>Teaches:</b> Introduction to Law</p> <p><b>Email:</b> iparker@alfaisal.edu</p> <p><b>Extension:</b> 7546</p>
<b>Dr. Samah Alagha</b>	<p><b><u>Associate Professor of Law, College of Law &amp; International Relations</u></b></p> <p><b>BA:</b> Aleppo University, Syria</p> <p><b>MA:</b> Damascus University, Damascus, Syria</p>

	<p><b>MA:</b> University of North Wales, Bangor, UK</p> <p><b>PhD.:</b> University of London, UK</p> <p>Associate Professor, College of Law &amp; International Relations</p> <p><b>Teaches:</b> Criminal Procedure Law, Internet and Cyber Security Law</p> <p><b>Email:</b> saalagha@alfaisal.edu</p> <p><b>Extension:</b> 7544</p>
<b>Dr. Abd Hakim Abd Razak</b>	<p><b><u>Assistant Professor of Law, College of Law &amp; International Relations</u></b></p> <p><b>BA in Legal Studies (Hons):</b> University of Technology MARA, Malaysia</p> <p><b>LL.M in Banking Law:</b> International Islamic University, Malaysia</p> <p><b>Ph.D. in Law:</b> Trinity College Dublin, Ireland</p> <p>Assistant Professor of Law, College of Law &amp; International Relations</p> <p><b>Teaches:</b> Land Law, Banking Law</p> <p><b>Email:</b> abrazak@alfaisal.edu</p> <p><b>Extension:</b> 8967</p>
<b>Dr. Adel El-Adawy</b>	<p><b><u>Assistant Professor of Law, College of Law &amp; International Relations</u></b></p> <p><b>Bachelor:</b> College of Wooster (Ohio, U.S.)</p> <p><b>Masters:</b> American University (DC, U.S.)</p> <p><b>PhD:</b> King's College London (London, UK)</p> <p><b>Teaches:</b> Introduction to Global Politics, International Relations of the Contemporary Middle East, War &amp; Diplomacy: The U.S. in World Affairs, European Foreign Policy and Security Issues, The Asia Pacific in World Affairs</p> <p><b>Email:</b> aeladawy@alfaisal.edu</p> <p><b>Extension:</b> 7541</p>
<b>Dr. Abdulrahman Alfatta</b>	<p><b><u>Assistant Professor of Law, College of Law &amp; International Relations</u></b></p> <p><b>LLB:</b> L.L.B: King Saud University, Saudi Arabia</p> <p><b>GD:</b> London International College. Law, Business and Social Sciences, UK</p> <p><b>LLM.:</b> The University of Westminster, School of Law, UK</p> <p><b>Ph.D:</b> The University of Westminster, School of Law, UK</p> <p>Assistant Professor of Law, College of Law &amp; International Relations</p> <p><b>Teaches:</b> Islamic Law, Muslims Family Law</p> <p><b>Email:</b> aalfatta@alfaisal.edu</p> <p><b>Extension:</b> 8920</p>
<b>Dr. Oludara Akanmidu</b>	<p><b><u>Assistant Professor of Law, College of Law &amp; International Relations</u></b></p> <p><b>Bachelor:</b> OBAFEMI AWOLOWO UNIVERSITY ILE-IFE</p> <p><b>Masters:</b> University of Warwick</p> <p><b>PhD:</b> University of Durham</p> <p><b>Teaches:</b> Bills of Exchange, Insurance Law,</p> <p><b>Email:</b> oakanmidu@alfaisal.edu</p>

#### Adjunct Faculty:

<b>Dr. Faisal AlFadhel</b>	<p><b><u>Adjunct Assistant Professor of Law, College of Law &amp; International Relations</u></b></p> <p><b>BA:</b> King Saud University, Saudi Arabia</p> <p><b>LL.M:</b> Queen Mary College, University of London, UK.</p>
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	<b>Ph.D.:</b> Queen Mary College, University of London, UK. <b>E:</b> <a href="mailto:falfadhel@alfaisal.edu">falfadhel@alfaisal.edu</a>
<b>Dr. Anas Albanyan</b>	<b>Adjunct Assistant Professor of Law, College of Law &amp; International Relations</b> <b>JD:</b> Lewis & Clark Law School, Portland, USA <b>L.L.M:</b> Duke University Law School - Durham, USA. <b>S.J.D:</b> Duke University Law School - Durham, USA. <b>E:</b> <a href="mailto:aaabanyan@alfaisal.edu">aaabanyan@alfaisal.edu</a>
<b>Mr. Mohammed AlSaud</b>	<b>Adjunct Instructor, College of Law &amp; International Relations.</b> <b>BA:</b> King Saud University. Riyadh, Saudi Arabia <b>L.L.M</b> City University - London, UK. <b>E:</b> <a href="mailto:mohammalsaud@alfaisal.edu">mohammalsaud@alfaisal.edu</a>
<b>Mr. Abdullah Al-Sheikh</b>	<b>Adjunct Instructor, College of Law &amp; International Relations.</b> <b>BA:</b> Imam Mohammed bin Saud University, Saudi Arabia. <b>LL.M:</b> University of California, Berkely, USA. <b>E:</b> <a href="mailto:abialsheikh@alfaisal.edu">abialsheikh@alfaisal.edu</a>

#### Administration Staff:

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<b>Bazza Abdullah Omar Bagteen</b>	Admin Coordinator <b>Email:</b> <a href="mailto:bbagteen@alfaisal.edu">bbagteen@alfaisal.edu</a> <b>Ext:</b> 7926
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<b>Hanan Qasem Abuhamar</b>	Administrative Coordinator <b>Email:</b> <a href="mailto:habuhamar@alfaisal.edu">habuhamar@alfaisal.edu</a> <b>Ext:</b> 8881
<b>Jelan Ali Alzahrani</b>	Administrative Assistant <b>Email:</b> <a href="mailto:jalzahrani@alfaisal.edu">jalzahrani@alfaisal.edu</a> <b>Ext:</b> 8979
<b>Shahad Suliman Al Khalifah</b>	Administrative Assistant <b>Email:</b> <a href="mailto:salkhalifah@alfaisal.edu">salkhalifah@alfaisal.edu</a> <b>Ext:</b> 7978

## College of Law and International Relations Programs

- Bachelor's degree Program in [Law and International Relations](#)
- Bachelor's degree Program in [Governance and Public Policy](#)
- Bachelor's degree Program in [Diplomacy and International Relations](#)

### Bachelor Diplomacy & International Relations Program

College of Law and International Relations  
Bachelor

**Vision:** To shape future global leaders through innovative education and research in political and international relations, addressing global challenges with diverse perspectives, by providing an international learning environment that equips students with the skills and knowledge to lead in foreign policy, diplomacy, and security, while fostering critical thinking and global collaboration.

**Mission:** Consistent with Alfaisal's vision, the College of Law & International Relations is dedicated to achieving excellence in legal education, advancing scholarship, and providing comprehensive training. With that, the Diplomacy and International Relations program will be a premier program that seamlessly connects legal education with global affairs, through the development of a new cohort of legal professionals who excel in legal principles while possessing a profound understanding of international relations and global governance. By merging extensive legal training with a focus on diplomacy and international issues, the college will equip graduates to thrive in various fields, including international law, diplomacy, and global policymaking.

### 4-Year Curriculum

0

### Fall (Year 1)

Item #	Title	Credits
LAW 122	Arabic Legal Writing	3
LAW 130	Introduction to Law	3
SSC 101	Public Speaking and Communications	3
LAW 135	The Real Estate Law	3
LAW 102	Introduction to Islamic Law & Jurisprudence	3

### Spring (Year 1)

Item #	Title	Credits
SSC 102	Theoretical Foundation of International Relations and Public Policy	3
SSC 103	Writing for Policy and Politics: Mastering Daily Communications	3
ECO 101	Microeconomics	3
SSC 104	Qualitative Research Methods for Social Sciences	3
SSC 105	Global Governance & International Organizations	3

### Fall (Year 2)

Item #	Title	Credits
INR 201	Introduction to International Relations	3
INL 201	Introduction to International Law	3
GPP 205	Introduction to Public Policy and Policy Design	3
GPP 208	Policy Analysis	3
ECO 102	Macroeconomics	3

### Spring (Year 2)

Item #	Title	Credits
INR 221	Saudi Arabian Foreign Relations & Diplomacy	3
INL 431	International Humanitarian Law of Armed Conflict	3
GPP 450	Policy Making Process	3
INR 223	Ethics In International Affairs	3
INR 240	Environmental Politics & Global Sustainability	3

### Fall (Year 3)

Item #	Title	Credits
LAW 436	International Criminal Law	3
LAW 242	Public International Law	3
INR 301	The Middle East Politics & Diplomacy Since 1945	3
INR 302	African Politics & Development	3
INR 303	History of International Relations	3

### Spring (Year 3)

Item #	Title	Credits
INR 310	International Security	3
INR 311	U.S. Foreign Policy	3
INR 312	Asian Politics and International Relations	3
LAW 438	International Investment Law	3

### Fall (Year 4)

Item #	Title	Credits
INR 401	Conflict Resolutions & Peacebuilding	3
INR 425	Foreign Policy of Russia, Eastern Europe, and the Eurasia	3
INR 423	European Foreign Policy and Security Issues	3
INR 403	Latin American Politics & Diplomacy	3
INR 404	Media, Communication, and Diplomacy	3

### Spring (Year 4)

Item #	Title	Credits
INR 440	Internship	9

## Bachelor

### Governance and Public Policy Program

College of Law and International Relations  
Bachelor

**Vision:** To empower the next generation of leaders with the knowledge, skills, and values necessary to create positive change by providing a transformative educational experience that fosters excellence in public policy and leadership education. Through rigorous academic programs, innovative research, and a commitment to public service, the goal is to develop



visionary leaders capable of addressing society's most pressing challenges, promoting civic responsibility, and transforming communities to shape a more just, equitable, and well-governed future.

**Mission:** The College of Law & International Relations is dedicated to achieving excellence in legal education, advancing scholarship, and providing comprehensive training. The goal of the program is to be a premier program that expertly combines legal education with governance and public policy expertise, developing a new generation of professionals skilled in crafting and implementing policies that promote positive social change and uphold justice and equity.

## 4-Year Curriculum

0

### Fall (Year 1)

Item #	Title	Credits
LAW 122	Arabic Legal Writing	3
LAW 130	Introduction to Law	3
SSC 101	Public Speaking and Communications	3
LAW 135	The Real Estate Law	3
LAW 102	Introduction to Islamic Law & Jurisprudence	3

### Spring (Year 1)

Item #	Title	Credits
SSC 102	Theoretical Foundation of International Relations and Public Policy	3
SSC 103	Writing for Policy and Politics: Mastering Daily Communications	3
ECO 101	Microeconomics	3
SSC 104	Qualitative Research Methods for Social Sciences	3
SSC 105	Global Governance & International Organizations	3

### Fall (Year 2)

Item #	Title	Credits
LAW 137	Saudi Arabia Legal System	3
LAW 232	Company Law	3
GPP 205	Introduction to Public Policy and Policy Design	3
GPP 208	Policy Analysis	3
ECO 102	Macroeconomics	3

### Spring (Year 2)

Item #	Title	Credits
GPP 221	International Political Economy	3
GPP 451	Health and Environment Policy: A Global Perspective	3
GPP 450	Policy Making Process	3
GPP 457	Judicial Governance	3
INR 240	Environmental Politics & Global Sustainability	3

### Fall (Year 3)

Item #	Title	Credits
GPP 301	Policy Design and Delivery	3
LAW 242	Public International Law	3
GPP 302	Global Governance	3
GPP 303	Equity & Trust	3
GPP 304	Managing the Nonprofit Organization	3

### Spring (Year 3)

Item #	Title	Credits
GPP 311	Introduction to Global Politics & International Relations	3
GPP 312	Policy Analysis & Program Evaluation	3
LAW 335	International Business Transactions	3
GPP 313	Ethics in Public Policy and Governance	3

### Fall (Year 4)

Item #	Title	Credits
GPP 401	Nonprofit Organization: INGOs & Globalization	3
GPP 402	Governance & Public Institutions	3
GPP 454	Corporate Governance and Regulations	3
GPP 452	Managing Government Organizations	3
GPP 403	Social Policy and Welfare State Governance	3

### Spring (Year 4)

Item #	Title	Credits
GPP 440	Internship	9

**Bachelor  
Law and International Relations  
Program**  
College of Law and International Relations  
Bachelor

**Bachelor's Degree Program in Law and  
International Relations (L.L.B)**

The Law and International Relations Program requires for graduation a total of 141 credit hours that include 126 credit hours of compulsory courses and 15 credit hours of elective courses. Choice of elective courses is specified by the Program curriculum.

**General Education Requirement  
Courses**

Item #	Title	Credits
LAW 121	English Legal Writing	3
LAW 122	Arabic Legal Writing	3

**Core Law Courses**

Item #	Title	Credits
LAW 130	Introduction to Law	3
LAW 131	Introduction to Islamic Law	3
LAW 132	Islamic Jurisprudence	3
LAW 133	Administrative Law	3
LAW 134	The Law of Contracts	3
LAW 137	Saudi Arabia Legal System	3
LAW 138	Criminal Law	3
LAW 139	Constitutional Law	3
LAW 140	Law of Tort	3
LAW 141	Research Methods & Legal Research	3
LAW 242	Public International Law	3
Law 231	Agency Law	3
LAW 232	Company Law	3
LAW 233	Islamic Finance	3
LAW 234	Bills of Exchange	3
LAW 235	Capital Market Law	3
LAW 236	Banking Law	3
LAW 237	Insurance Law	3
LAW 239	Labour Relations Law	3
LAW 240	Commercial & Consumer Law	3
LAW 241	Land Law	3
LAW 330	Muslims Family Law	3
LAW 331	Contracts of Guarantees	3
LAW 332	Jurisprudence	3
LAW 333	Criminal Procedure	3
LAW 334	Muslims` Personal Property Law	3
LAW 335	International Business Transactions	3
LAW 336	Economic Crimes	3
LAW 337	Conflict of Laws	3
LAW 338	Evidence Law	3
LAW 339	Civil & Commercial Procedure Law	3
LAW 430	Domestic and International Arbitration	3
LAW 432	Legal Professional Ethics	3
LAW 433	International Economic Law	3
LAW 434	Medical Law	3
LAW 435	Internet and Cybersecurity Law	3
LAW 436	International Criminal Law	3
LAW 437	International Labour Standards	3
LAW 438	International Investment Law	3
LAW 440	Summer Internship	0
LAW 441	Intellectual Property Law	3

**4-Year Curriculum**

### Fall (Year 1)

Item #	Title	Credits
LAW 121	English Legal Writing	3
LAW 130	Introduction to Law	3
LAW 131	Introduction to Islamic Law	3
LAW 139	Constitutional Law	3
LAW 134	The Law of Contracts	3
LAW 138	Criminal Law	3

### Spring (Year 1)

Item #	Title	Credits
LAW 122	Arabic Legal Writing	3
LAW 132	Islamic Jurisprudence	3
LAW 140	Law of Tort	3
LAW 141	Research Methods & Legal Research	3
LAW 137	Saudi Arabia Legal System	3
LAW 133	Administrative Law	3

### Fall (Year 2)

Item #	Title	Credits
LAW 242	Public International Law	3
Law 231	Agency Law	3
LAW 232	Company Law	3
LAW 236	Banking Law	3
LAW 234	Bills of Exchange	3
LAW 239	Labour Relations Law	3

### Spring (Year 2)

Item #	Title	Credits
LAW 235	Capital Market Law	3
LAW 233	Islamic Finance	3
LAW 237	Insurance Law	3
LAW 240	Commercial & Consumer Law	3
LAW 291	Research Methods & Legal Research	3
LAW 330	Muslims Family Law	3

### Fall (Year 3)

Item #	Title	Credits
LAW 331	Contracts of Guarantees	3
LAW 339	Civil & Commercial Procedure Law	3
LAW 333	Criminal Procedure	3
LAW 334	Muslims` Personal Property Law	3
LAW 430	Domestic and International Arbitration	3
LAW 441	Intellectual Property Law	3

### Spring (Year 3)

Item #	Title	Credits
LAW 335	International Business Transactions	3
LAW 336	Economic Crimes	3
LAW 337	Conflict of Laws	3
LAW 332	Jurisprudence	3
LAW 338	Evidence Law	3
LAW 432	Legal Professional Ethics	3

### Summer (Year 3)

Item #	Title	Credits
LAW 440	Summer Internship	0

### Fall (Year 4)

Item #	Title	Credits
LAW 433	International Economic Law	3
LAW 434	Medical Law	3
LAW 435	Internet and Cybersecurity Law	3
LAW 436	International Criminal Law	3
LAW 437	International Labour Standards	3
LAW 438	International Investment Law	3

### Spring (Year 4) - One Track Required 15 CREDIT HOURS

*4th Year*

### International Law Track

Item #	Title	Credits
INL 431	International Humanitarian Law3 of Armed Conflict	
INL 432	GCC Charter and Statutes	3
INL 433	International Commercial Arbitration	3
INL 434	International Negotiation & Dispute Settlement	3
INL 435	European Union Law	3
INL 436	Use of Force in International Law	3

## Government and Public Policy Track

Item #	Title	Credits
GPP 450	Policy Making Process	3
GPP 451	Health and Environment Policy: A Global Perspective	3
GPP 452	Managing Government Organizations	3
GPP 453	Public Policy and Social Issues	3
GPP 454	Corporate Governance and Regulations	3
GPP 456	Ethics and Politics of Public Service	3
GPP 457	Judicial Governance	3
GPP 459	Advanced Topics in Public Policy: International Development	3

## Diplomacy and International Relations Track

Item #	Title	Credits
INR 420	Introduction to Global Politics and International Relations	3
INR 421	The International Relations of the Contemporary Middle East	3
INR 422	War and Diplomacy: The U.S in World Affairs	3
INR 423	European Foreign Policy and Security Issues	3
INR 424	The Asia Pacific in World Affairs	3
INR 425	Foreign Policy of Russia, Eastern Europe, and the Eurasia	3
INR 429	Advanced Topics in International Relations	3



# College of Medicine

# College of Medicine

## Dean's Message

Over the last three decades, the Kingdom of Saudi Arabia has experienced significant economic growth. Health services have expanded significantly, as indicated by accessibility and coverage indicators. Similarly, there also have been improvements in health indicators such as mortality, morbidity, and life expectancy. However, national health manpower development is not coping with the momentum and attendant growth. Saudis make up only 19% of workers in the health sector. This figure is extremely low when compared to sectors like education. Reforming medical education and training is essential to produce a sufficiently skilled healthcare workforce, distributed effectively across the Kingdom.

The existing curricula of many medical schools in Saudi Arabia follow traditional approaches, which deliver knowledge through fragmented and non-integrated avenues. Instead of focusing on patient-centered learning, traditional programs are lecture-heavy, making students passive learners rather than active problem-solvers. Such institutions produce students who opt to work only in urban areas, contributing further to the poor distribution of stable national health personnel and services throughout the Kingdom. Alfaisal University medical college located in the capital city of Riyadh, responds to all these challenges. The college follows an innovative approach in the education of health professionals, including problem-based learning and community-based education.

The Alfaisal College of Medicine follows a problem-based, self-directed curriculum, in which patients' clinical scenarios and problems are studied from multiple standpoints. Problem-based learning is integrated with appropriate clinical skills training and community-based experiences. Emphasis is placed on critical thinking and problem solving.

The main goal of the undergraduate program is to train students to be critical thinkers and problem solvers, skilled in sensing, formulating, and managing common health problems. In doing so, graduates are being better prepared to expand their competencies in any career and in any discipline. Graduate Programs and Research will ensure higher education at an

international level that will distinguish the university as research based and working towards dissemination of knowledge.

The mission of the Alfaisal College of Medicine is to prepare its students for meeting and responding to the changing healthcare needs and expectations of the Saudi Arabian community. This is being achieved in full partnership with other healthcare providers and relevant sectors in the community.

***Prof. Khaled Al-Kattan, Dean, College of Medicine***

## College of Medicine Degree Program

### Bachelor of Medicine, Bachelor of Surgery (MBBS)

A six-year program leading to an MBBS degree (Medical Bachelor and Bachelor of Surgery)

ALFAISAL UNIVERSITY COLLEGE OF MEDICINE					
MBBS					
Year 1					
Sequence	Course Code	Year	Sem	Course Title	Credit Hrs
1	FND 111	1	1	Foundation Block (6-weeks)	4
2	CVP 112	1	1	Cardiopulmonary block (7 weeks)	4
3	REN 123	1	1	Renal block (5 weeks)	3
4	MOL 114	1	1	Molecular Medicine I (Biochemistry & Cell Biology)	3
5	COM 116	1	1	Primary Health Care , Rural Health and Prevention	2
6	ENG 102	1	1	Freshman English I	2
<b>Total Credit Hours for Semester-1</b>					<b>18</b>
1	GIT 113	1	2	Gastrointestinal block (5 weeks)	3
2	ERP 122	1	2	Endocrine and Reproductive block (6 weeks)	3
3	MSK 112	1	2	Musculoskeletal block (7 weeks)	4
4	GEN 124	1	2	Genetics	2
5	MOL 125	1	2	Molecular Medicine II (Biochemistry & Cell Biology)	3
6	PRO 115	1	2	Communication Skills	2
7	ENG 113	1	2	English-II	2
<b>Total Credit Hours for Semester-2</b>					<b>19</b>

<b>Year 2</b>					
1	POD 231	2	3	Pathogenesis of Diseases (11-Weeks)	6
2	MSI 361	2	3	Musculoskeletal and Integumentary block (6 weeks)	3
3	PRO 234	2	3	Professional Skills I (Introduction to clinical Skills)	2
4	BEP 235	2	3	Basics of Biostatistics and Epidemiology	2
5	ARB 102	2	3	Arabic Language I	2
6	ISL 102	2	3	Islamic Studies I	2
7	ENG 224	2	3	English for special purposes	2
<b>Total Credit Hours for Semester-3</b>					<b>19</b>
1	NEU 241	2	4	Neuroscience Block (11 weeks)	6
2	HNS 242	2	4	Head & Neck And Special Senses Block (5-weeks)	3
3	BHS 243	2	4	Behaviour Science	2
4	PRO 244	2	4	Professional Skills II (Integrated with Clinical Sessions)	2
5	ARB 113	2	4	Arabic Language II	2
6	ISL 113	2	4	Islamic Medical Jurisprudence	2
<b>Total Credit Hours for Semester-4</b>					<b>17</b>
<b>Year 3</b>					
S#	Course Code	Year	Sem	Course Title	Credit Hrs
1	CVP 351	3	5	Cardiopulmonary block (6-weeks)	4
2	REN 364	3	5	Renal Block (4-weeks)	2
3	HEM 352	3	5	Hem/Onc Block (4-weeks)	2
4	COM 353	3	5	Comprehensive Community Health (4 wks)	3
5	EBM 354	3	5	Evidence Based Medicine	2
6	PRO 355	3	5	Professional Skills III (Integrated with Clinical Sessions)	2
7	MIF 356	3	5	Medical Informatics & Quality and Care	2
<b>Total Credit Hours for Semester-5</b>					<b>17</b>
1	GIT 361	3	6	Gastrointestinal Block (6-weeks)	4
2	ERP 362	3	6	Endo-Repro block (6 weeks)	3
3	MID 363	3	6	Multisystem and infectious diseases block (5 wks)	3
4	PRO 365	3	6	Professional Skills IV (Integrated with Clinical Sessions)	2
5	COM 366	3	6	Family Medicine	2

6	NTN 368	3	6	Nutrition	2
7	FMT 367	3	6	Forensic Medicine & Toxicology	2
<b>Total Credit Hours for Semester-6</b>					<b>18</b>
<b>Year 4</b>					
1	MED 471	4	7	Internal Medicine-I (9 weeks)	9
2	PED 472	4	7	Paediatrics (9-weeks)	9
3	RAD 245	4	7	Radiology	2
4	SUR 481	4	8	Surgery (9-weeks)	9
5	GYN 482	4	8	Obstetrics & Gynaecology (9-weeks)	9
6	PHL 369	4	8	Biomedical Ethics	2
<b>Total Credit Hours for Year-4 (Semesters 7 &amp; 8)</b>					<b>40</b>
<b>Year 5</b>					
1	IMD 591	5	9	Subspecialty Medicine (9 weeks)	9
2	INS 592	5	9	Integrated Neurosciences (9 weeks) (Neurology/Ped. Neurology/Neurosurgery-Psychiatry)	9
3	HEN 483	5	9	Health Economics and Health Care Management	2
4	SSP 5X1	5	10	Subspecialty Surgery (9 weeks)(ENT-Ophthalmology-Orthopedics)	9
5	AMB 5X2	5	10	Ambulatory Care (9 weeks) (Family Med.-Emergency-Anesth)	9
<b>Total Credit Hours for Year-5 (Semesters 9 &amp; 10)</b>					<b>38</b>
					<b>186</b>

## Alfaisal's Innovative Spiral Medical Curriculum

Alfaisal University College of Medicine has developed a spiral curriculum, with three interconnected phases, where the outcomes of each phase build on each other to develop the final product of "a competent intern". Phase 1 of the curriculum covers normal structure and function of the human body. In Phase 2 of the curriculum, the normal versus abnormal relationship is explored, in addition to the introduction of clinical skills for clinical practice. Phase 3 of the curriculum is the clinical clerkship phase, where students learn the practice of medicine and apply the knowledge and skills they have learned in the previous phases. The curriculum follows an interwoven structure, where knowledge from earlier phases is

continuously reinforced and applied in later stages. For example, the structure and function of the heart learned in Phase 1 is revisited and reassessed when learning about the mechanism of heart diseases in Phase 2. Moreover, the disease mechanisms are revisited and reassessed when students learn the management of heart diseases in Phase 3 of the curriculum.

## College of Medicine Grading System

Grade	Quality Points	Description
A	4.00	Excellent
A-	3.67	
B+	3.33	Very Good
B	3.00	
B-	2.67	Good
C+	2.33	
C	2.00	
C-	1.67	
D+	1.33	Pass
D	1.00	
F	0.00	Fail
W	-	Withdrawn
WP	-	Withdrawn Penalty
P	-	Pass
NP	-	No grade pass
AU	-	Audit
I	-	Incomplete
CR	-	Credit transfer
R	-	Retake course
CC	-	Continual course
DN	0.00	Denial
S/U	-	Satisfactory/Unsatisfactory
NC	-	No Credit

## College of Medicine Administrative Staff

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## Bachelor of Medicine and Bachelor of Surgery (MBBS)

### College of Medicine Study Plan Program

#### College of Medicine

Bachelor of Medicine and Bachelor of Surgery (MBBS)

## College of Medicine - UG Course Credit Hour Transcript Main Courses (MBBS)

## Phase I - Man & The Environment

### Semester-I, Fall 2020

Item #	Title	Credits
FON 111	Foundation Block	2
MSK 112	Musculoskeletal Block	4
GIT 113	Gastrointestinal Block	3
MOL 114	Molecular Medicine I (Biochemistry & Cell Biology)	3
COM 116	Primary Health Care & Rural Health	2
ENG 102	Freshman English 1	2

### Semester-II, Spring 2021

Item #	Title	Credits
CVP 121	Cardiopulmonary block	5
HLS 122	Hematopoietic & Lymphatic System	2
REN 123	Renal Block	3
GEN 124	Genetics	2
MOL 125	Molecular Medicine II (Biochemistry & Cell Biology)	3
PRO 115	Communications Skills	2
ENG 113	Freshman English II	2

### Semester-III, Fall 2021

Item #	Title	Credits
END 231	Endocrine Block	2
REP 232	Reproductive Block	2
POD 233	Pathogenesis of Diseases (Basic 5 Principles of Pharma, Micro, Patho & Immuno)	5
PRO 234	Introduction to Medical Skills	2
BEP 235	Basics of Biostatistics & Epidemiology	2
ARB 101	Arabic Language I	2
ISL 101	Islamic Studies I	2
ENG 224	English for Medical Students	2

## Semester-IV, Spring 2022

Item #	Title	Credits
NEU 241	Neuroscience Block	6
HNS 242	Head & Neck and Special Senses Block	3
BHS 243	Behavior Science	2
PRO 244	Professional Skills IV (Integrated with Clinical Sessions)	2
RAD 245	Radiology	2
ARB 112	Arabic Language II	2
ISL 113	Islamic Studies II	2

## Phase II - Patho-physiology of the Disease

### Semester-V, Fall 2022

Item #	Title	Credits
CVP 351	Cardiopulmonary block	4
HEM 352	Hematology-Oncology Block	2
MSI 361	Musculoskeletal and integumentary block	3
EBM 354	Evidence based Medicine	2
PRO 355	Professional Skills III (Integrated with Clinical Sessions)	2
FMT 367	Forensic Medicine & Toxicology	2
COM 358	Family Medicine	2

### Semester-VI, Spring 2023

Item #	Title	Credits
REN 364	Renal Block	2
GIT 353	Gastrointestinal Block	3
END 362	Endocrine Block	2
REP 363	Reproductive Block and Breast	2
PRO 365	Professional Skills V (Integrated with Clinical Sessions)	2
COM 366	Family Medicine-II (Women's H, Prenatal C, Geriatrics, Palliative and Alternative M)	2
NTN 368	Nutrition	2
MIF 356	Medical Informatics	2

## Phase III - Clerkship

### Semester-VII & VIII, 2023-24

Item #	Title	Credits
MED 471	Medicine	9
PED 472	Pediatrics	9
SUR 481	Surgery	9
GYN 482	Obstetrics & Gynecology	9
HEN 483	Health Economics and Health Care Management	2
PHL 369	Medical Ethics	2

### Semester-IX & X, 2024-25

Item #	Title	Credits
IMD 591	Sub-Specialty Medicine	9
INS 592	Integrated Neuroscience	9
SSP 5X1	Surgical Sub-Specialty	9
AMB 5X2	Ambulatory Care	9

**Aggregate Credit Hours for UG Course: 183**

### Internship Year

#### Hospital Attachment

Item #	Title	Credits
MED 600	Internship	



# College of Pharmacy

# College of Pharmacy

## College of Pharmacy General Information

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**Dean of College of Pharmacy**

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## About the College of Pharmacy

College of Pharmacy enrolls graduates from the university preparatory program UPP into a further 5 years of didactic/ experiential courses within Pharm.D. Program. This program offers the graduate with a degree of; **Doctor of Pharmacy (Pharm.D.)**, conditioned with successful performance in all courses, including the final advanced pharmacy practice experience APPE rotations in the final year.

### National and International Collaboration:

1. 1. National:
  1. Medical City King Saud University
  2. Pediatric Hospital – King Saud Medical City
  3. King Fahad Medical City
  4. King Faisal Specialist Hospital & Research Center
  5. Prince Sultan Military Medical City
  6. Dr. Sulaiman Al-Habib Medical Group
  7. Ministry of Health
  8. Specialized Medical Center
  9. Saudi Food and Drug Authority
  10. Octapharm Pharmaceutical Company
  11. Avalon Pharmaceutical Company
  12. Eli Lilly Pharmaceutical Company
  13. Bupa Arabia Health Insurance Company
  14. Biogen International GmbH
  15. Hikma Pharmaceuticals Company

16. Lemon Medical Company
2. International:
  1. Massachusetts College of Pharmacy and Health Sciences (MCPHS), Boston, US
  2. Strathclyde Institute of Pharmacy and Biomedical Sciences (Sipbs) Glasgow, UK.

## College of Pharmacy Vision and Mission

### College of Pharmacy Vision

An aspiring hub recognized globally for healthcare advancement through world-class pharmacy education and innovative research.

### College of Pharmacy Mission

To empower pharmacy graduates with the knowledge, skills, and training to promote patient-centered care through education, research, and innovation.

## Faculty Organization and Departments

College of Pharmacy work dynamics are categorized under the following 2 departments:

### • Pharmaceutical Sciences

It Includes those faculties specialized in pharmaceutical sciences, such as Medicinal Chemistry, Pharmacology, Drug Discovery, Pharmaceuticals, Drug Delivery, Toxicology, Physiology and Biotechnology

### • Pharmacy Practice

It includes those faculties specialized in Clinical pharmacy, Experiential education, and Pharmacy practice.

#### Pharmaceutical Sciences Faculty Members

<b>Mohammed Abdalmoety</b>	Professor of Drug Design and Medicinal Chemistry, College of Pharmacy, Alfaisal University.
<b>Fares Khanfar</b>	PhD in Medicinal Chemistry and Drug design, College of Pharmacy, University of Louisiana, USA.
<b>Omar Ziad Ameer Al Adhami</b>	Assistant Professor of Physiology and Pharmacology, College of Pharmacy, Alfaisal University. PhD in Advanced Medicine, The Australian School of Advanced Medicine, Macquarie University, Sydney, Australia.

<b>Ibrahim Muhammad Salman</b>	Assistant Professor of Physiology and Pharmacology, College of Pharmacy, Alfaisal University. PhD in Advanced Medicine, The Australian School of Advanced Medicine, Macquarie University, Sydney, Australia.
<b>Muthanna Abdulkarim Al-Baldawi</b>	Assistant Professor of Pharmaceutics, College of Pharmacy, Alfaisal University. PhD in Pharmaceutical Technology, Cardiff University, UK
<b>Adeola Tawakalitu Kola Mustapha</b>	Assistant Professor of Pharmaceutics, College of Pharmacy, Alfaisal University. PhD in Pharmaceutics and Pharmaceutical Technology, De Montfort University, Leicester, UK.
<b>Nahlah Abdullah Aldahian</b>	Senior Lecturer of Pharmacology, College of Pharmacy, Alfaisal University. MSc in Pharmacology, Massachusetts College of Pharmacy and Health Science, Boston, USA.
<b>Mariyam Mohammad Alfagih</b>	Lecturer of Pharmacogenomics, College of Pharmacy, Alfaisal University. MSc in Genomic Medicine, National Heart and Lung Institute, Imperial College London, London, UK.
<b>Aiman Yahya Alwadi</b>	Lecturer of Biotechnology, College of Pharmacy, Alfaisal University. MSc in Biomedical Sciences, College of Medicine, Alfaisal University, Riyadh, KSA.
<b>Yaseen Bokhari</b>	Lecturer of Biotechnology and microbiology at College of Pharmacy, Alfaisal University. MSc in Science in Cytotoxicity and Biotechnology, Flinders University, Australia.
<b>Noura Hatim BinSaeed</b>	Senior Laboratory Specialist, College of Pharmacy, Alfaisal University. BSc in Pharmaceutical Sciences, Riyadh Elm University, Riyadh, KSA.
<b>Yusra Abdulkarim Alzahrani</b>	Laboratory Specialist, College of Pharmacy, Alfaisal University. BSc in Chemistry, College of Sciences, Princess Noura University, Riyadh, KSA.

#### Pharmacy Practice Faculty members

<b>Ibrahim Muhammad Salman</b>	Assistant Professor of Physiology and Pharmacology, College of Pharmacy, Alfaisal University. PhD in Advanced Medicine, The Australian School of Advanced Medicine, Macquarie University, Sydney, Australia; Graduate Certification in Advanced Pharmacy Practice, Pharmaceutical Society of Australia (PSA), Sydney, Australia; a board-certified pharmacist by the Australian Health Practitioner Regulation Agency (AHPRA), Sydney, Australia.
<b>Abdullah Mohammed Alrajhi</b>	Senior Lecturer of Pharmacy Practice, College of Pharmacy, Alfaisal University. PGY1 in General Pharmacy Practice, Massachusetts, USA and PGY2 Hematology and Oncology, King Fahad Specialist Hospital (KFSH), Riyadh, KSA.
<b>Rakan Jamal Alanazi</b>	Lecturer of Pharmacy Practice, College of Pharmacy, Alfaisal University. MSc in Pharmacy Practice, Purdue University, Indiana, USA.

teacher assistant	
<b>Shaden Al-Khatib</b>	Teaching assistant, College of Pharmacy, Alfaisal University  Doctor of Pharmacy (PharmD), Alfaisal University, Riyadh, Saudi Arabia
<b>Doaa Rashid</b>	Teaching assistant, College of Pharmacy, Alfaisal University  Doctor of Pharmacy (PharmD), Alfaisal University, Riyadh, Saudi Arabia

#### College of Pharmacy Admin Staff

<b>Abeer Aljahbali</b>	Administrative. She has finished her bachelor's degree from Imam Mohammed Bin Saud University college of English Languages and Literature.
<b>Deema Alluhayb</b>	Accreditation, Quality Assurance Administrative and Finance Officer She has Master of Education, University of Canberra, Australia.

## College of Pharmacy Degree Program

### Pharm.D. curriculum (Doctor of Pharmacy)

- [PharmD. Curriculum](#)

The curriculum of the Doctor of Pharmacy (Pharm.D.) Program at Alfaisal University is designed to systemically provide a solid foundation in the basic sciences on which to build upon, and integrate the pharmaceutical sciences, social/administrative/behavioural sciences, and clinical sciences. Consistent with the College of Medicine at Alfaisal University, the Pharm.D. curriculum uses the "SPICES" curriculum model as a guiding philosophy with these elements: Student-centred/active learning, Problem/practice based, Integrated, Community/systems-based, Electives, and Systematic approaches. In addition, the curriculum incorporates research and interprofessional experiences.

The integrated pharmacotherapy course sequences with case-based seminars that employ case-based collaborative learning (CBCL) approach; a hybrid of problem-based learning (PBL), and team-based learning (TBL) approaches. These courses will be offered in the early professional phase of the Pharm.D. curriculum to promote learning in both small groups to prepare for "case-based seminars" and in a tutorial setting with student-directed learning.



Distinguishing features of the program include state-of-the-art practicum and simulation experiences, a pharmacy practicum training laboratory with inpatient ambulatory care, and community pharmacy components will be offered is a set of patient care and health system management laboratory courses. Introductory Pharmacy Practice Experience (IPPE) courses in a community setting, as well as in an inpatient and outpatient settings will expose the students to the various pharmacy practice opportunities. Students will learn the fundamental research principles and apply research skills by conducting a research project as a capstone experience prior to the Advanced Pharmacy Practice Experiences (APPE) phase.

The last phase of the Pharm.D. program will consist of state of the art APPE rotations in-patient (hospital/health system) and out-patient (community/ambulatory care) settings that expose students to diverse patient populations as part of an interprofessional team.

## Program Structure

Year	Courses	Credit Hours
<b>First year</b>	University Preparatory Program	<b>23</b>
<b>Second-fifth year</b>	Didactic courses Practicum/simulation laboratory Introductory practice experiences	<b>135</b>
<b>Sixth year</b>	Advanced clinical/experiential education, via Advanced Pharmacy Practice Experience (APPE) rotations	<b>40</b>
	<b>Total</b>	<b>198</b>

## Program Objectives

The Doctor of Pharmacy (Pharm.D.) program at Alfaisal University prepares clinical pharmacists to provide comprehensive medication management using a patient-centred approach within interprofessional health care teams. The entire program requires a total of six years; the first year as the University Preparatory Program (UPP), followed by 4 years of didactic, practicum/simulation and introductory practice experiences, and a final year of advanced clinical/experiential education. Graduates of the program will be qualified practitioners with unique training in the appropriate use of medications and expertise in the provision of patient care services in a variety of different practice settings. The integration of research

within the Pharm.D. program provides an optimal environment that promotes critical thinking, analytical and lifelong learning, and prepares graduates for application of research.

At the conclusion of the Pharm.D. Program, all graduates will achieve the following outcomes:

1. Demonstrate a scientific foundation as related to the clinical, pharmaceutical, and social/administrative/behavioural sciences.
2. Identify and evaluate research methods and demonstrate research skills relevant to the pharmacy profession that can be applied in different practice settings.
3. Integrate systems management concepts in the pharmacy profession, including the management of drug formulary systems (i.e., hospital, healthcare system, or national-based).
4. Practice evidence-based decision making and implement pharmaceutical care plans.
5. Provide comprehensive medication management to optimize medication use and health outcomes, reduce adverse drug events and improve patient safety.
6. Promote and implement public health, wellness, and disease prevention concepts.
7. Demonstrate effective oral and written communication skills to peers, other professionals, patients, and the public.
8. Demonstrate a commitment to continuous professional and leadership development.

## College of Pharmacy Faculty and Staff

### - Faculty:

- Dr. Manal Alem, Associate Professor of Clinical Pharmacology, Dean of the College of Pharmacy.

- Prof. Mohammed Khanfar, Professor of Drug Design and Medicinal Chemistry, Vice Dean of the College of Pharmacy.

- Dr. Omar Al Adhami, Assistant Professor of Pharmacology & Physiology, Head of the Department of Pharmaceutical Sciences, Chair of Accreditation and Quality Assurance Department.

- Dr. Ibrahim Salman, Assistant Professor of Pharmacology & Physiology, Head of Pharmacy Practice Department.



- Dr. Muthanna Albadawi Assistant Professor of Pharmaceutics, Chair of Mentorship Program
- Dr. Adeola Kola Mustapha Assistant Professor of Pharmaceutics, Chair of Curriculum Community.
- Dr. Nahlah Aldahian, Senior Lecturer of Pharmacology, Phase II Director.
- Dr. Aiman Alwadi, Lecturer of Biotechnology, Phase III Director.
- Dr. Rakan Alenazi, Lecturer of Clinical Pharmacy, Chair of Pharmacy Education Unit.
- Dr. Mariyam Alfagihe, Lecturer of Pharmacogenomics, Chair of Experiential Learning Unit.
- Dr. Yassen Boukhari, Lecturer of Biotechnology.
- Ms. Noura Hatim, Senior Lab Specialist.
- Ms. Yusra Alzahrani, Lab Specialist.
- Dr. Abdullah Alrajhi, Senior Lecturer of Clinical Pharmacy.
- **Staff:**
  - Ms. Abeer Aljabhali, Administrative Assistant.
  - Ms. Deema Al Luhayb, Accreditation, Quality Assurance Administrative and Finance Officer.

## Doctor of Pharmacy-PharmD College of Pharmacy Study Plan Program

College of Pharmacy  
Doctor of Pharmacy-PharmD

## Pharm.D. Curriculum

### Year 1—Phase 1, Semester 1

Item #	Title	Credits
PCHE 101/ CHM 103	Chemistry I	3
PHSF 101/ PHY 103	Preparatory Human Structure and Function I	4
PAM 101/ MAT 103	Algebra	3
PENG 005	Preparatory English Level 5	4
PENG 006	Preparatory English Level 6	4

[PENG 005](#), [PENG 006](#): UPP criteria are available for exemption from English courses.

### Year 1—Phase 1 Semester 2

Item #	Title	Credits
PCHE 112/ CHM 113	Chemistry II	3
PHSF 112/ PHY 113	Preparatory Human Structure and Function II	4
PPHYM 112/ PHU 113	Physics for medicine and health sciences	3
PBIO 112/ BIO 113	Principles of Biochemistry	3
PENG 007	Preparatory English Level 7	3
PENG 008	Preparatory English Level 8	3

[PENG 007](#), [PENG 008](#): UPP criteria are available for exemption from English courses.

### Year-2—Phase 2, Semester 3

Item #	Title	Credits
ENG 231	Medical terminology	2
CHM 232	Organic chemistry	4
ANT 233	Anatomy and histology	4
PHY 234	Physiology	3
MAT 235	Calculus	3
ARB 102	Elective/ Arabic language I	2

### Year 2—phase 2, Semester 4

Item #	Title	Credits
MCH 241	Medicinal chemistry	4
BCH 242	Biochemistry	4
MIC 243	Microbiology	3
IMM 244	Immunology	2
BST 245	Biostatistics and basic research methods	3
ISL 102	Elective/ Islamic studies I	2

### Year 3—Phase 2, Semester 5

Item #	Title	Credits
CAL 351	Pharmacy calculations	1
KIN 352	Pharmacokinetics	3
PHC 353	Pharmaceutics I: Dosage Forms 3 and Stability	
MIC 354	Advanced Microbiology	2
IMM 355	Clinical Immunology	1
PRC 356	Pharmacy Practice and Health Care Systems	3
ARB 113	Arabic Language II	2
	Elective for Pharm.D	3

### Year 3—Phase 2, Semester 6

Item #	Title	Credits
PHC 361	Pharmaceutics II: Drug Delivery	2
PTH 362	Parenteral Therapy	2
REG 363	Pharmacy Regulations and Health Ethics	2
SCR 364	Self-care and Non-Prescription Drugs	1
BPH 365	Basic pharmacotherapy	3
BPH 366	Basic Pharmacotherapy '93case-based seminars'94	1
BPH 367	Pharmacotherapy of antimicrobial agents	3
ISL 113	Islamic Studies II	2

### Year 4—Phase 3, Semester 7

Item #	Title	Credits
MTM 471	Medication therapy management	2
DIT 472	Drug information and evidence-based practice	3
IPH 473	Integrated pharmacotherapy I: -3 CVS and renal I	
IPH 474	Integrated pharmacotherapy I: 1 -CVS and renal I '93case-based seminars'94	
IPH 475	Integrated pharmacotherapy II: 3 - MSK and - RES	
IPH 476	Integrated pharmacotherapy II: 1 -MSK and - RES '93case-based seminars'94	
PCL 477	Patient care and health system management laboratory I	2
PHG 478	Pharmacogenomics and personalized medicine	2

### Year 4—Phase 3, Semester 8

Item #	Title	Credits
KIN 481	Clinical Pharmacokinetics	2
ECO 482	Pharmacoeconomics and health outcomes	3
IPH 483	Integrated pharmacotherapy IV:3 Endocrine and women'92s health	
IPH 484	Integrated pharmacotherapy IV:1 Endocrine and women'92s health '93case-based seminars'94	
IPH 485	Integrated pharmacotherapy III: - CNS -	3
IPH 486	Integrated pharmacotherapy III: - CNS - '93case-based seminars'94	1
PCL 487	Patient care and health system management laboratory II	2
CAM 488	Complementary and Alternative Medicine	2

### Summer

Item #	Title	Credits
IPP 489	Introductory pharmacy practice experience I (IPPE)	3

### Year 5—Phase 3, Semester 9

Item #	Title	Credits
IPH 591	Integrated pharmacotherapy V:-3 CVS and renal II	
IPH 592	Integrated pharmacotherapy V: 1 CVS and renal II '93case-based seminars'94	
IPH 593	Integrated pharmacotherapy VI:3 Infectious diseases	
IPH 594	Integrated pharmacotherapy VI:1 Infectious diseases '93case-based seminars'94	
PCL 595	Patient care and health system management laboratory III	2
IPP 596	Introductory Pharmacy Practice Experience II	
	RES 5X6	0
	Elective II for Pharm.D	3

### Year 5—Phase 3, Semester 10

Item #	Title	Credits
IPH 5X1	Integrated pharmacotherapy VII: Haematology/ Oncology/ palliative care and GIT	3
IPH 5X2	Integrated pharmacotherapy VII: Haematology/ Oncology/ palliative care and GIT '93case-based seminars'94	1
MSF 5X3	Medication safety and health informatics	3
PCL 5X4	Patient care and health system management laboratory IV	2
IPP 5X5	Introductory Pharmacy Practice Experience III	2
RES 5X6 B	Research project	3

### 6th year—Advanced Pharmacy Practice Experience Rotations (APPE)

Item #	Title	Credits
APP 600	Advanced pharmacy practice experience rotations - sixth year	4

**Pre-requisite for all rotations are IPP 489, IPP 596, IPP 5X5**

*All students after finishing phase 3, are expected to finish 10 rotations for 45 weeks of advanced pharmacy practice experience. 5 core rotations are mandatory for all. From the elective rotations, (3-5) can be chosen from the selective/ elective rotations, and the remaining ones (0-2) are freely chosen from the free elective list. This proposed structure is the make most of the rotations focused on direct patient care and communication.*



# College of Science & General Studies

# College of Science & General Studies

## Dean's Message COSGS

It gives me great pleasure to warmly welcome you all to the College of Science and General Studies (CoSGS), which sets itself the task of nurturing science, the "key to innovation and inventions," and the foundation for advancement in all other branches of knowledge. The Bachelor of Science in Life Sciences offers two tracks for students to choose from: *Biological Sciences & Nanotechnology*, and *Environmental Sciences & Sustainability*.

I am truly delighted to be part of this diverse, competent, and vibrant academic community. As outlined in the College's Strategic Plan 2020-2025 (<https://cos.alfaisal.edu/pdf/Strategic-Plan-COSGS-2020-2025.pdf>) our vision is to be a *student-centered college distinguished for its world-class education, research, and outreach services*. Our mission is *to create and disseminate knowledge by offering world-class academic programs, cutting-edge research, and outreach activities that serve national development and benefit humanity*.

As a performance indicator, Alfaisal University was placed 36<sup>th</sup> globally by *Times Higher Education Young Universities Rankings 2022* (i.e., institutions less than 50 years old), as well as ranking 1<sup>st</sup> in the Kingdom and 1<sup>st</sup> in the Arab World ([https://www.timeshighereducation.com/world-university-rankings/2022/young-university-rankings#!/page/0/length/25/locations/SAU/sort\\_by/rank/sort\\_order/asc/cols/stats](https://www.timeshighereducation.com/world-university-rankings/2022/young-university-rankings#!/page/0/length/25/locations/SAU/sort_by/rank/sort_order/asc/cols/stats)).

Equipped with state-of-the art physical infrastructure and amenities, the CoSGS brings together nationally and globally eminent scholars in disciplines at the center of scientific inquiry as researchers and educators who take to heart the college vision and mission of supporting its students to achieve their academic and professional goals. Our well-developed academic departments and programs encompass the spectrum of life sciences, including environmental science & sustainability, chemistry, physics, mathematics, nanoscience, and nanotechnology, in addition to humanities and social sciences.

Our students receive a robust and career-focused education, along with advising and guidance through the years of their study. As doing research is not just an assignment but a vital interest, we get our students earnestly involved in both field and lab research. As an example of the innovation, in 2020-2021, a total of seven international patents were awarded to faculty, students, and staff in the College. A substantial achievement. Furthermore, our programs significantly contribute to the Saudi knowledge-based economy. Indeed, we take great pride in our alumni who are either pursuing their higher education in highly reputed western universities or enjoying the positions for which they are eligible in the Saudi job market, and beyond.

We welcome you to join our science programs



## College of Science & General Studies General Information

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<b>Ajmia Younes Arfi</b> , Assistant Professor, Department of Mathematics, College of Science & General Studies. Ph.D., University of Tunis-El Manar, Tunisia
<b>Alanoud Mohammed Albugami</b> , Instructor, Department of Life Sciences, College of Science & General Studies. M.Sc. King Abdullah University of Science and Technology, KSA.
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<b>Amy Katherine Jones</b> , Instructor, Department of English, College of Science & General Studies. M.A., Colorado State University, USA.
<b>Bandar Ahmed Al Sabt</b> , Assistant Professor of Islamic Studies, Department of Humanities and Social Sciences, College of Science & General Studies. Ph.D., King Saud University, KSA.
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## College of Science & General Studies: The Setting

### Historical Context

The King Faisal Foundation (KFF) which was established in 1976 by the heirs of the late King Faisal launched Alfaisal University as the premier coeducational institution for business, engineering, science, and medical education and research in the Kingdom and the region. The deeply held principle of KFF was that a well-educated population was the foundation for a strong nation. The Foundation has always promoted a pragmatic approach to furthering the opportunities for Saudi youth. The creation of a university that strives to achieve excellence in several fields is yet another important advance towards fulfilling its desire to enrich the country's enterprising individuals with the ability to compete on a global level. Financial support provided by the King Faisal Foundation has also produced the King Faisal School, Prince Sultan College for Tourism and Business, and Effat College (for women).

## Alfaisal University & the College of Science & General Studies

Alfaisal was established with the aim of being a private not-for-profit world-class university that offers its students the latest knowledge in a state-of-the-art environment. Alfaisal espouses all the noble virtues that form the bedrock of the Foundation's educational activities: to promote learning, research, and the implementation of technology in a manner that promotes the Kingdom's employment and career objectives for its citizens. Education at Alfaisal is international in approach with instruction in the English language. The programs are student-centered, utilize problem-based learning and foster team-based skills. Alfaisal will enable its graduates to gain internationally recognized qualifications through an exclusive education imparted to them from within the Kingdom itself.

Plans for establishing Alfaisal University began in 1999. The first "Concept Paper" regarding the University was prepared in late 2000 with the support of the Carlyle Group. It was submitted to the Economic

## COSGS Administrative Staff

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Offset Committee in February 2001 to qualify the University under the Economic Offset Program. Approval was received in July 2001. Four non-Saudi multinational companies agreed to become co-founders along with six Saudi organizations. In April 2003 the Offset Committee granted a multiple of eight offset credits to the non-Saudi co-founders for cash contributions. The Board of Trustees negotiated with the Ministry of Higher Education to secure an acceptable Charter that assured the independence of the University. The Charter (#10905) was approved by the Ministry on 10 July 2004 and unanimously ratified by the Board of Trustees on 25 October 2004.

The campus is situated on the beautiful grounds of the late King Faisal's Palace at Al Maathur in the center of Riyadh, a historical location ideal for academic pursuits. The first two campus buildings (Science and Business) were completed in 2008 and 2009, respectively. Students began University studies in Engineering, Business, and Medicine in October, 2008 with majors in the College of Science and General Studies beginning in September 2011. An MBA was initiated in 2010 and other graduate degrees in Engineering and Medicine were launched in 2012. The first females were admitted in September 2011. Today, the colleges of business, engineering, science, and medicine offer graduate programs within their respective colleges.

The College of Science and General Studies is predominantly a service college providing instruction in the areas of science, humanities, and social sciences for all colleges within Alfaisal University. The College offers this service at three distinct, yet complementary levels: preparatory year and undergraduate & graduate levels. The College offers an undergraduate program in Life Science & a graduate program in Nanoscience & Nanotechnology. Furthermore, a University Preparatory Program (UPP) which started as a separate entity ten years ago is now part of the University and is situated in the College of Science and General Studies.

## Vision

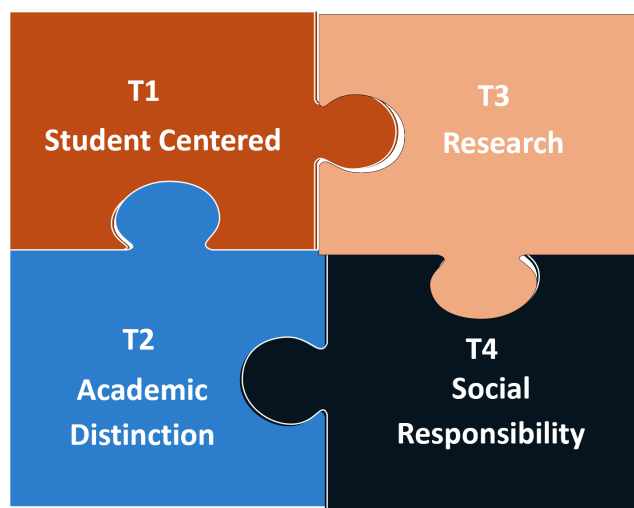
A student-centered college distinguished for its world-class education, research, and outreach services.

## Mission

To create and disseminate knowledge by offering world-class academic programs, cutting-edge research, and outreach activities that serve national development and benefit humanity.

## Themes

Four strategic themes have been derived and are shown in the Figure 1.



**Figure 1: Four Themes of the Strategic Plan of COSGS**

## Accreditation

The Life Science Undergraduate Program is now fully accredited by *The Applied and Natural Science Accreditation Commission (ANSAC)* of ABET. This is with the formal approval of NCAAA in KSA. There are four Accreditation Commissions associated with ABET; Applied and Natural Science Accreditation Commission, Computing Accreditation Commission, Engineering Accreditation Commission, and Engineering Technology Accreditation Commission.. The formal decision will be announced in August 2024.





# College of Science and General Studies Degree Programs

## College of Science and General Studies Degree Programs

### Bachelor of Science (B.Sc.) in Life Sciences

**Vice Dean for Academic & Student Affairs:** Ali Hendaoui, Assistant Professor, Department of Physics, College of Science & General Studies. Ph.D., University of Paris13, France.

**Director of Life Science Program:** Rashid Mehmood, Assistant Professor, Department of Life Sciences, College of Science & General Studies. Ph.D., Osaka University, Japan

### Program History

The Life Sciences program at Alfaisal University is an interdisciplinary program at the interface of Biology, Chemistry, Environmental, and Biomedical Sciences. The program received the Ministry of Education's approval in 2013. The program aims to serve the national policy in developing a knowledge-based economy in key science areas such as biological, biomedical, chemical, environmental, and technology disciplines. The Kingdom has ample need for growth in basic science instruction to produce competent students who will contribute to sustainable development and economic growth. The program curriculum and training prepare the students to pursue further graduate studies in various fields, including biological sciences, biomedical sciences, environmental sciences, chemical sciences, and in biotechnology & nanotechnology fields.

### Curriculum & Study Plan

The Bachelor of Science in Life Sciences offers two tracks for students to choose from: *Biological Sciences & Nanotechnology*, and *Environmental Sciences & Sustainability*. The first two years are common for all tracks, and in the 3<sup>rd</sup> year students start taking courses that are specific for the track of their choice. Student also have access to a variety of advanced electives courses to choose from including cancer biology, forensic science, medicinal chemistry, bioinformatics, and special topics. The Life Sciences Program requires a total of 134 credit hours for completing the program. This includes general education requirement & elective courses (23 credits), college requirement courses (25 credits), program requirement courses (53 credits), track requirement courses (18 credits), program electives (15 credits), and summer internship (0 credits). Student who meets requirement conditions may take one or more graduate courses to fulfill program graduation requirements (maximum of nine credit-hours).

### Bachelor of Science in Life Sciences Program Curriculum

Study Plan: Biological Sciences & Nanotechnology						
Fall (19 CRHs)				Spring (19 CRHs)		
	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
1 <sup>st</sup> Year	BIO 101	General Biology I	(3+1)	BIO 112	General Biology II	(3+1)
	CHM 101	General Chemistry I	(3+1)	CHM 112	General Chemistry II	(3+1)
	CSC 101	Introduction to Computer Science	(3+0)	***	Humanity Course Elective	(3+0)
	MAT 105	Calculus for Biomedical Sciences I	(3+0)	MAT 116	Calculus for Biomedical Sciences II	(3+0)
	ENG 101	Freshmen English I	(3+0)	ENG ***	English Elective	(3+0)
	ISL 101	Islamic Studies I	(2+0)	***	Islamic Elective	(2+0)
	Fall (17 CRHs)			Spring (20 CRHs)		

	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
2 <sup>nd</sup> Year	BIO 223	Microbiology	(3+1)	BIO 224	Human Physiology & Anatomy	(3+1)
	CHM 211	Organic Chemistry I	(3+1)	CHM 212	Organic Chemistry II	(3+1)
	PHU 205	Mech. & Waves for Life Science	(3+1)	PHU 216	Electro. & Optics for Life Science	(3+1)
	STA 211	Probability & Statistics	(3+0)	ENV 205	Environmental Science & Sustainability	(3+0)
	ARB 101	Arabic Language I	(2+0)	***	Free Elective	(2+0)
				***	Free Elective	(3+0)
	Fall (18 CRHs)			Spring (17 CRHs)		
3 <sup>rd</sup> Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 346	Biochemistry I	(3+1)	BIO 358	Biochemistry II	(3+1)
	CHM 310	Instrumental Analysis	(3+1)	LSR 302	Research Methodology	(3+0)
	BIO 345	Molecular Biology I	(3+1)	BIO 357	Molecular Biology II	(3+1)
	BIO 315	Genetics	(3+0)	***	Advanced Sci. Elective II	(3+0)
	***	Advanced Sci. Elective I	(3+0)	***	Free Elective	(3+0)
	LSR 390	Life Sciences Summer Internship (0 CRHs)				
	Fall (12 CRHs)			Spring (12 CRHs)		
4 <sup>th</sup> Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 439	Clinical Laboratory Science	(3+0)	***	Advanced Sci. Elective III	(3+0)
	BSN 430	Nanomaterials & Nanotechnology	(3+0)	***	Advanced Sci. Elective IV	(3+0)
	LSR 421	Life Science Research Project I	(0+3)	LSR 422	Life Science Research Project II	(0+3)
	BIO 440	Biotechnology	(3+0)	LSR 423	Integrative Life Science Research Seminar	(3+0)

\*\*\* Multiple courses to choose from (see program curriculum for the list of courses).

Study Plan: Environmental Sciences & Sustainability						
	Fall (19 CRHs)			Spring (19 CRHs)		
1 <sup>st</sup> Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 101	General Biology I	(3+1)	BIO 112	General Biology II	(3+1)
	CHM 101	General Chemistry I	(3+1)	CHM 112	General Chemistry II	(3+1)
	CSC 101	Introduction to Computer Science	(3+0)	***	Humanity Course Elective	(3+0)
	MAT 105	Calculus for Biomedical Sciences I	(3+0)	MAT 116	Calculus for Biomedical Sciences II	(3+0)
	ENG 101	Freshmen English I	(3+0)	ENG ***	English Elective	(3+0)
	ISL 101	Islamic Studies I	(2+0)	***	Islamic Elective	(2+0)
	Fall (17 CRHs)			Spring (20 CRHs)		
2 <sup>nd</sup> Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 223	Microbiology	(3+1)	BIO 224	Human Physiology & Anatomy	(3+1)
	CHM 211	Organic Chemistry I	(3+1)	CHM 212	Organic Chemistry II	(3+1)
	PHU 205	Mech. & Waves for Life Science	(3+1)	PHU 216	Electro. & Optics for Life Science	(3+1)
	STA 211	Probability & Statistics	(3+0)	ENV 205	Environmental Science & Sustainability	(3+0)
	ARB 101	Arabic Language I	(2+0)	***	Free Elective	(2+0)
				***	Free Elective	(3+0)
	Fall (17 CRHs)			Spring (18 CRHs)		
3 <sup>rd</sup> Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 346	Biochemistry I	(3+1)	BIO 325	Conservation Biology	(3+0)
	CHM 310	Instrumental Analysis	(3+1)	LSR 302	Research Methodology	(3+0)
	ENV 305	Environmental Health	(3+0)	ENV 330	Energy & Sustainability	(3+0)
	BIO 315	Genetics	(3+0)	ENV 410	Environmental Monitoring	(3+0)
	***	Advanced Sci. Elective I	(3+0)	***	Advanced Sci. Elective II	(3+0)

				***	Free Elective	(3+0)
	LSR 390	Life Sciences Summer Internship (0 CRHs)				
	Fall (12 CRHs)			Spring (12 CRHs)		
4 <sup>th</sup> Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	ENV 420	Waste Management	(3+0)	***	Advanced Sci. Elective III	(3+0)
	ENV 425	Environ. Policy & Economics	(3+0)	***	Advanced Sci. Elective IV	(3+0)
	LSR 421	Life Science Research Project I	(0+3)	LSR 422	Life Science Research Project II	(0+3)
	BIO 440	Biotechnology	(3+0)	LSR 423	Integrative Life Science Research Seminar	(3+0)

\*\*\* Multiple courses to choose from (see program curriculum for the list of courses).

## College of Science & General Studies Academic

### Departments

#### DEPARTMENT OF CHEMISTRY

##### Chair

**Dr. Amjad Fataftah**

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##### General Department Information:

The Department of Chemistry seeks to be nationally and internationally recognized for its excellence in education, interdisciplinary research, and services. The department strives toward becoming a leading source of knowledge in the chemical and biochemical sciences and their multifaceted practical applications. We are committed to educating and preparing our students to excel and achieve their goals. Our faculty members are respected scholars in their fields, as well as dedicated teachers and mentors. Under the guidance of our faculty members, students have the opportunity to conduct cutting-edge research and to gain hands-on experience with modern instrumentations.

The Chemistry Department serves the local community and the Kingdom by offering world-class education, providing scientific leadership, training future leaders chemical and biochemical sciences, and by engaging in community services.

### Chemistry Course Descriptions

#### CHM 101 General Chemistry I

**Cr Hr: 3**      **Prerequisite: None**      **Co-requisite: CHM 101 L**

CHM 101 is the first-semester course of a two semesters General Chemistry sequence for students majoring in science or preparing for entry into health professional programs such as medicine, dentistry, pharmacy and veterinary science. CHM 101 provides a comprehensive introduction to the basic principles of chemistry, including atomic and molecular structure, properties of gases, liquids and solids, and chemical thermodynamics.

#### CHM 101 L General Chemistry I lab

**Cr Hr: 1**      **Co-requisite: CHM 101**

General Chemistry I Lab provides an introduction to the fundamentals of laboratory techniques in chemistry. Students will carry out measurements, prepare solutions, and perform qualitative and quantitative experiments.

#### CHM 102 Introduction to Chemistry

**Cr Hr: 3**      **Prerequisite: None**      **Co-requisite: CHM 102 L**

CHM 102 is a single-semester, terminal course designed to provide engineering students with a foundation in the fundamental principles and concepts of chemistry. Topics covered include atomic structure, nomenclature, chemical equations, stoichiometry, thermochemistry, chemical bonding, solution properties, kinetics, equilibrium, electrochemistry, descriptive inorganic, nuclear chemistry, and bio/organic chemistry.

#### CHM 102 L Introduction to Chemistry lab

**Cr Hr: 1**      **Co-requisite: CHM 102**

Introduction to chemistry lab provides an introduction to the fundamentals of laboratory techniques in chemistry. Students will carry out measurements, prepare solutions, and perform qualitative and quantitative experiments.

**CHM 107      Chemistry in the Environment and Everyday Living**

**Cr Hr: 3      Prerequisite: None**

CHM 107 examines the role of chemistry in everyday life and the environment, and is intended for students not pursuing scientific or engineering majors. Chemical principles are introduced to the extent necessary for an understanding of issues.

**CHM 112      General Chemistry II**

**Cr Hr: 3      Prerequisite: CHM 101 or CHM 102 Co-requisite: CHM 112 L**

CHM 112 is the second of a two-semester chemistry course for science majors or those preparing for entry into health professional programs such as medicine, dentistry, pharmacy and veterinary science. CHM 112 builds on fundamental principles mastered in the first semester of the course.

**CHM 112      General Chemistry II lab**

**Cr Hr: 1      Co-requisite: CHM 112 L**

The general Chemistry II Lab (CHM 112 L) is designed to support and illustrate chemical concepts studied in the lecture portion of the course, as well as to introduce important laboratory techniques and encourage analytical thinking.

**CHM 211      Organic Chemistry I**

**Cr Hr: 3      Prerequisite: CHM 112      Co-requisite: CHM 211 L**

CHM 211 is the first semester of a two semester sequence for science majors and those preparing for entry into health professional programs such as medicine, dentistry, pharmacy and veterinary science. CHM 211 focus on bonding principles, functional groups, isomerism, stereochemistry, nomenclature, synthesis and reactions of alkanes, cycloalkanes,

alkenes, alkynes, alcohols, and alkyl halides. Addition, elimination, rearrangement, and substitution mechanisms.

**CHM 211 L      Organic Chemistry I lab**

**Cr Hr: 1      Co-requisite: CHM 211**

Organic chemistry I Lab provides an introduction to the fundamentals to laboratory techniques in organic chemistry. This lab introduces students to chemical reactions and syntheses of aromatic, carbonyl, and amine compounds.

**CHM 212      Organic Chemistry II**

**Cr Hr: 3      Prerequisite: CHM 211      Co-requisite: CHM 212 L**

CHM 212 is a continuation of CHM 211. It covers nomenclature, properties, reactions and synthesis of conjugated dienes, aromatics, organometallics, alcohols, phenols, ethers, aldehydes and ketones, carboxylic acids and derivatives, and amines. Mechanisms include electrophilic aromatic substitution and nucleophilic addition. Carbohydrates, amino acids, proteins and nucleic acids

**CHM 212 L      Organic Chemistry II lab**

**Cr Hr: 1      Co-requisite: CHM 212**

Organic chemistry II Lab (CHM 212 L) introduces students to chemical reactions and syntheses of aromatic, carbonyl, and amine compounds. Special topics in carbohydrate, amino acid, and lipid chemistry. Lab work includes simple and multi-step synthesis and spectral identification.

**CHM 213      Analytical Chemistry**

**Cr Hr: 3      Prerequisite: CHM 112**

Quantitative Analysis (CHM 213) provides a comprehensive introduction to the fundamental theory and laboratory techniques in analytical chemistry. This includes experimental errors and statistics, data analysis methods, chemical equilibria, titrations, spectrophotometry, and analytical separation methods.

**CHM 232      Organic Chemistry**

**Cr Hr: 3      Co-requisite: CHM 232 L**

CHM 232 provides the students with the essential knowledge required to define organic compounds and understand their properties, structures and actions. The students will determine the chemical structure using IR, NMR, and Mass Spectroscopy. The mechanisms of organic reactions, including addition, elimination, substitution, and rearrangement reactions will be discussed. Major organic chemical reactions covered in this course will help students understand subjects such as pharmacology and medicinal chemistry in the coming semesters.

**CHM 232 L      Organic Chemistry lab****Cr Hr: 1      Co-requisite: CHM 232**

Organic chemistry Lab provides an introduction to the fundamentals to laboratory techniques in organic chemistry. This includes chemical reactions and syntheses of aromatic, carbonyl, and amine compounds discussed in CHM232 course.

**CHM 310      Introduction to Instrumental Analysis****Cr Hr: 3      Prerequisite: CHM 212      Co-requisite: CHM 310 L**

Introduction to the theories of analysis by instrumental methods. Basic electronics are applied to chemical measurements. Topics include an introduction to the theory of spectroscopy, ultraviolet, visible, infrared, and others. CHM 310 is an introduction to basic principles and the instrumental design of a variety of analytical techniques, including electrochemical, spectrochemical (molecular and atomic), chromatographical and mass spectrochemical techniques.

**CHM 310 L      Introduction to Instrumental Analysis lab****Cr Hr: 1      Co-requisite: CHM 310**

Introduction to Instrumental Analysis lab (CHM 310 L) will introduce the basic analysis utilizing different instruments such as UV-visible spectrophotometer, IR, NMR, GC, HPLC, Potentiostat, and equipment relevant to the materials of CHM 310 course.

**CHM 331      Medicinal Chemistry****Cr Hr: 3      Prerequisite: CHM 212**

Medicinal Chemistry (CHM 331) will explore the role of chemistry in the design and action of drugs. Principles of drug discovery, drug development, drug interactions, and the structure-activity relationship of drugs will be discussed. Aspects of biochemistry and physical chemistry will be covered as required to understand the chemistry of drug action and drug metabolism. Selected case studies from the major classes of drugs and literature will be used to illustrate concepts covered in the course.

**CHM 320      Physical Chemistry****Cr Hr: 3      Prerequisite: CHM 212**

Physical chemistry (CHM 320) focuses on the molecular approach of the fundamentals of physical chemistry for life science students. It will help to explain many scientific phenomena such as: molecular structures, molecular spectroscopy, the applications of statistical thermodynamics and the motion and dynamics of molecules.

**CHM 332      Environmental Chemistry****Cr Hr: 3      Prerequisite: CHM 112 and CHM 211**

The purpose of this course is to gain an understanding of the fundamental chemical and biochemical processes that are occurring in the environment. The course will reflect on major issues in the environment, including atmospheric chemistry, air pollution, climate change, energy, water chemistry and water pollution, toxic heavy metals, organic pollutants such as pesticides, herbicides, insecticides, and waste and recycling.

**SCI 310      Forensic Science****Cr Hr: 3      Prerequisite: ENG112 (or ENG113)**

This single-semester elective course is designed to provide students with a foundation in the fundamental principles and concepts of forensic sciences. This course introduces the theory, concepts and practices used in the analysis of physical evidence performed in forensic laboratories, the fundamentals of crime scene investigation, forensic DNA analysis, illicit drugs, and forensic toxicology, hair and textile analysis, firearms and ballistics, and counterfeiting and forgery. In addition, selected case studies in different forensic disciplines will be discussed.

**ENV 205      Environmental Science & Sustainability**

**Cr Hr: 3      Prerequisite: CHM 112**

This course is general in nature that provides a general introduction to environmental issues and sustainable development. It surveys the impacts that humans have on the environment such as pollution, climate changes, loss of agricultural land, etc. It reviews the principles of sustainability and their applications to energy, climate change, urban planning, transportation, water use, etc. The course will also address changes and steps that can be made to promote sustainability. Current environmental issues will be discussed to motivate students to be active members of society for enhancing environmental awareness and in taking action to address environmental issues and sustainability in KSA.

**ENV 310      Environmental Toxicology**

**Cr Hr: 3      Prerequisite: ENV 205**

Environmental toxicology is an elective course focusing on the study of toxic effects of environmental chemicals on living organisms (including humans). In this course, the basic concepts, methods, and approaches in environmental toxicology will be introduced. Natural and synthetic chemicals commonly encountered in the air, water, and soil will be discussed regarding their occurrence, fate and transport, and toxicological effects on ecological species and humans. Case studies will be used to illustrate the complexity of environmental toxicology issues. New trends in chemical toxicity testing will be discussed. Contaminants of emerging concerns such as pharmaceutical and personal care products and engineered nanomaterials will also be introduced.

**ENV 315      Earth Systems**

**Cr Hr: 3      Prerequisite: ENV 205**

This course focuses on the profound transformation of Earth's environment that is now apparent, a transformation owing not to the great forces of nature or to extraterrestrial sources but to the numbers and activities of people – the phenomenon of global change. This course sets out what is known about global change and the nature of the Earth System.

**ENV 330      Energy & Sustainability**

**Cr Hr: 3      Prerequisite: ENV 205**

This course will help students to understand the critical relationships of the environment, energy, and sustainability. Leading experts provide comprehensive coverage of each topic, bringing together diverse subject matter by integrating theory with engaging insights. This course fills an information gap in energy, environment, and sustainability, presenting broad overviews of energy challenges and solutions along with the materials advances needed to enable rapid progress. The purpose of this course is to serve as a college-level that brings together the themes of environment and energy in the context of defining the issues, and subsequently focuses on the materials science and research challenges that need to be met.

**ENV 410      Environmental Monitoring**

**Cr Hr: 3      Prerequisite: CHM 310**

This course will cover introduction to environmental science, pollutants including chemical and biological and industrial hygiene. This will include evaluating the various sampling techniques, pollutants and analytical techniques which can contaminate water, soil/surfaces and outdoor/indoor air. Furthermore, it will emphasize on environmental pollutants detection, hazards controlling, risk reduction, selection of the appropriate instrumentation techniques, calibration, quality control and reporting.

**ENV 420      Waste Management**

**Cr Hr: 3      Prerequisite: ENV 205**

This course covers the principles of waste management. It provides an overview of municipal waste, industrial waste, and hazardous waste management including design and economic analysis. Reviews physical, chemical, biological treatment of hazardous waste, and the innovative management practices associated with different waste. Students will be exposed to real world settings through worked examples, case studies, and field trips to water and solid waste management facilities. Case studies for specific industries like petrochemicals, fertilizers, desalination and petroleum refining, etc.

**ENV 425      Environmental Policy & Economics**

**Cr Hr: 3      Prerequisite: ENV 205**

This course explores the proper role of government in the regulation of the environment. It will help students develop the tools to estimate the costs and benefits of environmental regulations. These tools will be used to evaluate a series of current policy questions, including: Should air and water pollution regulations be tightened or loosened? What are the costs of climate change in the U.S. and abroad? Is there a "Race to the Bottom" in environmental regulation? What is "sustainable development"? How do environmental problems differ in developing countries? Are we running out of oil and other natural resources? Should we be more energy efficient? To gain real world experience, the course is scheduled to include a visit to the ministries and government institutions in KSA. We will also do an in-class simulation of discussions for and against specific case scenarios.

**BSN 430      Nanomaterials & Nanotechnology**

**Cr Hr: 3      Prerequisite: CHM 310**

The course is designed to introduce students to the emerging area of nanomaterials and nanotechnology. The course intends to prepare and train students in the evolving areas of nanoscience and nanotechnology which lies at the interfaces of chemistry, physics, and biology. It will cover the basic fundamentals of Nanoscience and Nanotechnology including properties of nanomaterials, nanoscale phenomena, synthesis and fabrication, and characterization of nanomaterials. In addition, the emerging and potential applications of nanomaterials will be reviewed with more focus on applications related to life sciences.

## **DEPARTMENT OF ENGLISH**

### **Chair**

**Dr. Emily Wilson**

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### **General Department Information**

The English department exists to help Alfaisal students to be well-known for their dynamic critical thinking and communication skills as they interact across cultures and organizations. The first-year composition course required by all students takes a rhetorical approach to academic writing. Students begin by learning rhetorical analysis and then learn how to make effective choices as they compose their own arguments. In the second semester, students from

different colleges have a variety of different courses to choose from to complete their English requirement, from research to business communication to technical writing, to AI and digital media. This strong core of required and elective English courses thoroughly prepares students to succeed in high-level communication tasks across the curriculum.

### **Classes**

**ENG 101      Freshman English I**

**Cr Hr: 3 Prerequisites: none**

A skills-based, writing-intensive course, English 101 develops the student's abilities to organize, visualize and write effective essays that use advanced rhetorical strategies needed for success in academic pathways. The course covers the writing process, oral and written rhetorical techniques, and grammatical elements specific to a variety of genres. Students will explore and analyze how language is used to achieve communicative goals common to academic writing in various genres through in-class writing activities, lectures, and homework assignments. This English course is a prerequisite to all 200-level English courses and counts toward partial fulfillment of the General Education requirements at Alfaisal University.

**ENG 103      Foundations of English  
Communication**

**Cr Hr: 3 Prerequisites: ENG 101**

The objective of Foundations of English Communication is to provide targeted support for students by focusing on the fundamental skills necessary for effective written communication in an academic setting. This course aims to identify and address gaps in grammar, syntax, and essay writing techniques through personalized instruction and practical exercises. By emphasizing the development of clear writing practices, mastery of grammatical rules, and the structure of college-level essays,

students will gain the confidence and competence needed to succeed in future college courses. This English course counts toward partial fulfillment of the General Education requirements at Alfaisal University.

### **ENG 201      Business Communication**

#### **Cr Hr: 3 Prerequisites: ENG 101**

This course equips business students with the critical communication skills needed to thrive in today's globalized marketplace. Master the art of crafting clear, persuasive messages for diverse audiences, both in writing and orally. Through case studies, simulations, and real-world applications, you'll hone your ability to negotiate effectively, deliver impactful presentations, and navigate the nuances of intercultural communication. Empower yourself to become a confident and persuasive communicator in any business setting. This course serves as a prerequisite to all 300-level English courses, is a requirement for all students in the College of Engineering, and counts toward partial fulfillment of the General Education requirements at Alfaisal University. Business students may only enrol in this course if they have earned a grade of B or higher in ENG 101; otherwise they must first enrol in ENG 103.

### **ENG 202      Qualitative Research in Health Sciences**

#### **Cr Hr: 3 Prerequisites: ENG 101**

This course explores qualitative research methods within the context of health sciences. Through a combination of theoretical discussions (grounded theory, phenomenology, narrative inquiry, etc.), practical applications, and real-world experience collecting and analyzing data, students will develop an understanding of the unique contributions that qualitative data can make to the field of health research. Whether pursuing a career in academia, healthcare administration, public health, or clinical practice, students will be equipped with the tools needed to advance health sciences through qualitative inquiry. This English course counts toward partial fulfillment of the General Education requirements at Alfaisal University.

### **ENG 212      Introduction to Research**

#### **Cr Hr: 3 Prerequisites: ENG 101**

ENG 212 focuses on developing the student's abilities to develop, organize, and effectively support arguments by incorporating primary and secondary research. The course continues to strengthen the writing process and the oral and written rhetorical moves and grammatical elements relevant to research genres. Students will explore and analyze how language is used to achieve communicative goals common to academic writing in these papers, through in-class writing activities, lectures, discussions, digital fora, and homework assignments. This English course serves as a prerequisite to all 300-level English courses, and counts toward partial fulfillment of the General Education requirements at Alfaisal University.

### **ENG 222      Technical Writing**

#### **Cr Hr: 3 Prerequisites: ENG 101**

In 21st century professional settings, writers are expected to produce a wide range of texts using different media. Because every technical writing situation is unique, this course will help students adapt their communication for different audiences, purposes, and environments. Creating a shared critical vocabulary will allow students to make well-informed choices in the technical writing they produce in their own pathway studies. While this course emphasizes writing, it also helps students develop the reading, listening, and speaking skills necessary to communicate effectively in a variety of workplaces, and it balances a theoretical approach with practical and extra-curricular means of learning. This course serves as a prerequisite to all 300-level English courses, is a requirement for all students in the College of Engineering, and counts toward partial fulfillment of the General Education requirements at Alfaisal University.

### **ENG 223      Literature**

#### **Cr Hr: 3 Prerequisites: ENG 101**



ENG 223 invites students to embark on a journey through time and across the globe, all within the pages of short stories, reading words to travel the world. This course encourages a deep understanding of global narratives and the timeless nature of storytelling, allowing us to read and traverse continents and centuries from the comfort of our own reading nook. By immersing ourselves in stories, we will gain a greater appreciation for the interconnectedness of human experiences and the universal themes that bind us together across time and space, along with the incredible creativity and playful perspectives of writers. This English course counts toward partial fulfillment of the General Education requirements at Alfaisal University.

### **ENG 225                      Communication for Health Sciences**

**Cr Hr: 3 Prerequisite: ENG 101**

ENG 225 aims to develop fluency and confidence in using English in medical contexts. It also aims to increase EFL medical students' familiarity with medical written language and discourse in different medical contexts. Throughout the semester, students are also familiarized with the basics of medical terminology. The focus is on carrying out specialized activities in English, but attention is given to reading comprehension skills. This course is only for medical and pharmacy students, and it counts toward the English requirement for these colleges.

### **ENG 301                      Communication for Leaders**

**Cr Hr: 3 Prerequisites: a 200-level ENG course**

This course explores the connection between language and effective leadership. Students will explore how leaders can use language to inspire, persuade, and influence their employees and followers, as well as how language can shape the image of leadership. Through analysis of various communication strategies and case studies of successful leaders, students will develop an understanding of the importance of discourse in leadership. Topics covered include rhetoric, communication styles, negotiation strategies, cultural differences in communication, and the use of language in crisis management. The course includes both theoretical and practical components, with opportunities for students to apply concepts through role-plays and group activities. This English course

serves as a prerequisite to all 400-level English courses and counts toward partial fulfillment of the General Education requirements at Alfaisal University.

### **ENG 302                      Artificial Intelligence and Digital Media**

**Cr Hr: 3 Prerequisites: a 200-level ENG course**

New technologies are constantly making our communication tasks both easier and more complicated. Students will learn about a variety of digital media resources for communication. They will become familiar with AI-driven communication tools, including ChatGPT, social media algorithms, speech analysis, chatbots, and many other tools. Interactive class discussions as well as firsthand exploration of these tools will help students understand the incredible power as well as the challenges and limitations of using digital media and artificial intelligence for communication. This English course serves as a prerequisite to all 400-level English courses and counts toward partial fulfillment of the General Education requirements at Alfaisal University.

### **ENG 401                      Audience Analysis: Writing UX Research**

**Cr Hr: 3 Prerequisites: a 300 level ENG course**

Companies are increasingly using ethnographic methods as a cutting-edge way to collect information about user experience. This course introduces students to research methods they will need for success in business and industry. Students will develop tools necessary to collect, analyze, and interpret user data in a way that empowers companies to deliver better products and experiences to their target audiences. This English course counts toward partial fulfillment of the General Education requirements at Alfaisal University.

### **ENG 402                      Advanced Seminar in Communication**

**Cr Hr: 3 Prerequisites: a 300 level ENG course**

This seminar will be a rotating list of topics, but will place a strong emphasis on oral communication, including presentations, meetings, and interviews. Public speaking is an essential element of success in most jobs, yet it is often people's greatest fear. This

course focuses on reducing fear by helping students learn, step by step, how to prepare and deliver engaging and persuasive presentations in both small and large group settings. Students also learn how to integrate audiovisual components effectively for maximum audience impact. The course's primary focus will be the preparation and delivery of presentations. This English course counts toward partial fulfillment of the General Education requirements at Alfaisal University.

## DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

### Chair

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### General Department Information:

The Department of Humanities and Social Sciences is the backbone of the different university colleges. It offers both General Educational Requirements, including Arabic, Islamic studies, and a wide range of free elective courses in anthropology, philosophy, psychology, sociology, history and foreign languages. In addition, the Department contributes to humanities and social sciences research and supports the college and university mission in serving the community.

## Humanities and Social Sciences Course Descriptions

### ISL 101 Islamic Studies I

**Cr Hr: 2 Prerequisite: None**

Introduces Islamic culture and stresses its importance and contribution to humanity. It presents Sharia Law in terms of sources, underpinnings, and objectives. It also enhances students' faith in the viability of Sharia Law and its all-inclusiveness. The course counts as a social science component of the university General Education Requirements.

### ISL 103 The Noble Biography of the Prophet

**CR Hr: 3 Prerequisite: None**

This course offers a condensed yet comprehensive exploration of the life, teachings, and legacy of the Prophet Muhammad (peace be upon him). Students will examine key events from his early life in Mecca to his leadership in Medina, focusing on his character, values, and contributions to Islam. Through historical analysis and reflection, students will gain a deeper understanding of the Prophet's enduring influence and relevance in contemporary society, including his lineage, characteristics, and his mission during both the Meccan and Medinan periods. Additionally, the course delves into his establishment of the Islamic community and state in Medina, his conduct during times of peace and war, and some of his notable traits.

### ISL 112 Islamic Studies II

**Cr Hr: 2 Prerequisite: ISL 101**

Introduces the community and family systems in Islam, their underpinnings and reform mechanisms. It examines the problems these systems encounter and shatters misconceptions about them. It also presents the application of Sharia Law in pertinent contexts.

### ISL 113 Islamic Studies II

**Cr Hr: 2 Prerequisite: ISL 102**

Islamic Medical Jurisprudence introduces the importance of learning medicine in Islam and presents

the Islamic legislative rulings related to various medical issues. It also includes the principles of jurisprudence and their legislative objectives. It offers contemporary medical issues and Islamic legislative stances.

### ARB 101 Arabic Language I

**Cr Hr: 2 Prerequisite: None**

Concentrates on developing Arabic language skills in paragraph writing, orthography, punctuation, style, vocabulary, and conversation in Standard Arabic. It also enhances students' literary appreciation and provides morphological and syntactic insight into text analysis. This course counts as a humanities course in the university General Education Requirements.

### ARB 101 IN Arabic language I Intermediate Level

**Cr Hr: 2 Pre-requisites: None**

Offered to students who have studied 4-6 years of Arabic at school or students who have not studied Arabic after the sixth grade. It focuses on dictation rules, basic grammar, literary appreciation, lexicon search, and paragraph writing.

**ARB 101NN Arabic language I for Non-natives**

**Cr Hr: 2 Pre-requisites: None**

Offered to students whose native language is not Arabic or students who have studied three years or less of Arabic at school. The course introduces the fundamental elements of the Arabic language within a cultural context. Emphasis is placed on the development of the basic language skills, vis., listening, speaking, reading, and writing, in addition to grammar and contextual vocabulary.

**ARB 112 Arabic Language II**

**Cr Hr: 2 Prerequisite: ARB 101**

Focuses on developing students' Arabic language skills to higher proficiency levels in various domains, including essay writing and conversation in Standard Arabic. The course also introduces the different literary schools and their characteristics. It counts as a humanities course in the university General Education Requirements.

**ARB 112 IN Arabic language II Intermediate Level**

**Cr Hr: 2 Pre-requisites: ARB 101 IN**

As a continuation of ARB 101 IN, ARB 112 IN focuses on Arabic syntax, semantics, report and essay writing, and literary appreciation and evaluation.

**ARB 112NN Arabic language II for Non-natives**

**Cr Hr: 2 Pre-requisites: ARB 101 NN**

Continues and builds upon the fundamental elements of Arabic within a cultural context. Continued emphasis on the development of basic language skills, vis., listening, speaking, reading and writing in addition to grammar and contextual vocabulary.

**ANT 101 Introduction to Sociocultural Anthropology**

**Cr Hr: 3 Prerequisite: None**

The course explores anthropology and its four major sub-branches. It focuses on the significance of sociocultural anthropology for appreciating the diversity of contemporary and past human cultures and creating an awareness of ethnographic research methods and diverse anthropological perspectives. It enhances students' understanding of the similarities and differences among human cultures and their appreciation of cultural constructions of realities.

**ANT 102 Entrepreneurial Multiculturalism**

**Cr Hr: 3 Prerequisite: None**

Presents interdisciplinary knowledge on how business cultures evolve in various societies around the world. It also explores why some individuals/social groups are more successful in entrepreneurship than others within the same societies and cross-culturally.

**ANT 103 Saudi Culture and Traditions**

**Cr Hr: 3 Prerequisite: None**

This course provides an in-depth exploration of the rich cultural heritage and traditions of Saudi Arabia. Through a multidisciplinary approach, students will delve into various aspects of Saudi culture, including history, religion, language, arts, cuisine, social customs, and values. Emphasis will be placed on understanding the diverse cultural fabric of Saudi society, including its regional variations, Islamic, and other historical legacies. By the end of the course, students will gain a comprehensive understanding of Saudi culture, fostering cultural competence and appreciation for the nuances of this vibrant society. This course aims to cultivate respect, understanding, and cross-cultural communication skills necessary for engaging with Saudi culture in diverse personal, professional, and global contexts.

**FRE 101 French I**

**Cr Hr: 3 Prerequisite: None**

It introduces the fundamental elements of the French language within a cultural context. Emphasis is placed on the development of the basic language skills, vis. listening, speaking, reading, and writing, in addition to grammar and vocabulary skills.

**FRE 112 French II**

**Cr Hr: 3 Prerequisite: FRE 101**

It builds upon the fundamental elements of the French language within a cultural context. Continued emphasis is placed on the development of basic language skills, vis. listening, speaking, reading and writing in addition to grammar and vocabulary skills.

### **GER 101 German I**

**Cr Hr: 3 Prerequisite: None**

It introduces the fundamental elements of the German language within a cultural context. Emphasis is placed on the development of the basic language skills, vis. listening, speaking, reading, and writing, in addition to grammar and vocabulary skills.

### **GER103 German I for CoM Students**

**Cr Hr: 3 Prerequisite: None**

The course introduces the fundamental elements of the German language within a medical context. Emphasis is placed on the development of the basic language skills such as listening, speaking, reading, and writing, in addition to grammar and vocabulary skills that aim to prepare for basic communication in a working environment at German clinics and hospitals.

### **GER 112 German II**

**Cr Hr: 3 Prerequisite: GER 101**

It builds upon the fundamental elements of the German language within a cultural context. Continued emphasis is placed on the development of basic language skills, vis. listening, speaking, reading and writing in addition to grammar and vocabulary skills.

### **GER 113 – German II for CoM Students**

**Cr Hr: 3 Prerequisite: GER 103**

The course builds upon the fundamental elements of the German language within a medical context. Continued emphasis is placed on the development of basic language skills such as listening, speaking, reading, and writing, in addition to grammar and vocabulary skills that aim to prepare for basic communication in a working environment at German clinics and hospitals

### **HIS 101 Islamic Civilization and Mediaeval Europe**

**Cr Hr: 3 Prerequisite: None**

The course introduces the foundations of Islamic civilization, its development and prosperity, places of contact between Europeans and Muslims, and means of influence, such as direct contact and the translation of Islamic books in science, medicine, philosophy, literature and the arts.

### **PSY 101 Introduction to Psychology**

**Cr Hr: 3 Prerequisite: None**

The course introduces psychology and its key concepts, theories, research methods, and contributions to the understanding of human behavior. Topics include the nervous system, perception, motivation, learning and memory, social behavior, personality, developmental, and clinical psychology. The course also introduces past and current theories and contributions of eminent psychologists.

### **SOC 101 Introduction to Sociology**

**Cr Hr: 3 Prerequisite: None**

Introduces the basic concepts in the field, research methods, and theories. It addresses the interrelations among human societies, individuals, groups and organizations. Topics include social interaction, social institutions, social stratification, community, and social change strategies. This course elaborates on the social structure of Saudi Arabian society, its social institutions and stages of social transformation.

## **DEPARTMENT OF LIFE SCIENCE**

### **Chair**

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### **General Department Information:**

The mission of the Department of Life Sciences is to promote understanding of the function of molecules, cells, tissues and organs with a concentration on hereditary factors and genetic mechanisms controlling fundamental biological processes, particularly in relation to the human body; and to contribute to the

training of the next generation of research scientists, biotechnological entrepreneurs, educators, biomedical and allied health professionals.

The Department of Life Sciences envisions becoming a recognized national and international center of academic excellence by providing of high quality education in a broad spectrum of modern interdisciplinary life sciences to produce competent biomedical and biotech professionals responsive to the needs of the society.

## **Life Sciences Course Descriptions**

### **BIO 101                      General Biology I**

**Cr Hr: 3 +1 Lab        Prerequisite: None**

The course covers major fields and fundamental principles of modern biology and provides a foundation for more in-depth and specialized studies during the following years. The course concentrates on the core concepts of modern biology and provides knowledge about the role of various biological macromolecules in cell physiology; how different types of cells are integrated into multicellular systems; molecular and chromosomal mechanism of heredity.

### **BIO 103                      Introduction to Human Biology**

**Cr Hr: 3                Prerequisite: None**

The course concentrates on the basic aspects of human biology and provides knowledge about the role of various biological macromolecules in the human body, how different types of cells are integrated into multicellular systems, and how organs and organisms develop and function. The course satisfies the General Education Requirements in Science.

### **BIO 112                      General Biology II**

**Cr Hr: 3 +1 Lab        Prerequisite: BIO 101**

This is the second module of the general biology introductory course designed for the Life Science Major curriculum. It concentrates on the fundamental aspects of animal physiology with an emphasis on the human body. The course is focused on the evolution, development, structure, function, health and disease of major physiological systems and regulatory mechanisms coordinating their function in the human organism.

### **BIO 223                      Microbiology**

**Cr Hr: 3 +1 Lab        Prerequisite: BIO 112, CHM112**

The course provides a basic understanding of modern medical microbiology with emphasis on the contribution microorganisms make to human health and welfare and intensive study of the processes by which microorganisms cause human disease, how the pathogens can be recognized (identified) and what steps can be taken for the prevention and treatment of infections. The emphasis will be placed on the development of observational, practical and analytical skills through supervised laboratory work and demonstrations.

### **BIO 224                      Human Physiology and Anatomy**

**Cr Hr: 3 +1 Lab        Prerequisite: BIO 112**

The course covers human anatomy and physiology from a systems-based perspective, stressing the ways in which different physiological systems interact. Emphasis is on understanding the integration of human anatomy through biological function, development, evolutionary history and genetics. Several clinical examples are given to illustrate how human variation, including congenital defects, emerges from the interaction of development, form, and function.

### **BIO 345                      Molecular Biology I**

**Cr Hr: 3 +1 Lab        Prerequisite: BIO223**

As the first module of the Molecular Biology course, BIO 345 concentrates on molecular mechanisms of genetic processes. This module explains how the flow of biological information from DNA to RNA to protein gives rise to the recognizable, inherited attributes of living organisms. It uses seminal experiments to introduce the students to basic classical and molecular genetics, and then expands on these themes to include genetic engineering and genomic approaches to these phenomena.

### **BIO 357                      Molecular Biology II**

**Cr Hr: 3 +1 Lab        Prerequisite: BIO 345**

As the second module of the Molecular Biology course, BIO 357 concentrates on molecular mechanisms of cellular physiology and interactions. This module provides detailed knowledge of the structural organization and differentiation of eukaryotic cells as

well as key processes in development that are based on cell-cell communication and cell movement. It introduces fundamental properties of the cytoplasm and the roles of the cytoskeleton in fundamental biological processes, including chromosome separation, cell motility and intracellular transport processes, as well as the evolution, function and biogenesis of cell organelles.

**BIO 346                      Biochemistry I**

**Cr Hr: 3 +1 Lab              Prerequisite: BIO 224, CHM 212, PHU 216, STA 211**

The two-module Biochemistry course concentrates on the chemical properties of biological macromolecules with particular attention to the relationship between structure and biological function. The first module specifically covers amino acids, the fundamentals of protein structure, the basics of enzyme catalysis and kinetics, lipids, and membrane structures, transport proteins, the physicochemical basis of signal transduction, vitamins and their functional role in the body.

**BIO 358                      Biochemistry II**

**Cr Hr: 3 +1 Lab              Prerequisite: BIO 346**

The second module of the Biochemistry course concentrates on the complexity of metabolic pathways and their regulation. It reviews the inter-linked metabolic processes involved in nutrient handling and homeostasis.

**BIO 325                      Conservation Biology**

**Cr Hr: 3                      Prerequisite: BIO 223**

This course is general in nature that provides a general introduction to conservation biology. Conservation Biology is the scientific study of the phenomena that affect the maintenance, loss, and restoration of biological diversity. Topics covered include: 1) the impacts of global warming, species invasions, and habitat destruction on biodiversity, 2) strategies developed to combat these threats, and 3) a consideration of key economic and ethical tradeoffs. Special attention will be paid to current debate and controversy within this rapidly emerging field of study.

**ENV 305                      Environmental Health**

**Cr Hr: 3                      Prerequisite: BIO 223**

The course examines the physical, biological and chemical factors affecting human health. The course also explores approaches to control the major environmental health problems in industrialized and developing countries. A range of topics are covered including how the body reacts to environmental pollutants; physical, chemical, and biological agents of environmental contamination; vectors for dissemination (air, water, soil); solid and hazardous waste; susceptible populations; the scientific basis for policy decisions; and emerging global environmental health problems.

**SCI 321                      Immunology**

**Cr Hr: 3                      Prerequisite: BIO 224**

SCI 321 aims to provide students with an understanding of immunology and the immunological basis of some common and well-known diseases. The course will balance basic knowledge of the underlying complexity of the immune system, such as T and B cell receptor genes, the MHC and antigen presentation, with the application of immunological aspects to infectious diseases, cancer, inflammation and autoimmunity.

**SCI 322                      Cancer Biology**

**Cr Hr: 3                      Prerequisite: BIO 224**

This course will introduce the core aspects of cancer biology. Emphasis will be placed on molecular mechanisms of cancer pathophysiology - such as signal transduction, DNA damage and repair and regulation of cell division, death and senescence as well as on system biology, microevolution of tumors, interaction between tumor and organism. Existing and novel strategies of cancer prevention, diagnosis and treatment will be discussed.

**SCI 323                      Signal Transduction**

**Cr Hr: 3                      Prerequisite: BIO 224**

The concept of "signal transduction pathway" is one of the major advancement in our understanding of how living cell – a unit of life – is functioning: how it adapts to changing environment and communicates with neighbours in multicellular organisms. The perspective of "signal transduction" is essential to understand complex biological processes and diseases ranging

from memory formation to diabetes and cancer. The course makes sense of the dizzying array of pathways used by the cell to communicate.

**BIO 405 Human Genetics**

**Cr Hr: 3 Prerequisite: BIO345**

BIO 405 will cover: 1) the genetic and molecular basis of heredity and inherited traits, 2) how genetics and genomics help to understand the human condition, including genetic diseases, cancer, and human evolution, 3) how basic and translational genetics research is leading to improvements to human health, and 4) current ethical discussions related to human genetics.

**SCI 325 Bioinformatics and Computational Genomics**

**Cr Hr: 3 Prerequisite: BIO112, STA211**

The course is a combination of lectures and instructor-guided practical sessions. SCI325 will cover: 1) the theoretical basis of various comparative analyses of DNA and protein sequences, 2) how bioinformatics, genetics and genomics help to understand the population and evolutionary processes, 3) how computational genomic analyses generate testable hypotheses, and 4) a role of bioinformatics in conservation biology, current human genetics and medicine.

**LST 421 Life Science Special Topics I**

**Cr Hr: 3 Prerequisite: BIO 346**

LST courses introduces special topics relevant to Biomedical Science. The course subjects can be modified according to faculty availability, students' preferences and pathways.

**LST 421 Epigenetics**

The course will first review recent progress in understanding fundamental epigenetic mechanisms and events controlling normal human development and physiology, such as growth, metabolism and ageing processes together with environmental factors affecting the human epigenome. This will follow with reviews of the recent discovering of epigenetic etiology of some most significant human disorders.

**BIO 440 Biotechnology**

**Cr Hr: 3 Prerequisite: BIO 223, ENV 205**

The aim of this course is to provide a basic understanding of modern biotechnology and its applications. This course is focused on the molecular and genetic tools used to analyze and modify organisms to produce desired small molecules and proteins; discuss established and cutting-edge manipulation techniques in the field of synthetic biology. We will also cover the production of biofuels, bioplastics, amino acids, food additives, various bulk chemicals, and biopharmaceuticals.

**LSR 302 Research Methodology**

**Cr Hr: 3 Prerequisite: ENG112**

The course aims to provide students with the basic concepts of research, types of research and the research method. The ultimate aim of this course is to equip students with skills on how to formulate a research hypothesis, review literature, design research projects, acquire & analyze data and report the research findings. The students will also be introduced to research writing and ethical issues associated with research.

**LSR 421~422 Life Science Research Project I&II**

**Cr Hr: 6 Prerequisite: LSR 302**

The courses represent a two-semester-term individually guided investigation project involving laboratory work and/or computational investigation in some aspect of Biomedical Science. The background, results and conclusions of the study to be reported in the form of an oral presentation and progress report by the end of Fall semester, and a thesis and final defense at the end of the course.

**LSR 423 Integrative Life Science Research Seminar**

**Cr Hr: 3 Prerequisite: LSR 421**

LSR423 course is designed to train students to summarize results obtained during student research project courses, built up scientific hypotheses and discuss their merits in group seminars with an assessment of the subsequent self-directed learning in oral presentations, coursework or undergraduate thesis writing and defence. This course develops transferable skills associated with analysis and

presentation of laboratory-based experimental research in Life Sciences in the form of poster and podium presentation.

### **SCI 326     Virology**

**Cr Hr: 3     Prerequisite: BIO 223**

The course focuses on the principles of virus structure, replication and genetics. It will help the students appreciate the relevance of virology in the modern world, including the fields of vaccines, anti-viral drugs and cancer. Other acellular biological particles like prions are also discussed. The course reflects many recent developments in virology and offers deeper insights into the subject. Newly-discovered and emerging viruses are discussed.

## **DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCES**

**Chair**

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### **General Department Information:**

Mathematics are critical to understanding scientific and engineering concepts. Nature laws are described in a mathematical language, and engineering concepts are modeled and achieved through mathematical tools. The Department of Mathematics & Computer Science is endeavoring to become a world-class leader in mathematics and computer science by designing advanced programs and a vibrant environment for developing graduates with the solid academic and technical backgrounds. To achieve this challenging objective, the department is offering world-class education for our students and maintain high quality research programs. The department offers a wide selection of courses that allow students to acquire a solid base in mathematics and computer science. Our teaching is aimed at developing the students' analytical skills and critical thinking capacities, and to give the students the opportunity to discover the intellectual depth of mathematics & computer science, and their relations to other disciplines.

Mathematics and computer science play an ever-increasing role in many emerging fields of study, most

notably in Engineering, Life Science and Physical Sciences. As the Kingdom moves towards knowledge-based industries, applied mathematics and computer science are considered strategic fields of national importance. As a support for the emergence and the rapid growth of the cited fields, the department offers a wide range of courses for Engineering, Life science, Medicine and Business programs.

## **Mathematics & Computer Science Course Descriptions**

### **CSC 101     Introduction to Computer Science**

**Cr Hr: 3     Prerequisite: None**

This course provides an introduction to a disciplined approach to computer programming and problem solving, utilizing a block-structured high-level language, with an emphasis on procedural abstraction and good programming style. Students will apply programming skills in solving a variety of problems. Algorithmic concepts are also introduced. This course also provides a survey study of data structures and data abstraction, and an introduction to complexity considerations and program verification.

### **MAT 100     Pre-calculus**

**Cr Hr: 3     Prerequisite: None**

This course builds sound and strong basic mathematics that are required for studying undergraduate mathematics. This course is particularly important to students whose mathematical skills are not sufficiently developed at the high school level. The course covers materials that include algebraic operations, radical and rational expression, equalities and in-equalities, functions and analytic geometry, special types of functions (linear, quadratic, inverse, polynomial, rational, exponential, logarithmic and trigonometric), solution to equations, and identities involving some types of functions.

### **MAT 101     Calculus I**

**Cr Hr: 3     Prerequisite: None**

This course introduces the basic concepts of mathematical analysis used in science and engineering. The course teaches an introduction to differential and integral calculus. Topics include limits; the derivative; rates; Newton's method; the mean-



value theorem; max-min problems; the integral and the fundamental theorem of integral calculus; areas, volumes, and average values.

**MAT 105      Calculus for Biomedical Sciences I**

**Cr Hr: 3      Prerequisite: None**

This course offers a solid introduction to differential and integral calculus and is designed for students in the biomedical sciences. The course begins with an intensive review of important topics from pre-calculus and an introduction to discrete time and population models. Then it proceeds to cover limits, continuity, differentiation, derivative rules, curve sketching, optimization, difference equations, anti-derivatives, Riemann sums, definite integral, fundamental theorem of calculus, applications of integration.

**MAT 111      Business Calculus**

**Cr Hr: 3      Prerequisite: MAT 100**

The main objective of this course is to help the student in understanding the basic concepts of calculus on the one hand, and to develop the skills needed for using calculus as a viable tool to solve problems that arise in the study of business and economics. Topic covered include, limits, types of functions (polynomial, rational, exponential and logarithmic), their derivatives, anti-derivatives and their various applications.

**MAT 112      Calculus II**

**Cr Hr: 3      Prerequisite: MAT 101**

This course is a continuation to Calculus I. The course covers basic mathematical analysis and mathematical tools that are widely used and are essential for mathematical analysis and applications. Topics include sequences; infinite series; power series; conics; polar, cylindrical, and spherical coordinates; vectors and the geometry of space; and vector valued functions.

**MAT 116      Calculus for Biomedical Science II**

**Cr Hr: 3      Prerequisite: MAT 105**

This course is a continuation of MAT 105. The course covers further integration techniques, such as integration by parts, by substitution and by partial fractions. Other topics include improper integrals, sequences and series, convergence tests, power and

Taylor series, solving differential equations, limits and continuity of functions of two variables, partial derivatives, the double integral.

**MAT 211      Calculus III**

**Cr Hr: 3      Prerequisite: MAT 112**

This course deals with multi-dimensional calculus. It is designed primarily for engineering majors and is taken by other technical majors. The student will develop an understanding of limits and continuity of functions of several variables; compute partial derivatives and apply to optimization problems; set up and compute iterated integrals to compute areas, volumes of solids; understand and apply Green's Theorem, the Divergence Theorem and Stoke's Theorem.

**MAT 212      Linear Algebra**

**Cr Hr: 3      Prerequisite: MAT 112**

The course teaches an introduction to linear algebra. Topics include complex numbers, geometric vectors in two and three dimensions and their linear transformations, the algebra of matrices, determinants, and solutions of systems of equations, vector space, eigenvalues and eigenvectors.

**MAT 213      Differential Equations**

**Cr Hr: 3      Prerequisite: MAT 112**

This course is an introduction to the theory and application of ordinary differential equations and the Laplace transform. The main objective is for the student to develop competency in the basic concepts and master certain solution methods. Topics covered include linear and nonlinear first order equations; higher order linear differential equations; undetermined coefficients method; variation of parameters method; Cauchy-Euler equation; Laplace transform; linear systems solution; solution by series method.

**MAT 224      Numerical Methods**

**Cr Hr: 3      Prerequisite: MAT 212, MAT 213**

This course introduces the basic concepts of numerical analysis that are employed in science and engineering. It includes a solid introduction to the basic methods and approximation techniques in use, and to the reliability and accuracy of the approximations.

Applications of the methods to simplified/model problems that represent real-life problems are also included. Programming skills (based on MATLAB/OCTAVE) needed to implement the methods on a computer are also covered.

**STA 211 Probability and Statistics**

**Cr Hr: 3 Prerequisite: MAT 116**

STA 211 introduces the basics of probability and statistics as used in sciences. It covers introduction to probability, random variables, some common probability distributions, random vectors, sample statistics, regression, and applications in experimental sciences.

**STA 212 Probability and Statistics for Engineers**

**Cr Hr: 3 Prerequisite: MAT 112**

The course is designed to teach students the basics of probability and statistics as used in engineering and the sciences. The course covers introduction to probability theory, random variables, statistics, and regression.

**MAT113 Real Analysis**

**Cr Hr: 3 Prerequisite: None**

This course is an Introduction to Real Analysis. Topics include real number system, concepts of set, intervals, rational and irrational numbers; sequences and series, criteria of convergence, divergence; limit, continuity and differentiation; the Riemann integral; sequences and series of functions, point-wise convergence, and uniform convergence; elementary metric space theory including compactness, connectedness and completeness.

## DEPARTMENT OF PHYSICS

Chair

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**General Department Information:**

As a part of the College of Science and General Studies (COSGS) at Alfaisal University, the Department of Physics seeks to become a nationally and internationally recognized model in training of the next generation of Highly Qualified Personnel (HQP) in strategic sectors of a high relevance to the Kingdom of Saudi Arabia and worldwide, such as Energy (Alternative Energies), Nanotechnology and Health. This can be achieved by offering world-class education and training of students in Applied Physics. Capitalizing on high-caliber faculty, this objective will be strongly supported by cutting-edge research activities exploiting the exceptional local infrastructure. The ultimate goal is to serve the Kingdom of Saudi Arabia through contributing to the development of knowledge-based economy.

Physics is also valuable in different areas of biology, engineering, business and medicine. As such, the Physics Department of Alfaisal University is currently offering physics courses for life sciences, engineering, business and preparatory year medicine-pathway students.

## Physics Course Descriptions

**PHU 101 Astronomy**

**Cr Hr: 3 Prerequisite: None**

This elective course is designed for College of Business students to fulfil part of their science requirements. The material of the course is presented in a survey manner using only pre-calculus mathematics. The covered material includes spectroscopy, telescopes, the solar system and its formation theories, the life cycle of stars, galaxies and the general structure of the universe, and an introduction to cosmology.

**PHU 102 Science of Energy and the Environment**

**Cr Hr: 3 Prerequisite: None**

This elective course is designed for College of Business students to fulfil part of their science requirements. The material of the course is presented in an interactive manner with the students with minimum use of mathematics. The course material covers topics ranging from basic energy concepts to fossil fuels, including oil and gas, renewable and nuclear energy

sources and usage. The course also covers the environmental issues as they pertain to the Kingdom of Saudi Arabia, the Gulf region and globally.

**PHU 103 Mechanics and Waves for Engineers**

**Cr Hr: 3 Co-requisite: MAT 101 (if not completed previously)**

The material of this course requires knowledge of differential and integral calculus. The covered material is based on Newtonian Mechanics and includes the study of 1-, 2- and 3- Dimensional translational Motion and Rotation Motion kinematics and Dynamics, energy, power, momentum, impulse, Gravitation, periodic motion and mechanical waves.

**PHU 103 L Mechanics and Waves for Engineers Labs**

**Cr Hr: 1 Co-requisite: PHU 103 (if not completed previously)**

This material constitutes the laboratory related to the course PHU 103.

**PHU 124 Electromagnetism and Waves for Engineers**

**Cr Hr: 3 Prerequisite: PHU 103 & MAT 101**

The material of this course requires knowledge of differential and integral calculus. The covered material includes the basics of electricity and magnetism, electromagnetic radiation, and optics.

**PHU 124 L Electromagnetism and Waves for Engineers Labs**

**Cr Hr: 1 Co-requisite: PHU 124 (if not completed previously)**

This material constitutes the laboratory related to the course PHU 124.

**PHU 205 Mechanics for Life Sciences**

**Cr Hr: 3 Prerequisite: None**

This course is the first of a two-semester sequence that introduces the basic concepts of algebra-based physics. It deals in essence with classical mechanics. The topics covered include particle kinematics and

dynamics; conservation of energy and linear momentum; rotational kinematics and angular momentum; simple harmonic motion and fluids.

**PHU 205 L Mechanics for Life Sciences**

**Cr Hr: 1 Co-requisite: PHU 205 (if not completed previously)**

This constitutes the laboratory related to the course PHU 205.

**PHU 216 Electromagnetism and Optics for Life Sciences**

**Cr Hr: 3 Prerequisite: PHU 205**

The material of the course is Algebra based. The covered material includes the basics of electricity and magnetism, electromagnetic radiation, and optics.

**PHU 216 L Electromagnetism and Optics for Life Sciences Labs**

**Cr Hr: 1 Co-requisite: PHU 216 (if not completed previously)**

This material constitutes the laboratory related to the course PHU 216.

## Alfaisal University Preparatory Program General Information

**Program Director**, Dr. Amjad Kayed Fataftah,  
Assistant Professor of Chemistry

**Website:** <https://cos.alfaisal.edu/en/upp>

### College of Science and General Studies/ University Preparatory Program (UPP)

Alfaisal University, P.O. Box 50927, Takhasusi Road  
Riyadh-Kingdom of Saudi Arabia

**Tel:** + 966 11 2158901

**Email:** [cos@alfaisal.edu](mailto:cos@alfaisal.edu)

### Welcome Message:

Welcome to the Alfaisal University Preparatory Program (AUPP). The AUPP is the launch of your academic journey and your bridge to your future major here at Alfaisal University. Our academic program is rigorous and challenging and your success

in the program will require your best effort.

The AUPP is a center of excellence for both English and science instruction. As teachers and mentors, our experienced instructors are here to facilitate your learning as well as your transition to the college of your choice. They will challenge you and demand your best effort; you are advised to take advantage of their expertise and wisdom.

The AUPP will impart upon you lessons for life as well as the skills that you will need to succeed in your chosen career. We are confident that your experience here will be memorable and rewarding. Please know that your positive input and shared experiences are always appreciated and valued.

We invite you to visit our website for information on the course offerings, faculty, and academic resources as well as guidance on AUPP policies and procedures.

## UPP Faculty Members

<b>Abdulrahman Solima</b>	Assistant Professor, University Preparatory Program, College of Science & General Studies Ph.D., Virginia Commonwealth University, USA
<b>Amber Ragland</b>	Instructor, University Preparatory Program, College of Science & General Studies M.Ed., The University of Memphis, USA
<b>Amjad Fataftah</b>	Assistant Professor, University Preparatory Program, College of Science & General Studies Ph.D., Northeastern University, USA
<b>Amy Jones</b>	Instructor, University Preparatory Program, College of Science & General Studies M.A., Colorado State University, USA
<b>Danny Salgado</b>	Instructor, University Preparatory Program, College of Science & General Studies M.A., Murray State University, USA
<b>Dominic Castello</b>	Instructor, University Preparatory Program, College of Science & General Studies M.A., University of Birmingham, UK
<b>Elizabeth Marnell</b>	Instructor, University Preparatory Program, College of Science & General Studies M.A., Wright State University, USA
<b>Farid Amalou</b>	Assistant Professor, University Preparatory Program, College of Science & General Studies Ph.D., École Polytechnique Fédérale de Lausanne, Switzerland
<b>John Fulghum</b>	Instructor, University Preparatory Program, College of Science & General Studies, M.A., The University of Memphis, USA
<b>Justin Abel</b>	Instructor, University Preparatory Program, College of Science & General Studies M.Ed., Eastern Washington University, USA
<b>Lyndsey DeBoard</b>	Instructor, University Preparatory Program, College of Science & General Studies M.A., Tennessee Technological University, USA M.Sc., Bangalore University, India

<b>Mateen Khan</b>	Associate Professor, University Preparatory Program, College of Science & General Studies Ph.D., Aligarh Muslim University, India
<b>Michelle Vyncke</b>	Instructor, University Preparatory Program, College of Science & General Studies M.A., Kings College, UK
<b>Mohamed Kariapper</b>	Assistant Professor, University Preparatory Program, College of Science & General Studies Ph.D., University of Warwick, UK
<b>Roman Delgado</b>	Instructor, University Preparatory Program, College of Science & General Studies M.A., Columbia University, USA
<b>Saabia Qazi</b>	Instructor, University Preparatory Program, College of Science & General Studies, M.Sc. Bangalore University, India.
<b>Salem Abaalhareth</b>	Instructor, University Preparatory Program, College of Science & General Studies M.Sc., California State University-East Bay, USA
<b>Shauna Alkhatib</b>	Instructor, University Preparatory Program, College of Science & General Studies M.S., Hamilton College & American Intercontinental University, Los Angeles, USA
<b>Siddiq Abdullah</b>	Lecturer, University Preparatory Program, College of Science & General Studies M.Sc., North Carolina Agricultural and Technical State University, USA
<b>Steven Gomez</b>	Instructor, University Preparatory Program, College of Science & General Studies M.A., California State University, USA
<b>Tezra Jackson</b>	Instructor, University Preparatory Program, College of Science & General Studies M.A., Pepperdine University, USA
<b>Zain Musa</b>	Instructor, University Preparatory Program, College of Science & General Studies B. Sc., University of Khartoum, Sudan

## AUPP Curriculum and Exit Criteria

- Instructors will follow a unified syllabus and major assessment schedule for each course.
- Students registered for the same course, i.e., English, science, math, business, or engineering, but enrolled in different sections of the same course, will use the same textbooks, have the same syllabus, and take the same unified exams.
- The minimum passing grade for any AUPP English language course is C for all pathways. Any student earning a C- or below in an AUPP English language course must repeat the course. Under certain circumstances, a student may advance to the subsequent level based on the recommendation of the AUPP English department chair.
- To successfully exit the program and to enter Alfaisal University, students must score a

minimum TOEFL ITP of 500+ (TOEFL iBT = 60+ or IELTS = 6.0+) for the following pathways: business, engineering, and science.

- Upon successful completion of PENG08, and to successfully exit the program and to enter Alfaisal University, students must score a minimum TOEFL ITP of 500+ (TOEFL iBT = 60+ or IELTS = 6.0+) for the following pathways: medicine and pharmacy; otherwise, to successfully exit the program and to enter Alfaisal University, students must score a minimum TOEFL ITP 550+ (TOEFL iBT = 79+ or IELTS = 6.5+).
- UPP students are not allowed to take any college level courses.
- All students who are repeating the UPP must repeat all the courses with no exception including the ones that they passed. For repeated passed courses, UPP administration and SA will consider the highest grade.

**The following pages contain detailed pathway-specific curriculum requirements for each of the AUPP pathway programs: medicine, pharmacy, science, engineering, and business.**

- [Medicine Pathway](#)
- [Pharmacy Pathway](#)
- [Science Pathway](#)
- [Engineering Pathway](#)
- [Business Pathway](#)

## Spring Direct Admission Criteria for Current UPP Business or Engineering Students

Current UPP business or engineering students must meet the following requirements in order to be eligible for spring direct admissions.

### College of Engineering:

Requirement Type	Description
English Level	Students must score TOEFL ITP 500+ (or TOEFL iBT = 60+, IELTS = 6.0+, OOPT = C1), Complete English Level 7 with a minimum grade of B+
Required Grades	No course grade of "F"
Cumulative GPA	Students must pass all the required courses with a minimum Cumulative GPA 3.5/4.0
<b>If the students were exempted from UPP-English:</b>	

Requirement Type	Description
English Level	Exempted from English
Required Grades	No course grade of "F"
Cumulative GPA	Students must pass all UPP and Direct courses with a minimum Cumulative GPA 3.5/4.0

### College of Business:

Requirement Type	Description
English Level	English Level Students must score TOEFL ITP 500+ (or TOEFL iBT = 60+, IELTS = 6.0+, OOPT = C1) or Complete English Level 7 with a minimum grade of B+.
Required Grades	No course grade of "F"
Cumulative GPA	Students must pass all the required courses with a minimum Cumulative GPA 3.00/4.0
<b>If the students were exempted from UPP-English:</b>	
English Level	Exempted from English
Required Grades	No course grade of "F"
Cumulative GPA	Students must pass all UPP and Direct courses with a minimum Cumulative GPA 3.0/4.0
<b>NOTE:</b> Oxford Online Placement Test (OOPT) cannot be used for AUPP English exemption.	

## Bachelor

### Bachelor of Science in Life Sciences

#### Program

[College of Science and General Studies](#)

Bachelor

### Bachelor of Science (B.Sc.) in Life Sciences

The Bachelor of Science in Life Sciences offers two tracks for students to choose from: Biological Sciences & Nanotechnology, and Environmental Sciences & Sustainability. The first two years are common for all tracks, and in the 3rd year students start taking courses that are specific for the track of their choice. Student also have access to a variety of advanced electives courses to choose from including cancer biology, forensic science, medicinal chemistry, bioinformatics, and special topics. The Life Sciences Program requires a total of 134 credit hours for completing the program. This includes general education requirement & elective courses (23 credits), college requirement courses (25 credits), program requirement courses (53 credits), track requirement

courses (18 credits), program electives (15 credits), and summer internship (0 credits). Student who meets requirement conditions may take one or more graduate courses to fulfill program graduation requirements (maximum of nine credit-hours).

## General Education Requirements

Item #	Title	Credits
ARB 101	Arabic Language I	2
ARB 112	Arabic Language II	2
ENG 101	Freshman English 1	3
ENG 112	Freshman English II	3
ISL 101	Islamic Studies I	2
ISL 112	Islamic Studies II	2

## Free Electives

- Any courses offered at Alfaisal
- Transferred courses offered by other institutions (pre-approvals by CoS and SA are required)

## Humanities & Social Science Electives

**1 course, 3 Credit Hours**

Item #	Title	Credits
ANT 101	Introduction to Sociocultural Anthropology	3
HIS 101	Islamic Civilization and Mediaeval Europe	3
PSY 101	Introduction to Psychology	3
SOC 101	Introduction to Sociology	3

\*Any other Humanity & Social Sciences courses (FRE 101, GER 101, SPN 101, etc.)

## Science Core Courses

Item #	Title	Credits
BIO 101	General Biology I	4
BIO 112	General Biology II	4
CHM 101	General Chemistry I	4
CHM 112	General Chemistry II	4
CSC 101	Introduction to Computer Science	3
MAT 105	Calculus for Biomedical Sciences I	3
MAT 116	Calculus for Biomedical Science II	3

## Life Science Core Courses

Item #	Title	Credits
BIO 223	Microbiology	4
BIO 224	Human Physiology and Anatomy	4
BIO 346	Biochemistry I	4
BIO 440	Biotechnology	3
CHM 211	Organic Chemistry I	4
CHM 212	Organic Chemistry II	4
CHM 310	Introduction to Instrumental Analysis	4
ENV 205	Environmental Science & Sustainability	3
LSR 302	Research Methodology	3
LSR 390	Life Science Summer Internship	0
LSR 421	Life Science Research Project I	3
LSR 422	Life Science Research Project II	3
LSR 423	Integrative Life Science Research Seminar	3
PHU 205	Mechanics for Life Sciences	4
PHU 216	Electromagnetism and Optics for Life Sciences	4
STA 211	Probability and Statistics	3

## Biological Sciences & Nanotechnology (BSN) Track

Item #	Title	Credits
BIO 345	Molecular Biology I	4
BIO 357	Molecular Biology II	4
BIO 358	Biochemistry II	4
BIO 405	Human Genetics	3
BSN 430	Nanomaterials & Nanotechnology	3

## Environmental Sciences & Sustainability (ESS) Track

Item #	Title	Credits
BIO 325	Conservation Biology	3
ENV 305	Environmental Health	3
ENV 330	Energy & Sustainability	3
ENV 410	Environmental Monitoring	3
ENV 420	Waste Management	3
ENV 425	Environmental Policy & Economics	3

## Program Electives

**5 Courses, 15 Credit Hours**

Item #	Title	Credits
CHM 213	Analytical Chemistry	3
CHM 232	Organic chemistry	4
CHM 331	Medicinal Chemistry	3
CHM 332	Environmental Chemistry	3
ENV 310	Environmental Toxicology	3
ENV 315	Earth Systems	3
SCI 310	Forensic Science	3
SCI 321	Immunology	3
SCI 322	Cancer Biology	3
SCI 323	Signal Transduction	3
SCI 325	Bioinformatics and Computational Genomics	
SCI 326	Virology	3
LST 421	Life Science Special Topics I	3
LST 422	Life Sciences Special Topics II	3

\*Student may take courses from other tracks or a graduate course with approval.

## Life Sciences 4-Year Study Plans

Choose one track:

### Study Plan: Biological Sciences & Nanotechnology

#### Fall (Year 1)

Item #	Title	Credits
BIO 101	General Biology I	4
CHM 101	General Chemistry I	4
CSC 101	Introduction to Computer Science	3
MAT 105	Calculus for Biomedical Sciences I	3
ENG 101	Freshman English 1	3
ISL 101	Islamic Studies I	2

#### Spring (Year 1)

Item #	Title	Credits
BIO 112	General Biology II	4
CHM 112	General Chemistry II	4
	Humanity Course Elective	3
MAT 116	Calculus for Biomedical Science II	3
ENG 112	Freshman English II	3
ISL 112	Islamic Studies II	2

#### Fall (Year 2)

Item #	Title	Credits
BIO 223	Microbiology	4
CHM 211	Organic Chemistry I	4
PHU 205	Mechanics for Life Sciences	4
STA 211	Probability and Statistics	3
ARB 101	Arabic Language I	2

#### Spring (Year 2)

Item #	Title	Credits
BIO 224	Human Physiology and Anatomy	4
CHM 212	Organic Chemistry II	4
PHU 216	Electromagnetism and Optics for Life Sciences	4
ENV 205	Environmental Science & Sustainability	3
ARB 112	Arabic Language II	2
	Free Elective	3

#### Fall (Year 3)

Item #	Title	Credits
BIO 346	Biochemistry I	4
LSR 302	Research Methodology	3
BIO 345	Molecular Biology I	4
	Advanced Prog. Elective I	3
	Advanced Prog. Elective II	3

[BIO 345](#): Track specific course

#### Spring (Year 3)

Item #	Title	Credits
BIO 358	Biochemistry II	4
CHM 310	Introduction to Instrumental Analysis	4
BIO 357	Molecular Biology II	4
	Advanced Prog. Elective III	3
	Advanced Prog. Elective IV	3

[BIO 358](#), [BIO 357](#): Track specific courses

#### Summer (Year 3)

Item #	Title	Credits
LSR 390	Life Science Summer Internship 0	

## Fall (Year 4)

Item #	Title	Credits
BIO 405	Human Genetics	3
BSN 430	Nanomaterials & Nanotechnology	3
LSR 421	Life Science Research Project I	3
LST 421	Life Science Special Topics I	3

[BIO 405](#), [BSN 430](#): Track specific courses

## Spring (Year 4)

Item #	Title	Credits
BIO 440	Biotechnology	3
	Free Elective	3
LSR 422	Life Science Research Project II	3
LSR 423	Integrative Life Science Research Seminar	3

## Study Plan: Environmental Sciences & Sustainability

### Fall (Year 1)

Item #	Title	Credits
BIO 101	General Biology I	4
CHM 101	General Chemistry I	4
CSC 101	Introduction to Computer Science	3
MAT 105	Calculus for Biomedical Sciences I	3
ENG 101	Freshman English 1	3
ISL 101	Islamic Studies I	2

### Spring (Year 1)

Item #	Title	Credits
BIO 112	General Biology II	4
CHM 112	General Chemistry II	4
	Humanity Course Elective	3
MAT 116	Calculus for Biomedical Science II	3
ENG 112	Freshman English II	3
ISL 112	Islamic Studies II	2

## Fall (Year 2)

Item #	Title	Credits
BIO 223	Microbiology	4
CHM 211	Organic Chemistry I	4
PHU 205	Mechanics for Life Sciences	4
STA 211	Probability and Statistics	3
ARB 101	Arabic Language I	2

## Spring (Year 2)

Item #	Title	Credits
BIO 224	Human Physiology and Anatomy	4
CHM 212	Organic Chemistry II	4
PHU 216	Electromagnetism and Optics for Life Sciences	4
ENV 205	Environmental Science & Sustainability	3
ARB 112	Arabic Language II	2
	Free Elective	3

## Year 3 (Fall)

Item #	Title	Credits
BIO 346	Biochemistry I	4
LSR 302	Research Methodology	3
ENV 305	Environmental Health	3
	Advanced Prog. Elective I	3
	Advanced Prog. Elective II	3
	Free Elective	3

[ENV 305](#): Track specific course

## Spring (Year 3)

Item #	Title	Credits
BIO 325	Conservation Biology	3
CHM 310	Introduction to Instrumental Analysis	4
ENV 330	Energy & Sustainability	3
	Advanced Prog. Elective III	3
	Advanced Prog. Elective IV	3

[BIO 325](#), [ENV 330](#): Track specific courses

## Summer (Year 3)

Item #	Title	Credits
LSR 390	Life Science Summer Internship 0	



## Fall (Year 3)

Item #	Title	Credits
ENV 310	Environmental Toxicology	3
ENV 420	Waste Management	3
LSR 421	Life Science Research Project I	3
LST 421	Life Science Special Topics I	3

[ENV 310](#), [ENV 420](#): Track specific courses

## Spring (Year 4)

Item #	Title	Credits
BIO 440	Biotechnology	3
ENV 425	Environmental Policy & Economics	3
LSR 422	Life Science Research Project II	3
LSR 423	Integrative Life Science Research Seminar	3

[ENV 425](#): Track specific courses

## Track

### Business Pathway

#### Program

Alfaisal University Preparatory Program  
Track

### Business Pathway

#### Semester I

Item #	Title	Credits
PENG 005	Preparatory English Level 5	4
PENG 006	Preparatory English Level 6	4
PTECH 101	Preparatory Technical Writing I	3
PAB 101	Preparatory Algebra for Business I	3
PBUS 101	Introduction to Business	4
PSCS 101	Study and Communication Skills2	

#### Semester II

Item #	Title	Credits
PENG 007	Preparatory English Level 7	3
PENG 008	Preparatory English Level 8	3
PTECH 112	Preparatory Technical Writing II	3
PAB 112	Preparatory Algebra for Business II	3
PBS 112	Business Statistics	3
PCS 112	Basic Computer Skills	3

1. Students must pass Algebra I and Introduction to Business with a minimum grade of **C**.
2. Students must score a minimum TOEFL ITP of 500+ (TOEFL iBT = 60+ or IELTS = 6.0+).
3. Students must pass all the required courses with a cumulative GPA of 2.5/4.0.
4. Students must pass all courses; a grade of **F** in any course will invalidate a pending exit.
5. Students must successfully complete the AUPP within one academic year, i.e., both the fall and spring semesters of an academic calendar year to exit the program.
6. \*All PENG-exempt business pathway students are required to take PTECH101 and PTECH112.
7. **Note:** \* = For students enrolled in PTECH101 and PTECH112, adjusted credit hours and contact hours are denoted by the asterisk as shown above in "Total no. of Hours."
8. Students who fail Algebra I (PAB101) and/or Introduction to Business (PBUS101) in first semester, can repeat it in the second semester, and will take Algebra II (PAB112) and Business Statistics (PBS112) on the following summer course

## Track

### Engineering Pathway

#### Program

Alfaisal University Preparatory Program  
Track

### Engineering Pathway

#### Semester I

Item #	Title	Credits
PENG 005	Preparatory English Level 5	4
PENG 006	Preparatory English Level 6	4
PTECH 101	Preparatory Technical Writing I	3
PPC 101	Preparatory Pre-Calculus for Engineering and Science I	3
PCHE 101	Preparatory Chemistry I	3
PPHYE 101	Preparatory Physics for Engineering and Science I	3
PSCS 101	Study and Communication Skills2	

## Semester II

Item #	Title	Credits
PENG 007	Preparatory English Level 7	3
PENG 008	Preparatory English Level 8	3
PTECH 112	Preparatory Technical Writing II	3
PPC 112	Preparatory Pre-Calculus for Engineering and Science II	3
PCHE 112	Preparatory Chemistry II	3
PPHYE 112	Preparatory Physics for Engineering and Science II	3
PIE 112	Introduction to Engineering Innovation	3

1. Students must pass Pre-calculus II, Physics II, Chemistry II and Introduction to Engineering Innovation with a minimum grade of **C**.
2. Students must score a minimum TOEFL ITP 500+ (or TOEFL iBT = 60+ or IELTS = 6.0+).
3. Students must pass all required courses with a cumulative GPA of 2.5/4.0.
4. Students must pass all courses; a grade of **F** in any course will invalidate a pending exit.
5. Students must successfully complete the AUPP within one academic year, i.e., both the fall and spring semesters of an academic calendar year to exit the program.
6. \*All PENG-exempt engineering pathway students are required to take PTECH101 and PTECH112.
7. **Note:** \* = For students enrolled in PTECH101/ PTECH112, adjusted credit hours and contact hours are denoted by the asterisk as shown above in "Total no. of Hours."

## Track Medicine Pathway

### Program

Alfaisal University Preparatory Program  
Track

## Medicine Pathway

## Semester I

Item #	Title	Credits
PENG 005	Preparatory English Level 5	4
PENG 006	Preparatory English Level 6	4
PAM 101	Preparatory Algebra for Medicine	3
PCHE 101	Preparatory Chemistry I	3
PHSF 101/ PHY 103	Preparatory Human Structure and Function I	4
PSCS 101	Study and Communication Skills2	

## Semester 2

Item #	Title	Credits
PENG 007	Preparatory English Level 7	3
PENG 008	Preparatory English Level 8	3
PPHYM 112	Preparatory Physics for Medicine	3
PCHE 112	Preparatory Chemistry II	3
PHSF 112/ PHY 113	Preparatory Human Structure and Function II	4
PBIO 112	Preparatory Biochemistry	3

1. Students must pass Chemistry II, Human Structure & Functions II, and Introduction to Biochemistry with a minimum grade of **B**.
2. Minimum passing grade for all other courses is **C**.
3. Students must pass all required courses with a cumulative GPA of 3.2/4.0.
4. Students must pass PENG08.
5. Students must score a minimum TOEFL ITP of 500+ (TOEFL iBT = 60+ or IELTS = 6.0+); in addition, to passing PENG08.
6. Students must pass all courses; a grade of **F** in any course will invalidate a pending exit.
7. Students must successfully complete the AUPP within one academic year, i.e., both the fall and spring semesters of an academic calendar year to exit the program.
8. **Note:** \* = If English exempt, adjusted credit hours and contact hours are denoted by the asterisk as shown above in "Total no. of Hours."

## Track Pharmacy Pathway

### Program

Alfaisal University Preparatory Program  
Track

## Pharmacy Pathway

## Semester I

Item #	Title	Credits
PENG 005	Preparatory English Level 5	4
PENG 006	Preparatory English Level 6	4
PAM 101	Preparatory Algebra for Medicine	3
PCHE 101/ CHM 103	Chemistry I	3
PHSF 101/ PHY 103	Preparatory Human Structure and Function I	4
PSCS 101	Study and Communication Skills2	

## Semester II

Item #	Title	Credits
PENG 007	Preparatory English Level 7	3
PENG 008	Preparatory English Level 8	3
PPHYM 112	Preparatory Physics for Medicine	3
PCHE 112	Preparatory Chemistry II	3
PHSF 112/ PHY 113	Preparatory Human Structure and Function II	4
PBIO 112	Preparatory Biochemistry	3

1. Students must pass Chemistry II, Human Structure & Functions II, and Introduction to Biochemistry with a minimum grade of **B**.
2. Minimum passing grade for all other courses is **C**.
3. Students must pass all required courses with a cumulative GPA of 3.2/4.0.
4. Students must pass PENG08.
5. Students must score a minimum TOEFL ITP of 500+ (TOEFL iBT = 60+ or IELTS = 6.0+); in addition, to passing PENG08.
6. Students must pass all courses; a grade of **F** in any course will invalidate a pending exit.
7. Students must successfully complete the AUPP within one academic year, i.e., both the fall and spring semesters of an academic calendar year to exit the program.
8. **Note:** \* = If English exempt, adjusted credit hours and contact hours are denoted by the asterisk as shown above in "Total no. of Hours."

## Track Sciences Pathway

### Program

Alfaisal University Preparatory Program

Track

## Sciences Pathway

## Semester I

Item #	Title	Credits
PENG 005	Preparatory English Level 5	4
PENG 006	Preparatory English Level 6	4
PTECH 101	Preparatory Technical Writing I	3
PPC 101	Preparatory Pre-Calculus for Engineering and Science I	3
PCHE 101	Preparatory Chemistry I	3
PPHYE 101	Preparatory Physics for Engineering and Science I	3
PSCS 101	Study and Communication Skills2	

## Semester II

Item #	Title	Credits
PENG 007	Preparatory English Level 7	3
PENG 008	Preparatory English Level 8	3
PTECH 112	Preparatory Technical Writing II	3
PPC 112	Preparatory Pre-Calculus for Engineering and Science II	3
PCHE 112	Preparatory Chemistry II	3
PPHYE 112	Preparatory Physics for Engineering and Science II	3

1. Students must pass Chemistry II, Pre-calculus II, and Physics II, with a minimum grade of **C**.
2. Students must score a minimum TOEFL ITP of 500+ (or TOEFL iBT = 60+ or IELTS = 6.0+).
3. Students must pass all required courses with a cumulative GPA of 2.5/4.0.
4. Students must pass all courses; a grade of **F** in any course will invalidate a pending exit.
5. Students must successfully complete the AUPP within one academic year, i.e., both the fall and spring semesters of an academic calendar year to exit the program.
6. \*All PENG-exempt Life Sciences pathway students are required to take PTECH101 and PTECH112.
7. **Note:** \* = For students enrolled in PTECH101/ PTECH112, adjusted credit hours and contact hours are denoted by the asterisk as shown above in "Total no. of Hours."

# Courses

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## English for Specific Purposes

### **ESP 224 : English for Specific Purposes**

This course is concerned with developing fluency and confidence in using English in medical contexts. It increases EFL medical students' familiarity with medical written language and discourse in different medical contexts. The focus is on carrying out specialized activities in English, but attention is given to reading comprehension skills (expanding the English general and medical vocabulary repertoire through extensive readings), academic and scientific writing skills, and technical medical terms as required.

**Credits** 3

**Prerequisites**

ENG 102, ENG 113

## Accounting

### **ACC 201 : Introduction to Financial Accounting**

The course introduces students to the accounting equation, accounting cycle and preparation of financial statements, the framework within which financial statements are prepared, Generally Accepted Accounting Principles (GAAP), and users of such financial statements. As well, the course will cover inventory and accounts receivables.

**Credits** 3

**Core Requirement** BCC

**Prerequisites**

[ECO 101](#), [MAT 100](#), [ENG 101](#)

### **ACC 202 : Introduction to Management Accounting**

The course introduces students to the role of accounting information in business and investment decisions. It covers Job Order Costing, Process Costing, and Activity Based Costing methods used in manufacturing and service operations. The course explores the cost volume profit relationship, cost classifications: variable and fixed costs, standard costing, and budgeting; it also introduces the Balanced Scorecard as a performance measure.

**Credits** 3

**Core Requirement** BCC

**Prerequisites**

ACC 201, OPM 230

### **ACC 301 : Intermediate Financial Accounting I**

The course provides students with depth knowledge and applied skills about the fundamentals of financial reporting, financial statements and their components, revenue recognition, cash control, recognition and measurement of accounts receivable, accounting for perpetual and periodic inventory systems, inventory costing methods, long-term asset recognition and measurement and their depreciation/amortization.

**Credits** 3

**Core Requirement** MCC

**Prerequisites**

ACC 201

### **ACC 302 : Intermediate Financial Accounting II**

This is the second half of intermediate accounting. It focuses on the liability and equity side of the balance sheet. The topics covered include liabilities, contingencies, stockholders' equity, and earnings per share: both basic and dilutive EPS (dilutive securities), complex financial instruments, income taxes, pensions, post-retirement benefits, leases, accounting changes and error correction, and statement of cash flows.

**Credits** 3

**Core Requirement** MCC

**Prerequisites**

ACC 301

### **ACC 320 : Cost Accounting**

The course provides students with a practical set of tools related to the use of accounting information in making business and investment decisions. It focuses on master budgets, inventory costing and capacity analysis, pricing decisions and cost management, cost allocation and customer profitability, spoilage & scrap, balanced scorecard, inventory management, and capital budgeting and cost analysis.

**Credits** 3

**Core Requirement** MCC

**Prerequisites**

ACC 202

### **ACC 330 : Zakat and Income Taxes**

The course provides students with knowledge, skills, and theory of Zakat and Income Taxes. It introduces students to rules and regulations governing Zakat and Income Taxes in Saudi Arabia. Students learn the incomes that are subjected to Zakat and Income Taxes. As well, students learn how to determine taxable and Zakatable income and what income components should be included in both income taxes and zakat.

**Credits** 3

**Core Requirement** [MCC](#)**Prerequisites**

ACC 202

**ACC 390 : Financial Statement Analysis and Valuation**

Valuation and performance are an important part of investment decisions which heavily relies on the information in financial statements. This course will familiarize students with the framework of analysis and valuation using financial statements and focus on how to extract information from financial statements and use that data for valuation.

**Credits** 3**Core Requirement** [MCC](#)**Prerequisites**[FIN 201](#), [ACC 301](#)**ACC 410 : Advanced Financial Accounting**

The course involves a detailed examination of equity investments, mergers, acquisitions, and consolidation of financial statements as well as intercompany transactions of depreciable and non-depreciable assets, intercompany bondholding, and other consolidation reporting issues, foreign currency transactions, and translation and consolidation of the financial statements of foreign operations.

**Credits** 3**Core Requirement** [MCC](#)**Prerequisites**

ACC 302

**ACC 415 : Financial Statement Analysis & Valuation**

Valuation and performance are an important part of investment decisions which heavily relies on the information in financial statements. This course will familiarize students with the framework of analysis and valuation using financial statements and focus on how to extract information from financial statements and use that data for valuation.

**Credits** 3**Prerequisites**

FIN 201, ACC 301

**ACC 420 : Auditing and Assurance Services**

Students learn how to assess the effectiveness of a company's accounting, internal control system, and risk management. It covers theory, concepts, professional and legal standards and procedures underlying audits of financial statements as well as techniques for gathering, summarizing, analyzing, and interpreting information reported in financial statements and procedures used in verifying this information.

**Credits** 3**Core Requirement** [MCC](#)**Prerequisites**[ACC 302](#), [OPM 230](#)**ACC 425 : Special Topics in Taxation**

This course will cover special topics in taxation which are relevant to the decent and expected developments in Saudi Arabia. The course will cover tax policy, system design, and technical issues involved in taxation which are not covered in the regular curriculum. One issue of immediate importance in the context of Saudi Arabia, for example, is indirect taxation. The course will therefore start with a particular emphasis on value-added and goods and services tax regimes. It will include local and cross-border taxation regimes, including the construction of the tax base, tax rates, and the operation of VAT/GST regimes. The course will also look at customs duties and other indirect taxes. The list of these topics will be changed and updated based on developments in the Kingdom's policies and needs.

**Credits** 3**Core Requirement** [MCC](#)**Prerequisites**

ACC 330

**ACC 495 : Accounting Theory and contemporary Issues**

This course introduces students to the general nature of accounting theory and its function in relation to problems confronting the accounting profession. Accounting practices including accounting rules, principles and processes are examined within the context of contemporary theoretical perspectives and socio-political behaviors of market participants.

**Credits** 3**Core Requirement** [BEC](#)**Prerequisites**

ACC 302

**ACC 498 : COOP Training Internship**

This course requires students to complete a four month placement as an internee in various local and international organizations across various sectors and industries in KSA. This is an important part of the BBA degree requirements which bridges the gap between theory and practice. Students will get a chance to get hands-on experience in a variety of areas related to Accounting including the application of the principles of financial and management accounting in decision making; diagnosing the financial health of companies

and identifying drivers of performance; and be involved in the auditing process and know its impractical importance and implications.

**Credits** 12

**Core Requirement** [MCC](#)

**Prerequisites**

[MGT 490](#)

## Finance

### **BAN 320 : Business Data Analytics with Excel**

This course is designed to equip participants with advanced skills in using Microsoft Excel for statistical analysis and data manipulation. Through a combination of hands-on exercises and practical examples, participants will learn how to leverage Excel's powerful features to conduct statistical analysis, generate insightful reports, and make data-driven decisions.

**Credits** 3

**Prerequisites**

OPM 211

### **BAN 403 : Supply Chain Analytics**

The Supply Chain Data Analytics course within a Bachelor's Degree in Business Analytics offers a comprehensive exploration of the data-driven methodologies and tools essential for optimizing supply chain operations. Through this course, students learn about the integration of technology, data analysis, and logistics to enhance efficiency and decision-making within supply chains. Covering topics such as predictive modeling, data visualization, demand forecasting, and inventory optimization, the course equips students with the skills to analyze complex supply chain data, derive meaningful insights, and implement solutions for improved performance, cost reduction, and risk management within modern global supply networks. Students gain hands-on experience with industry-relevant software and case studies, fostering an understanding of how analytics can be applied to solve real-world supply chain challenges.

**Credits** 3

**Prerequisites**

BAN 310, OPM 240

### **FIN 201 : Principles of Finance**

This is a core second-year course for all students in the College of Business. The course introduces students to the role of financial markets. Basic principles of ratio

analysis, the time value of money, valuing fundamentals for financial assets such as bonds and shares will be explained.

**Credits** 3

**Core Requirement** [BCC](#)

**Prerequisites**

[OPM 101](#), [MAT 111](#), [ECO 102](#), [ENG 112](#)

### **FIN 310 : Financial Modelling**

This is a third-year core unit for Finance major students. This course uses spreadsheets for financial analysis, risk analysis, valuations, investment management, credit analysis, scenario analysis, budgeting, sales forecast, financial projections, and project evaluation. The use of Excel as a tool for modeling, basic skills in recording, writing, and using Macros in Excel is also covered.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

FIN 201

### **FIN 320 : Corporate Finance**

Corporate finance involves the financial management and value of business entities. In this course, the students investigate how managers make investment, financing, and dividend decisions. Investment decisions are based on discounted cash flow techniques and their extensions.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

FIN 201

### **FIN 330 : Financial Planning**

This course is about making sure that values line up with how people spend and save. This course presents the basic theory and structure of individual financial planning and will analyze managing assets, credit, insurance needs, and investments, focusing on investments in stocks, bonds mutual funds, ETFs, and real estate. The course will also focus on insurance needs analyzing income and tax issues as they relate to investments. It will cover the development of lifelong financial, retirement, and estate planning. Students are required to develop an automated financial plan in MS Excel.

**Credits** 3

**Core Requirement** [BEC](#)

**Prerequisites**

FIN 201



**FIN 340 : Contemporary Financial Issues**

This course examines current financial issues that are shaping the global financial environment. This course discusses and debates the relevance of traditional financial models in contemporary financial events. The unit further includes the analysis of business cycles from a finance perspective.

**Credits** 3

**Core Requirement** [BEC](#)

**Prerequisites**

FIN 201

**FIN 350 : Financial Markets and Institutions**

The course explores the structure and activities of various financial institutions in the global financial system. The course examines the growing importance of Central Banking actions and policies on achieving macroeconomic objectives. The changing regulatory environment facing commercial banks since the global financial crisis of 2008 as well as the Saudi Mortgage Law are also covered in detail.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

FIN 201

**FIN 377 : Fixed Income Securities**

This is a basic course in the analysis of fixed income securities. The course focuses on the modern valuation techniques for a variety of fixed income securities based on an observed term structure of interest rates. Recognized topics include bond pricing, the Treasury Market, bond portfolio and risk management based on duration and convexity, yield-curve trading strategies, term structure estimation, and credit risk modelling.

**Credits** 3

**Core Requirement** [BEC](#)

**Prerequisites**

FIN 201

**FIN 380 : Corporate Governance:**

This course examines the relationships between corporate managers, the boards of directors, and investors. The course reviews the responsibilities of the board, including financial statement approval, CEO performance assessment, executive compensation, and succession planning. With global brands at risk and mistakes instantly transmitted via the internet and social media, the reputational stakes are very high.

**Credits** 3

**Core Requirement** [BEC](#)

**Prerequisites**

[FIN 201](#), [ACC 202](#), [MGT 210](#)

**FIN 410 : Investments**

This is a final year support class for students majoring in Finance. The course examines the theory and practice of portfolio management and security analysis through the implementation of advanced regression and Excel tools for empirical research and quantitative problem-solving. Students are required to develop an automated trading model in MS Excel.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

[ACC 301](#), OR [FIN 350](#), OR [FIN 320](#).

**FIN 420 : International Finance**

This course examines international financial markets, and the opportunities they present for achieving risk management and asset allocation objectives. The principal focus will be on assets traded in liquid markets: currencies, equities, bonds, swaps, and other derivatives. Analytical tools for risk and return measurement, portfolio management, and hedging will be examined.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

FIN 320

**FIN 450 : Financial Trading Strategies**

This course aims to introduce students to the global markets including international stock markets and indices, commodities, and currencies in the spot market. Students will learn the difference between fundamental and technical analysis and be able to make trading decisions. Moreover, the course provides the students with basic chart reading and analysis.

**Credits** 3

**Core Requirement** [BEC](#)

**Prerequisites**

FIN 201

**FIN 467 : Banking Management**

The course aims to introduce students to the banks and their services. Topics cover issues such as organization and structure of banks; financial statements of a bank; measuring and evaluation of bank performance; asset and liability management, hedging against interest rate risk, duration gap. Basel Agreement on International Capital Standards and regulations and reform will be introduced.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

**FIN 498 : COOP Training Internship**

This course requires students to complete a four month placement as an internee in various local and international organizations across various sectors and industries in KSA. This is an important part of the BBA degree requirements which bridges the gap between theory and practice. Students have the opportunity to get hands-on experience in a variety of areas related to mutual funds, alternative investment, asset allocations, portfolio management, risk management, corporate banking, Investing banking, venture capital, financial statement analysis and corporate valuation among many other finance applications.

**Credits** 12**Core Requirement** MCC**Prerequisites**[MGT 490](#)**FN 415 : Derivative Securities**

This course will cover a broad range of derivative products and markets and discuss how risks are managed by using financial derivatives. Forward and futures contracts including pricing and applications will be discussed and analyzed. Then, we will study swaps and options, and describes how they are used to hedge different kinds of risks and will analyze hedging strategies using options in stock and foreign currency markets. We then discuss options pricing and At the end of this course we will present some issues of current concern like the use of derivatives in hedging risk during the global financial crisis with VaR applications.

**Credits** 3**Prerequisites**

FIN 320

**FN 415 : Derivative Securities****Credits** 3**Prerequisites**

FIN 320

## Management

**MGT 125 : Principles of Management**

This course provides a comprehensive foundation for understanding key concepts of management and relevant activities associated with the management of individuals, groups and the organization. It covers key areas of management including the planning, organizing, leading and controlling functions within

contemporary organizations. Topics covered include: effective decision making; the influence of the external environment and the organization's culture; managing in a global environment; managing diversity, social responsibility and ethics; managing change and disruptive innovation; designing effective organizational structure; managing human resources; motivating employees; leading effectively; and, controlling people and operations. The course introduces students to management theory, research and case studies that will develop their ability to effectively manage workplaces facing complex real-world business problems.

**Credits** 3**MGT 201 : Business Communication**

This course introduces basic communication theory and its application to business functions. It covers a wide range of business communication concepts including business correspondence, presentations, report writing, messaging and emails, providing and receiving feedback, international business etiquette, effective use of the English language, and communicating across languages and cultures.

**Credits** 3**Core Requirement** BCC**Prerequisites**[ECO 102](#), [ENG 112](#)**MGT 210 : Business Ethics**

This course introduces students to ethical concepts and imparts the necessary analytical skills needed to solve moral dilemmas in business. It provides an assessment of the local and global trends within the area of corporate social responsibility, and an introduction to the moral principles guiding business practice.

**Credits** 3**Core Requirement** BCC**Prerequisites**[ISL 112](#), [ENG 101](#)**MGT 230 : Organizational Behavior**

This course provides a comprehensive overview of the applied behavioral sciences to the study of people at work in organizations. It covers the fundamentals of individual and group behavior and topics such as motivation, power and politics, and conflict and negotiations. It will also provide students with some experiential opportunities to develop leadership skills.

**Credits** 3**Core Requirement** BCC**Prerequisites**



[MGT 210](#), [MAT 111](#), [ENG 112](#)

### **MGT 300 : Executive Lecture**

This course focuses on the discussion of contemporary business and management issues by local and international leading executives from a wide range of organizations and industries. These seminars are intended to bridge the gap between the practical world of business and leadership and business education. All lectures are free and open to the public.

**Credits** 1

**Core Requirement** [BCC](#)

**Prerequisites**

ACC 202

### **MGT 301 : Business Law**

This course focuses on the essential international principles of business law including contracts, negotiable instruments, banking law, insurance, agency and powers of attorney, forms of business organization, employment, criminal law and torts, intellectual property, and tax. These concepts will be introduced in assigned readings and in brief lectures by the instructor, and then explored by students in general discussion and other formats.

**Credits** 3

**Core Requirement** [BCC](#)

**Prerequisites**

MGT 201, MGT 210, MGT 230

### **MGT 350 : Human Resources Management**

This course overviews the functions carried out by the Human Resource Management (HRM) departments and specialists. It addresses a wide range of topics such as personnel planning, recruitment and selection, performance assessment, training and development, and ethics in HRM.

**Credits** 3

**Core Requirement** [MCC in HRM and EFB](#)

**Prerequisites**

MGT 210

### **MGT 360 : Employee learning and development**

This course aims at helping students understand the various steps needed to develop training and development programs. It demonstrates the importance of training in advancing organizational learning and overall motivation. Topics covered include needs analysis, learning theories, training design, methods, and delivery, transfer of learning, and training evaluation, costs, and benefits.

**Credits** 3

**Core Requirement** [MCC in HRM](#)

**Prerequisites**

MGT 230

### **MGT 370 : Human Resource Planning, Recruitment and Selection**

This course presents the key organizational and managerial practices involved in Human Resource (HR) planning, recruitment, and selection. Topics covered include HR strategy, labor demand and supply, job analysis, methods and processes of recruitment, valid and reliable selection methods, and processes.

**Credits** 3

**Core Requirement** [MCC in HRM](#)

**Prerequisites**

MGT 230

### **MGT 373 : Negotiation**

This course introduces the students, using role-playing simulations, to a wide range of negotiation concepts such as conflict management as a first party and as a third party, mediation, investigation, arbitration, and dispute resolution.

**Credits** 3

**Core Requirement** [MCC in HRM and EFB](#)

**Prerequisites**

MGT 230

### **MGT 374 : Real Estate**

The course will provide an introduction to real estate with a broad overview of real property concepts and characteristics, legal considerations, influences on real estate values, types of value, economic principles, market area analysis, investment and financing issues, brokerage, development, and management.

**Credits** 3

**Core Requirement** [BEC](#)

**Prerequisites**

FIN 201

### **MGT 375 : Introduction to Entrepreneurship**

This course provides deeper insights into entrepreneurship and establishes entrepreneurial links with innovation. It maps out the practical steps of forming a brand-new company and addresses the strategic considerations for creating companies. The students will be exposed to various themes including entrepreneurial perspectives, launching entrepreneurial ventures, and formulation of the entrepreneurial plan.

**Credits** 3

**Core Requirement** [MCC in EFB](#)

**Prerequisites**

FIN 201

**MGT 376 : Entrepreneurial Finance**

This course is intended to empower students to be successful in developing and financing the ideas they bring to the market. The overriding orientation is to apply theory and methods of finance and economics to incubating and growing new ventures. The course focuses on value creation as the objective for all entrepreneurial strategic and financial decisions.

**Credits** 3

**Core Requirement** MCC in EFB

**Prerequisites**

[FIN 201](#), [MKT 201](#)

**MGT 380 : Employee Relations & Engagement**

This course introduces students to the various issues involved in the creation of productive and meaningful employee-employer relationships. It covers a wide range of concepts including employee relationship principles and models, local and regional labor law, employee engagement and participation, conflict management, grievance handling, and disciplinary procedures.

**Credits** 3

**Core Requirement** BEC

**Prerequisites**

MGT 230

**MGT 383 : Organizational Leadership**

This course serves as an introduction to leadership theory and practice. It examines different approaches toward leadership: traits, skills, behavioral and situational. It also analyzes different types of leadership, such as transformational leadership, adaptive leadership, servant leadership and authentic leadership. This course helps students to develop their leadership skills.

**Credits** 3

**Core Requirement** MCC in HRM

**Prerequisites**

MGT 230

**MGT 390 : Total Reward Management**

This course in the HRM portfolio explores the principles and practices of compensation and benefits in organizations from the holistic and comprehensive view of total reward management. Topics may include total reward strategy, job evaluation, reward systems, pay, and grade structures, benefits management, reward system auditing.

**Credits** 3

**Core Requirement** MCC in HRM

**Prerequisites**

MGT 230

**MGT 393 : Managing Organizational Change**

This course introduces the students to the challenges of managing change inside the organization. It helps them establish an in-depth understanding of how to manage organizational change as a systematic approach and equips them with tools for implementing strategic change across the organization. Students will also learn about challenges and opportunities associated with change.

**Credits** 3

**Core Requirement** MCC in HRM and EFB

**Prerequisites**

MGT 230

**MGT 395 : Design Thinking**

This course presents an introduction to the design thinking approach and mindset using highly interactive exercises that give the participants an understanding of techniques and methods of design thinking and awaken their innovative and problem-solving abilities. Design thinking is an iterative approach to solving problems. Through this course, students will be introduced to design management, strategic design, product/service design, and experience design.

**Credits** 3

**Core Requirement** MCC in EFB

**MGT 401 : Family Business Management**

This course examines the business, personal and family issues found in family-owned and family-managed companies. We will discuss and propose solutions to the managerial, strategic, financial, and behavioural issues arising in family firms. We will analyse the subjects of ownership, succession, conflict resolution, sibling rivalry, compensation, attracting and retaining family and nonfamily talent, estate planning, and financing of the family firm.

**Credits** 3

**Prerequisites**

MGT 230

**MGT 420 : Human Performance Improvement**

This is a senior course that focuses on managing people's performance in the workplace, contributing to organizational performance, and the essential skills that HRM practitioners and line managers need for internal consulting to design, facilitate, implement and evaluate performance interventions at a group (e.g. departmental) and organizational level.

**Credits** 3

**Core Requirement** BEC

**Prerequisites**

MGT 350

**MGT 440 : Comparative HRM**

This course explores the cultural relevance of HRM. The implementation of HRM theories across cultures is explored in-depth, along with various relevant topics including people management across cultures, cultural diversity, and other selected International HRM topics.

**Credits** 3

**Core Requirement** BEC

**Prerequisites**

MGT 360, MGT 390

**MGT 443 : Comparative Management**

This course provides a comprehensive foundation for understanding, interacting, and successfully managing today's multinational and multicultural organizations. It covers a wide range of issues ranging from assessing the international environment, exploring various cultures and communication methods, international negotiations and decision making to the creation of a global management team and international strategy formulation and execution.

**Credits** 3

**Core Requirement** MCC in HRM

**Prerequisites**

MGT 230

**MGT 490 : Strategic Management**

This course is a capstone that integrates the functional areas of marketing, accounting, finance, management, and operations into developing business strategies. It addresses a wide range of concepts such as internal and external factor analysis, business and corporate planning, strategic implementation, control, and evaluation.

**Credits** 3

**Core Requirement** BCC

**Prerequisites**

MGT 230, OPM 340

**MGT 499/HRM 498 : COOP Training Internship**

This course requires students to complete a four months placement as an internee in various local and international organizations across various sectors and industries in KSA. This is an important part of the BBA degree requirements which bridges the gap between theory and practice. Students will get a chance to get hands-on experience in a variety of areas related to Human Resource Management including workforce planning, recruiting, training and development, compensation, and performance management as well as leadership development in the various local and international organizations across the various sectors and industries in KSA.

**Credits** 12

**Core Requirement** MCC in HRM and EFB

**Prerequisites**

MGT 480, [MGT 490](#)

## Marketing

**MKT 201 : Principles of Marketing**

This course presents a broad overview of the main marketing concepts and activities while also providing in-depth knowledge of key marketing issues such as segmentation, targeting, positioning, marketing environment, marketing information system, branding, customer relationship management, and the elements of the marketing mix. Case studies, client presentations will be used.

**Credits** 3

**Core Requirement** BCC

**Prerequisites**

OPM 101, ECO 102, MAT 111, ENG 112

**MKT 301 : E-Marketing**

The E-marketing course provides a framework for understanding how the Internet and related technologies affect marketing. The course covers basic aspects of the technological part of Internet marketing (e.g. Internet development and applications). But the main focus will be on the business part. More specifically, the courses address marketing mix over the Internet, online consumer behavior, online market research, mobile marketing, E-CRM, Legal/ethical issues, and social media revolution.

**Credits** 3

**Core Requirement** MCC

**Prerequisites**

MKT 201

**MKT 310 : Consumer Behavior**

It covers major influences on the buying process, including affect, cognition, situational and cultural factors. Specific topics include attitudes, learning, intentions, product knowledge, involvement, attention, comprehension, social class, consumer decision-making, and behavioral change strategies among others. Key consumer behavior concepts and processes are emphasized using case studies, client presentations, and projects.

**Credits** 3

**Core Requirement** MCC

**Prerequisites**

MKT 201

**MKT 315 : Services Marketing**

It is designed to help students understand the unique characteristics of services and the marketing decisions related to them. The main objective of this course is to provide an in-depth understanding of marketing services with cases featuring a wide array of industries and organizations. Students will also be introduced to a customer service-oriented mindset. A range of assessment tools is used to facilitate learning in this course.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

MKT 201

**MKT 320 : International Marketing**

The course provides a comprehensive understanding of the issues and challenges inherent in the formulation and implementation of international marketing strategies. Key emphasis is placed on environmental forces affecting international marketing decisions, the selection of international target markets and the design of international marketing plans.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

MKT 201

**MKT 330 : Marketing Research**

The course covers current techniques and tools necessary for conducting marketing research. Exposition of these techniques will be offered along two dimensions: theoretical and practical. Marketing research emphasize topics such as problem definition, research design, secondary and primary data, questionnaire design, sampling, and measurement.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

[MKT 201](#), [OPM 211](#)

**MKT 401 : Brand Strategy**

This course provides a comprehensive and up-to-date treatment of the subjects of brands, brand equity, and strategic brand management. The design and implementation of marketing programs and activities to build, measure, and manage brand equity. One of the book's important goals is to provide managers with concepts and techniques to improve the long-term profitability of their brand strategies. The course incorporates current thinking and developments on these topics from both academics and industry participants and combines a comprehensive

theoretical foundation with enough practical insights to assist managers in their day-to-day and long-term brand decisions. Finally, illustrative examples and case studies of brands marketed all over the world will be discussed.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

MKT 201

**MKT 410 : Integrated Marketing Communications**

The course presents a comprehensive approach to creating and implementing advertising and sales promotions activities. Issues related to event sponsorships, direct marketing, public relations, and business/store image will also be covered. Relevant social, cultural, and ethical issues are emphasized. A range of assessment tools is used to facilitate learning.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

[MKT 310](#), [OPM 230](#)

**MKT 420 : Marketing Strategy**

The course covers the design and implementation of marketing strategies through linking marketing concepts and theories to real-life cases. It aims at understanding the entire marketing mix in light of the strategy of the firm. The main emphasis is placed on problem and opportunity recognition, decision making, segmentation, targeting, positioning, branding, competitive dynamics, and administering marketing programs.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

MKT 330

**MKT 498 : COOP Training Internship**

This course requires students to complete a four month placement as an internee in various local and international organizations across various sectors and industries in KSA. This is an important part of the BBA degree requirements which bridges the gap between theory and practice. Students will get a chance to get hands-on experience in a variety of areas related to Marketing including generating, analyzing, interpreting, and presenting marketing information using marketing research and innovative marketing tools related to consumer behavior, e-marketing, services marketing integrated marketing communications and marketing strategies.

**Credits** 12

## Prerequisites

MGT 490

# Operations & Project Management

## OPM 101 : Introduction to Computing

This course introduces the concepts of computer applications and their roles in managing business operations. It introduces students to the understanding of computer hardware, software, essential computer and Internet-based systems, and the latest MS Office applications. A substantial portion of the course will be dedicated to hands-on and excel based exercises.

**Credits** 3

## OPM 211 : Business Statistics

This introductory course provides the student with an advanced overview of descriptive and inferential statistical methods. This course's topics include descriptive statistics, probability, probability distributions, sampling and sampling distributions, interval estimation, hypothesis testing, simple linear regression and correlation, and multiple regression analysis. In addition to relevant statistical theories, the course focuses on exercises and applications.

**Credits** 3

**Core Requirement** GER

## Prerequisites

[OPM 101](#), [MAT 111](#)

## OPM 230 : Management Information Systems

This course covers the use of ICT in managing activities and how MIS can be best integrated into the day-to-day operations of organizations. It will provide knowledge of primary methodologies and approaches that can be used to deal with business and operational needs in alignment with corporate business objectives. Some key topics covered in this course are the roles of MIS in organizations, management and the networked enterprise, and advanced excel features.

**Credits** 3

**Core Requirement** BCC

## Prerequisites

OPM 101, ECO 102

## OPM 310 : Introduction to Project Management and Tools

The course introduces the concepts and methodology of the project management and their usage by project

manager to successfully complete the projects. A key aspect of the course is to manage project stakeholders and environment within the business context with due consideration to balancing the scope, cost, and time and quality constraints. The course explores and applies various tools and techniques such as Microsoft Project 2016 to effectively manage the projects.

**Credits** 3

**Core Requirement** MCC

## Prerequisites

OPM 211

## OPM 315 : E-Commerce (BE)

The course provides an overview of the basic elements of the technology infrastructure used to conduct Electronic Commerce. It examines the processes for business strategies that incorporate various forms of Electronic Commerce including business-to-business, business-to-consumer, and the business processes that support selling/purchasing activities. It reviews the designing and managing of online storefronts, Payment Systems, Security, and Privacy.

**Credits** 3

**Core Requirement** BEC

## Prerequisites

FIN 201, OPM 230

## OPM 330 : Quantitative Methods for Business

This course covers deterministic models and techniques to optimally solve complex managerial problems. Topics include linear programming, networks, integer programming, decision trees, and sensitivity analysis. It also shows how to practically apply these techniques in different areas of an organization, such as marketing, production scheduling, financial planning, and make-or-buy decision.

**Credits** 3

**Core Requirement** BCC

## Prerequisites

OPM 211

## OPM 340 : Operations Management

The course studies the fundamental process for the production of goods and services in organizations with emphasis on understanding its relationship to other business areas. The course uses quantitative tools in production/operations for effective decision-making. It covers concepts such as operations strategy, process design, forecasting, capacity planning, scheduling, inventory management, and resource management. Field trips are used to enhance the learning experience.



**Credits** 3

**Core Requirement** MCC

**Prerequisites**

OPM 330

**OPM 360 : Principles of Logistics and Supply Chain Management**

This course covers principles of supply chain management and provides techniques used to analyze various aspects of logistics systems. Key concepts such as procurement, sourcing, supply chain management, communication, warehousing, packaging, materials handling, demand management, distribution, and facility location are examined as an integral part of modern business. Field trips and business simulations are used to enhance the learning experience.

**Credits** 3

**Core Requirement** MCC

**Prerequisites**

ACC 202, OPM 230

**OPM 370 : Quality Management**

The course introduces analytical concepts and tools to accomplish business performance excellence. It exposes students to quality knowledge and quality improvement methods. It addresses the key issues of quality standards, principles, and practices. It also covers techniques of total quality including benchmarking, statistical process control, and continuous improvement.

**Credits** 3

**Core Requirement** MCC

**Prerequisites**

OPM 330

**OPM 380 : Advanced Project Management**

The course builds on [OPM 310](#) with a focus on understanding and managing the business changes through the adoption and implementation of effective project management approaches to successfully achieve targeted business and project objectives. Additional contemporary project management concepts such as project management office and agile project management are taught. The course provides an advanced foundation on studying and maintaining the alignment between business strategic objectives and various operational and project management knowledge areas.

**Credits** 3

**Core Requirement** MCC

**Prerequisites**

OPM 310

**OPM 390 : Special Topics in Operations Management**

A survey course of selected topics in operations management in order to supplement available offerings. In this course, important concepts, and the state-of-the-art analytical techniques essential for managing the operations of any organization are covered. Topics such as MRP and ERP, scheduling, management of waiting lines, location planning and analysis.

**Credits** 3

**Prerequisites**

OPM 340

**OPM 425 : Special Topics in Operations Management**

A survey course of selected topics in operations management in order to supplement available offerings. In this course, important concepts and the state-of-the-art analytical techniques essential for managing the operations of any organization are covered. In particular, topics such as MRP and ERP, scheduling, management of waiting lines, location planning, and analysis.

**Credits** 3

**Core Requirement** MCC

**Prerequisites**

OPM 340

**OPM 450 : Management of Innovation**

The course empowers students to deliver breakthrough innovations successfully into the world of business. The students explore techniques that seek major growth through innovations in products, services, and business models and develop the skills and gain the knowledge required to bring these innovations successfully to market. Business cases and projects are used to enhance the learning experience.

**Credits** 3

**Core Requirement** MCC

**Prerequisites**

OPM 330

**OPM 485 : Project Risk Management**

This course introduces essential analytical techniques to manage business management issues with focus on project risk management. The concepts and the theories of risks management are discussed together with management models and their adoption. The course will present the full life cycle of risk management including risks planning, identification, analysis (qualitative and quantitative), response strategies, monitor and control, and overall risk

governance approach. Business cases and tailored exercises are used for hands-on exercises to enhance students' learning and experience.

**Credits** 3

**Core Requirement** [MCC](#)

**Prerequisites**

OPM 310

### **OPM 498 : Operations and Project Management Internship**

This course requires students to complete a four months placement as an internee in either a private or government organization. This is an important part of the BBA degree requirements which bridges the gap between theory and practice. Students have the opportunity to get hands-on experience in Operations and Project Management related areas, including planning, tracking, reporting, managing projects, and operations; overseeing supply chain management and logistics functions; assessing processes quality and risk.

**Credits** 12

**Core Requirement** [MCC](#)

**Prerequisites**

MGT 490

## College of Engineering and Advanced Computing

**ARC : Elective III**

**Credits** 3

**ARC : Elective IIII**

**Credits** 3

### **COE 100 : Student Orientation and Academic Success**

This is a formal zero-credit hour course on student orientation and academic success. This course introduces students in the College of Engineering (COE) to their rights and responsibilities as a student at the COE and develops their skills to foster academic success. Students will develop a thorough understanding of the academic policies and procedures applicable to the COE Students, including policies and procedures related to attendance vs participation, academic integrity, academic probations, outside studies programs and credit transfer, grade appeals, GPA calculations, repeating courses, make-up exams, sick-leave, student advising, etc. The course will also familiarize students with their study plans,

including requirements for adding a minor or a double major; equip them with the skill required to access and utilize the rich library resources; introduce them to the set of extracurricular activities available at Alfaisal; and enhance their time management and study skills. The course will be delivered as a combination of online and face-to-face sessions. It will use online resources as well as guest speakers to educate students on the important aspect of their academic life.

**Credits** 1

## Architectural Engineering

### **ARE 110 : Architectural History and Theories**

This course presents a survey of architectural styles of the past to the present time on the comparative methods. Emphasis includes the geographical, geological, climatic, religious, social and political influences.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

none

**Corequisites**

none

### **ARE 120 : Drafting and Drawing**

The course is designed for students with little drafting background. Course content includes careers in drafting/engineering, use of drafting equipment, drafting techniques, lettering, geometric construction, multi-view and isometric drawings, sectional and auxiliary views, and basic dimensioning.

**Credits** 1

**Lab Hours** 0

**Lecture Hours** 1

**Tutoring Hours** 0

**Prerequisites**

none

**Corequisites**

none

### **ARE 120-S : Drafting and Drawing Lab**

The course is designed for students with little drafting background. Course content includes careers in drafting/engineering, use of drafting equipment, drafting techniques, lettering, geometric construction, multi-view and isometric drawings, sectional and auxiliary views, and basic dimensioning.

**Credits** 2

**Lab Hours** 4

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

none

**Corequisites**

ARE 120

### **ARE 201 : Architectural Design I**

Students will study all the elements of architectural design and develop a sensitivity and awareness required for valid interpretations of design concepts. Students will design a small-scale architectural projects focusing on the notions of time and transformation in conceptual, structural, organizational and spatial terms. This distinct emphasis supports a unifying analytical and creative framework for increasingly complex architectural interventions. Analytical and experimental drawing techniques, including drawing plans, sections, elevations and perspectives, and model-making to inform and represent the transition from simple concepts into sophisticated and developed spatial designs.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ARE 120

**Corequisites**

none

### **ARE 202 : Architectural Design II**

Students will complete commercial design study and advanced architectural design projects utilizing computer-aided design as well as traditional methods. Emphasis is placed on three-dimensional conceptualization, elements of design, site development, architectural history, color in design, computer generated 3D rendering, basic and advanced model building and time management skills.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ARE 201

**Corequisites**

none

### **ARE 220 : Construction Drawing (CAD)**

The course teaches drawing and drafting and computer-aided design of architectural systems, and includes the preliminary design, analysis, and documentation of these systems. This will include first and third angle projections, solid modeling and the use of commercially available CAD software.

**Credits** 2

**Lab Hours** 0

**Lecture Hours** 2

**Tutoring Hours** 0

**Prerequisites**

[ARE 120](#), [ARE 232](#)

**Corequisites**

none

### **ARE 220 S : Construction Drawing (CAD) Studio**

The course teaches drawing and drafting and computer-aided design of architectural systems, and includes the preliminary design, analysis, and documentation of these systems. This will include first and third angle projections, solid modeling and the use of commercially available CAD software.

**Credits** 2

**Lab Hours** 4

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

[ARE 120](#), [ARE 232](#)

**Corequisites**

ARE 220

### **ARE 231 : Building Materials and Construction Technology**

This course introduces construction materials and construction technology. Topics include construction terminology, materials and their properties, manufacturing processes, construction techniques and technologies, and other related topics. Upon completion, students should be able to detail construction assemblies and identify construction materials and properties.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[ME 201](#)

**Corequisites**

none



**ARE 231 L : Building Materials and Construction Technology Lab**

This course provides an understanding of the basic properties of construction materials and presents current field and laboratory standards and testing requirements for these materials such as Normal Consistency & Setting Time of Cement Past; Fresh and hardened properties of Mortar; Sieve Analysis of Aggregate; Specific Gravity of Aggregate; Unit Weight of Aggregate; Fresh and Mechanical Properties of Concrete; Mechanical Properties of Steel; Tests on wood.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

[ME 201](#)

**Corequisites**

[ARE 231.](#)

**ARE 232 : Building Construction**

This course introduces the student to the basics of building construction methods and techniques. It deals with the main elements and components of the building such as; site conditions, foundation systems, retaining walls, load bearing & masonry walls, skeleton R.C. structures, R.C. Footings, R.C. columns, R.C. floors & roofs, building insulation and protection, and staircases design, finishes and construction sequence.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[ME 201](#)

**Corequisites**

none

**ARE 297 : Architecture and Buildings**

This course presents an introductory study of the theory, history, principles and practice of architecture. It includes the basic principles of architectural analysis, criticism and aesthetic principles. It discusses the roles and responsibilities of the design professions, including interior design, landscape architecture, urban planning and engineering and how they relate to each other.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 110

**ARE 302 : Indoor Air Quality Engineering**

This course is designed to provide a fundamental knowledge about Indoor Air Quality (IAQ) and provide information about IAQ standards and laws. Participants will also learn the basics about how to implement the IAQ solution and perform IAQ audit in buildings.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[ME 206](#)

**Corequisites**

none

**ARE 303 : Interior Design**

The student will learn about design fundamentals as applied to the study and practice of interior design. Topics include color, space, form, light, furniture, windows, floors, and accessories. Class format includes illustrated lectures, discussions, and projects.

**Credits** 2

**Lab Hours** 0

**Lecture Hours** 2

**Tutoring Hours** 0

**Prerequisites**

ARE 202

**Corequisites**

none

**ARE 303 S : Interior Design Studio**

The student will learn about design fundamentals as applied to the study and practice of interior design. Topics include color, space, form, light, furniture, windows, floors, and accessories. Class format includes illustrated lectures, discussions, and projects.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ARE 202

**Corequisites**

ARE 303

**ARE 311 : Building Acoustics**

In this course, students will study the acoustical environment of buildings, including basic theory with an emphasis on room acoustics and mechanical system noise and vibration. Principles and their

applications to sound insulation and testing will also be presented and discussed together with relevant standards and regulations.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[ME 206](#)

**Corequisites**

none

### **ARE 313 : Electrical Installations**

Electrical Installations abound in any building. The Architecture Engineer is expected to have knowledge of the design, variety and maintenance of these Electrical Installations. This course will give the student a foundation course in power generation, distribution and control with respect to electrical installations in buildings.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[EE 207](#)

**Corequisites**

none

### **ARE 314 : Architectural Design III**

In Architectural Design III, students will be introduced to the dynamic relationship between buildings, streets, and public open spaces, which can create a functional, attractive and sustainable built environment. This course emphasizes sustainability through forms and functions, the integration between various arrangement of buildings and spaces, and the utilization of new technologies and systems in designing and constructing buildings. It is an interactive course that accentuates evidence-based design and research. Students will complete design proposals and schemes to redevelop an urban site in the city of Riyadh; involving different factors: economic, social, and environmental. The emphasis will be placed on fitting architectural forms into historical, and cultural contexts; enabling desirable activity patterns; conceptualizing built form; providing necessary infrastructure and service systems.

**Credits** 2

**Lab Hours** 0

**Lecture Hours** 2

**Tutoring Hours** 0

**Prerequisites**

ARE 202

**Corequisites**

none

### **ARE 314 S : Architectural Design III Studio**

The emphasis of this design component is to utilize hands-on analysis and problem solving techniques to create a better arrangement and design of the site under investigation. You will have the opportunity to apply what you have learned through lectures and field research into your design. The design of your final project should meet the requirements of the site, and the aspirations of its users.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ARE 202

**Corequisites**

ARE 314

### **ARE 315 : Lighting Systems and Applications**

This is an introductory course to lighting systems, their designs and applications in buildings, for students who aspire to be architects, interior designers and building service engineers. It covers day-lighting, electric lighting and introduces the use of color.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[PHU 124](#)

**Corequisites**

none

### **ARE 321 : Structural Mechanics**

This course covers the analysis of construction materials and structural components in buildings: uniform and non-uniform torsion of structural shapes, analysis of determinate and indeterminate beams (including elastic foundation conditions) by classical methods, finite difference equations, numerical integrations, series approximation, elastic stability of beams and frames, lateral stability of beams, beams-columns, analysis of frames including the effect of axial compression. It also introduces the concepts, theories and methodologies for structural design for buildings.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours 0****Prerequisites**

ARE 231

**Corequisites**

none

**ARE 321 L : Structural Mechanics Lab**

Laboratory experiments related to structural mechanics, including truss analysis, bending, buckling, torsion, stresses, and strains of structural members.

**Credits 1****Lab Hours 2****Lecture Hours 0****Tutoring Hours 0****Prerequisites**

ARE 231

**Corequisites**

ARE 321

**ARE 332 : Building Services Engineering**

This course will cover the principles of building services engineering, which consists of three major modules: fire safety engineering, piped and gas services engineering and vertical transportation systems in buildings.

**Credits 3****Lab Hours 0****Lecture Hours 3****Tutoring Hours 0****Prerequisites**

[ME 206](#)

**Corequisites**

none

**ARE 332 L : Building Services Engineering Lab**

This course will cover the principles of building services engineering, which consists of three major modules: fire safety engineering, piped and gas services engineering and vertical transportation systems in buildings.

**Credits 1****Lab Hours 2****Lecture Hours 0****Tutoring Hours 0****Prerequisites**

[ME 206](#)

**Corequisites**

ARE 332

**ARE 341 : The Built Environment**

Through a series of modules dealing with different architectural issues and building types (Representation; Landscape; Dwelling; Commerce and

Industry; Public Institutions; Sacred Spaces), students will be introduced to ideas and problems that affect the way in which the built environment has been and continues to be shaped in a variety of historical and cultural contexts. We will think broadly about how the spaces that people move through and inhabit in their daily lives shape and are shaped by human behavior, cultural identity, political experience, and the currents of historical circumstance. Contemporary buildings and projects will figure prominently as examples of how designers currently approach architectural, structural and urban problems. Local sites will serve as case-studies for the analysis of different aspects of the built environment. This class is taught in a seminar format with students evaluated on their class participation and assigned projects. Readings and projects will introduce students to a variety of techniques for analyzing and representing the built environment, providing the basic tools for subsequent architectural research and studies.

**Credits 3****Lab Hours 0****Lecture Hours 3****Tutoring Hours 0****Prerequisites**

ARE 297

**Corequisites**

none

**ARE 355 : Quantity Surveying**

Students will acquire knowledge of and understand basic concepts of: accepted drawing conventions and formats; how to read and interpret architectural and engineering drawings; what constitutes a set of drawings and how to locate cross-references, etc; how building specifications are prepared and structured; the purpose of measurement and estimating in the construction industry; how to measure simple architectural and engineering structures using basic measurement techniques; how to effectively describe items that have been measured; what the purpose of Standard Method of Measurement of Building Work is and how to use it; what are the standard building trades and why they have been identified; the definitions of building elements; how common construction rates are built-up including the constituents of material, labor, plant, overheads and profit; the inclusiveness and/or exclusiveness of rates and prices.

**Credits 3****Lab Hours 0****Lecture Hours 3****Tutoring Hours 0**

**Prerequisites**

ARE 220

**Corequisites**

none

**ARE 400 : Special Topics in Architectural Engineering**

This course provides instruction and experience in timely topics related to the Architectural Engineering field.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

Department Approval

**Corequisites**

none

**ARE 405 : Structural Analysis**

In this course students will study the methods of analysis for determinate and indeterminate structures under stationary and moving loads which include stability and determinacy of structures. They will also apply the basics of structural mechanics and design to analyze and optimize practical building structures using finite element analysis (FEA) software under various loading conditions.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 321

**Corequisites**

none

**ARE 406 : Fundamentals of Reinforced Concrete Design**

In this course, students will gain the ability to design and proportion structural concrete members including slabs, beams, and columns for strength as well as serviceability and economy. A practical understanding of the structural design process will be developed along with a theoretical understanding of the mechanics and behavior of reinforced concrete. Additionally, different types of reinforced concrete systems will be introduced. Students will develop a thorough understanding of the behavior and design of reinforced concrete members and systems and will be able to apply and effectively use the latest industry

standard of formulas, tables, design aids, and/or computer software in the design of reinforced concrete members.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[ME 203](#), [ARE 405](#)

**Corequisites**

none

**ARE 409 : Project Management and Economics**

In this course students will learn to solve economic problems related to construction and engineering, through studying construction project management theories and techniques, characteristics of construction organizations, equipment, and methods. Using project management software and the project life-cycle model from construction project simulations, or real life projects, students will organize, plan, monitor and control a construction project. Students learn to delineate the unique cost control methods for construction productivity, job cost, labor records, and material and equipment purchases. Construction site safety is emphasized throughout the course.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 355

**Corequisites**

none

**ARE 410 : Contracts and Liabilities for Buildings and Construction**

This course presents and discusses the legal aspects of engineering and construction contracts; contract formation, interpretation, rights and duties, and changes; legal liabilities and professional ethics of architects, engineers, and contractors. Upon completion of this course, students will be able to: (1) identify the elements of contract formation; (2) interpret contract clauses; (3) explain the rights and duties of the parties involved in design and construction; and (4) evaluate changes and their root causes. Students will also be able to objectively identify and analyze legal liabilities, ethical dilemmas, and the expected professional standard of architects, engineers, and contractors.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3  
**Tutoring Hours** 0

**Prerequisites**

ARE 355

**Corequisites**

none

**ARE 412 : Environmental Management and Policy**

The objective of this course is to develop an understanding of rational analysis, as well as decision making in issues concerning environmental economics and policy, taking into account the environmental impacts. Concept of externality of environmental impacts, market failure, social cost and benefit analysis, concept of environmental protection and policy instruments related to energy supply and consumption, environmental pollution control and abatement, case studies. Contemporary issues of environment at domestic, regional and international level: public participation and environmental concerns, acid rain, Montreal Protocol, UNFCCC and Kyoto Protocol.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 341

**Corequisites**

none

**ARE 435 : Undergraduate Research in Architectural Engineering**

In this course students will learn how to produce highly quality research about a novel topic mutually agreed between the instructor and the student related to the broad field of Architectural Engineering. The student and the faculty supervisor will complete and sign a research contract which includes a plan for the semester before the research begins. Students receive guidance and are mentored throughout the whole process. Students' progress is periodically assessed by the instructor and ultimately the students will produce a final report detailing their research results.

**Credits** 0

**Lab Hours** 0

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

Department Approval.

**Corequisites**

none

**ARE 435 S : Undergraduate Research in Architectural Engineering Studio**

In this course students will learn how to produce highly quality research about a novel topic mutually agreed between the instructor and the student related to the broad field of Architectural Engineering. The student and the faculty supervisor will complete and sign a research contract which includes a plan for the semester before the research begins. Students receive guidance and are mentored throughout the whole process. Students' progress is periodically assessed by the instructor and ultimately the students will produce a final report detailing their research results.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

Department Approval

**Corequisites**

ARE 435

**ARE 452 : Soil Mechanics and Foundations**

The main objective of the course is to introduce students to the basic concepts of design and engineering of earth materials. After completion of the course, students should have a fundamental conceptual understanding of the mechanical behaviors of soils and rocks, which will provide them with the basic tools required in the solution of most geotechnical engineering problems.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 231

**Corequisites**

none

**ARE 455 : Sustainable Buildings**

This course presents the practice of creating building structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle: from siting to design, construction, operation, maintenance, renovation, and deconstruction. This practice expands and complements the classical building design concerns of economy, utility, durability, and comfort. It addresses the full range of issues associated with sustainable buildings, including energy consumption, use of materials, health, assessment methods and

environment concerns. It discusses the issues through lectures, tutorials and case study reviews that identify how they are integrated into the design of buildings.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 341

#### **ARE 460 : Waste Management in Buildings**

The course is designed to furnish the technical skills of future engineers responsible for the design, installation, operation and monitoring of public health and waste management systems required for the safe, comfortable and environmentally friendly operation of modern buildings.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[ME 201](#)

**Corequisites**

none

#### **ARE 465 : Management Principles in Building Engineering**

This course presents the management principles for building engineering, which include financial management, human resources management and organization of business.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 409

**Corequisites**

none

#### **ARE 470 : Building Automation and Control**

This course provides an integrated system approach to understanding building automation and control systems and their applications to building services. It covers the architecture, communication methods, and application software of modern building automation and control systems, and provides good working knowledge of how to specify, design, install, commission, operate, and maintain building automation and control systems. Application areas will include air-conditioning systems, fire detection and suppression systems, security systems, lighting

systems, vertical transport systems and other essential building services. The lectures will be complemented by hands-on training sessions in labs.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 313

#### **ARE 475 : Building Energy Management**

This course gives a rigorous treatment of issues related to the judicious use of energy in the design and use of buildings is provided. Energy-efficient building services systems and system control, energy-conscious building design, building energy analysis, auditing, building envelope, energy-efficient lighting design, energy management programs, energy sources and conservation, rate schedules, waste-heat recovery, passive solar heating/cooling and day-lighting.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 313

#### **ARE 477 : Smart Buildings**

This course explores how a building's operational efficiency as well as occupants' productivity and safety can be improved through the use of advanced and smart technologies. Students will be introduced to principles of smart systems and green building systems, in addition to how these principles integrate and interact. Students will also learn the possibility and feasibility of utilizing the Internet of Things (IoT), especially in evaluating and transforming existing buildings into sustainable ones. Finally, students will work on a technical, hands-on projects where IoT and other technologies are used in monitoring and managing a building's sustainability variables.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 341

**Corequisites**

none

#### **ARE 480 : Construction Economics and Finance**

The course provides a framework for understanding and interpreting the economic and financial issues in



relation to the construction industry, construction firms, and construction projects. The course covers the economic theories of development and construction of built facilities and infrastructure and the roles of these processes in the general economy. Participants will benefit by gaining a better understanding of the conceptual frameworks of economic analysis that underly a variety of approaches to practical problems encountered in the construction process.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 355

**Corequisites**

none

### **ARE 482 : Operation Analysis in Building Construction**

The course provides students with an introduction to how to approach a construction project covering site set up, planning including the provision of different types of construction equipment and their application, equipment economics, productivity measures, probability theory and statistics, and performance improvement. This task will be linked to the master schedule and the financial planning too . The outcome will be a comprehensive plan for driving projects through completion based on scientific approach and optimum planning. The course primarily focuses on modeling and simulation of field operations using discrete event simulation, including the use of specialized software. Activity cycle diagrams will be used extensively to describe processes and their elements, activities, and resources. Verification and validation of simulation models will be discussed. Analytical skills gained from this course will allow students to better understand and design construction operations. Students will have the opportunity to meet construction managers and visit construction projects to get hands on experience.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 355

**Corequisites**

none

### **ARE 484 : Construction Professional Practice**

This course examines practice management and project management in the built environment professions, particularly in engineering and construction. Topics in practice management include: ethical practice; the character and operation of practices; legal requirements; cash flow and profitability; running a business; professional memberships and registration; risk and professional liability; and personal career planning. Topics in project management include: project stages; procurement and feasibility; statutory requirements; management of time, cost and quality; and contracts and contract administration in private and public realms. Alternative and innovative pathways through the profession are also considered.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ARE 409

**Corequisites**

none

### **ARE 491 : Architectural Engineering Capstone Project I**

The Capstone project is a two-semester-long design project, undertaken individually or in a small team, under a staff mentor. The project involves an introduction to the life cycle of a project from a technical and management perspective, and is based on extensive oral and written communication. The capstone project is typically the foundation of the student's engineering portfolio for application to industry or graduate school. Students will apply the engineering concepts covered in the courses learned so far to architectural engineering problems, including the design of building structural and services systems, with an emphasis on teamwork. The projects are also used to introduce the students to various practical aspects of construction and professional ethics.

**Credits** 2

**Lab Hours** 4

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

[ARE 202](#), [ARE 332](#), [ARE 313](#), [ARE 315](#), [ME 407](#)

**Corequisites**

none



### **ARE 492 : Architectural Engineering Capstone Project II**

The Capstone project is a two-semester-long design project, undertaken individually or in a small team, under a staff mentor. The project involves an introduction to the life cycle of a project from a technical and management perspective, and is based on extensive oral and written communication. The capstone project is typically the foundation of the student's engineering portfolio for application to industry or graduate school. Students will apply the engineering concepts covered in the courses learned so far to architectural engineering problems, including the design of building structural and services systems, with an emphasis on teamwork. The projects are also used to introduce the students to various practical aspects of construction and professional ethics.

**Credits** 2

**Lab Hours** 4

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ARE 491

**Corequisites**

none

### **ARE 401 : Ethics and Professional Development**

The course will integrate modules covering ethics, career and professional development, along with preparations for taking the Jahiziyah/ Saudi Engineering Council Exams. The course will introduce the professional ethics and compare it with personal ethics and common morality. The professional ethics will be studied within the Engineering context where differentiation between Ethics, Morals and the Law will be discussed. Typical Ethical issues that engineers face such as safety, health, confidentiality and conflict of interest will be covered.

The course will also cover professional development lecture series for the students to introduce them to topics and application related to their fields, job market as well as trends in the local and international economies.

The students will also be prepared for the Jahiziyah and the Saudi Engineering Council Exams through lectures, discussions and mock up exams.

**Credits** 1

## **Biomedical Engineering**

### **BME 100 : Introduction to Biomedical Engineering**

The aim of this course is to introduce the students to the biomedical engineering profession. This course will provide an insight into multidisciplinary areas of biomedical engineering and design. The course is primarily concerned with professional practice and a starting point for your ongoing professional development that you will undertake as a professional biomedical engineer throughout your career. Course topics will be covered by lectures, tutorials, practical classes, and a team-based design project.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[PHU 103](#)

**Corequisites**

None

### **BME 100 L : Introduction to Biomedical Engineering Lab**

The Introduction to Biomedical Engineering Lab is a hands-on lab that complements theoretical knowledge in biomedical engineering. Students gain practical experience through experiments, data analysis, and problem-solving using cutting-edge equipment and software. Topics include biomedical instrumentation, medical imaging, biomaterials, bioinformatics, and physiological measurements. Instructors guide students in applying engineering principles to healthcare challenges, fostering critical thinking and problem-solving skills. Ethical considerations and regulatory requirements are also explored.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

[PHU 103](#)

**Corequisites**

[BME 100](#)

### **BME 201 : Bio Fluid Dynamics**

Fundamentals of fluid mechanics. Flow properties of blood, applications describing flow of air in the airways and flow of blood in large arteries.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours 0****Prerequisites**

[BME 100](#); [PHU 103](#)

**Corequisites**

None

**BME 202 : Biomechanics**

This course explores fluid mechanics in the context of the human circulatory system. Principal equations are derived from differential analysis of fluid flow, and models of characteristic flow conditions are fully analyzed. Biofluid mechanics, vessel biomechanics, and hemodynamic analysis of the circulation system will also be discussed. This course combines didactic lecture and laboratory and will introduce the student to the principles of biomechanics in the context of the musculoskeletal system. Topics include fundamental concepts of mechanics, force systems and couples (including muscle and joint forces), free body diagrams, stress analysis and failure of materials (including analysis of bone strength), mechanical behavior of soft tissues, dynamics of particles and rigid bodies (including analysis of gait), and impulse (including analysis of injury). Kinematic and dynamic analysis of mechanisms. Computer-aided kinematic design. Experimental studies of mechanical properties of structural elements and prosthetics.

**Credits 3**

**Lab Hours 0**

**Lecture Hours 3**

**Tutoring Hours 0**

**Prerequisites**

[PHU 103](#)

**Corequisites**

None

**BME 301 : Biomedical Signals and Systems**

This course applies mathematical analysis tools to biological signals and systems. Frequency analysis, Fourier and Laplace transforms, and state equations are used to represent and analyze continuous and discrete time bio signals. Classic feedback analysis tools are applied to biological systems that rely on negative feedback for control and homeostasis.

**Credits 3**

**Lab Hours 0**

**Lecture Hours 3**

**Tutoring Hours 0**

**Prerequisites**

[MAT 211](#); [MAT 213](#)

**Corequisites**

None

**BME 302 : Biomedical Digital Signal Processing**

This course Presents the fundamentals of digital signal processing with particular emphasis on problems in biomedical research and clinical medicine. It covers principles and algorithms for processing both deterministic and random signals. Topics include data acquisition, imaging, filtering, coding, feature extraction, and modeling.

**Credits 3**

**Lab Hours 0**

**Lecture Hours 3**

**Tutoring Hours 0**

**Prerequisites**

[BME 301](#)

**Corequisites**

None

**BME 303 : Biomedical Electronics**

This subject will enable the students to learn the basic principles of different instruments used in medical science since a large number of electronic equipment are being used in hospitals for patient care and diagnosis. The course provides Introduction to Semiconductors, Diode types, circuits and applications, Bipolar Junction Transistors (BJT) types and biasing circuits, Field effect transistors (FET), Small-signal BJT and FET amplifiers, Multistage amplifiers, Frequency response of amplifiers, Introduction to differential amplifiers, medical applications of diode circuits and transistor amplifiers.

**Credits 3**

**Lab Hours 0**

**Lecture Hours 3**

**Tutoring Hours 0**

**Prerequisites**

[EE 207](#)

**Corequisites**

None

**BME 303 L : Biomedical Electronics Lab**

The biomedical electronics Lab is a hands-on lab that complements theoretical knowledge in Medical Electronics course. This subject will enable the students to learn the basic principles of different instruments used in medical science since a large number of electronic equipment are being used in hospitals for patient care and diagnosis. The lab provides experiments such as Introduction to Semiconductors, Diode types, circuits and applications, Bipolar Junction Transistors (BJT) types and biasing circuits, Field effect transistors (FET), Small-signal BJT and FET amplifiers, Multistage amplifiers, Frequency

response of amplifiers, Introduction to differential amplifiers, medical applications of diode circuits and transistor amplifiers.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

[EE 207](#)

**Corequisites**

[BME 303](#)

### **BME 304 : Biomedical Image processing**

**Credits** 4

**Lab Hours** 2

**Lecture Hours** 3

### **BME 305 : Biomedical Imaging Systems I**

This course provides an introduction to the physics and engineering of tomographic imaging devices, instrumentation, the diagnostic methods, signal processing methods, image characteristics and the biological effects in X-Ray (projection radiography), X-Ray computed tomography, nuclear medicine (SPECT/PET), ultrasound imaging, and magnetic resonance imaging.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 301](#)

**Corequisites**

None

### **BME 305 L : Biomedical Imaging Systems I Lab**

An introduction to the physics, instrumentation, and signal processing methods used in general radiography, X-ray computed tomography, ultrasound imaging, magnetic resonance imaging, and nuclear medicine. The primary focus is on the methods required to reconstruct images within each modality, with emphasis on the resolution, contrast, and signal-to-noise ratio of the resulting images. Students will additionally engage in hands-on activities to reconstruct medical images from raw data.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

[BME 305](#)

### **BME 306 : Biomedical Imaging Systems II**

This course covers the fundamentals and advanced principles of various biomedical imaging modalities, integrating core concepts from diagnostic and therapeutic ultrasound, computerized tomography (CT), magnetic resonance imaging (MRI), and nuclear imaging. Students will gain an in-depth understanding of the physics, engineering, and technological implementations behind these imaging techniques, focusing on their clinical applications.

**Credits** 4

**Lab Hours** 2

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 301](#) [BME 305](#)

### **BME 307 : Information Technology for Biomedical Engineers**

The objective of this course is to provide the students with the knowledge to address these challenges. We focus on the storage, integration, querying and management of heterogeneous, voluminous, geographically dispersed biomedical data. In addition to primary data, such as experimental data, the methods also address derived data such as those from analyzed microscope images. Examples of pathway analysis methods and the sharing and storage of the data that they generate will be Presented.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[SE 100](#)

**Corequisites**

None

### **BME 308 : Biomedical Instrumentation I**

This course introduces the students to the basic design concept required to acquire, process and interpret biological and medically relevant signals. Emphasis is placed on recognizing and accommodating limitations inherent in sensor and their associated electronics. Topics include design of biomedical instrumentation including different sensor types and their associated electronics. Mathematical models of sensor ranging including resistive sensors and biosensors. The design of the signal conditioning electronics. Practical application on specific cases where students will be

able to demonstrate their skills on evaluating a biomedical instrument using MATLAB/LabVIEW/Multisim software.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

COM 200 [BME 202](#) [BME 303](#)

**Corequisites**

None

### **BME 308 L : Biomedical Instrumentation I Lab**

This laboratory-based course is designed to develop hands-on experimental skills to the selection and application of various sensors and transducers, and develop practical experience to designing, using and testing analog instrumentation used to acquire and process biomedical signals.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Corequisites**

[BME 308](#)

### **BME 310 : Healthcare Management System**

This course covers Health Care Management and provides a framework for addressing management problems in health care organizations. By the end of the course, you will have been exposed to many management ideas, theories, and applications.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 307](#)

**Corequisites**

None

### **BME 390 : Biomedical Engineering Summer Internship**

**Credits** 0

### **BME 401 : Undergraduate Research in Biomedical Engineering**

The course will provide Undergraduate students who are interested in participating in research with a BME faculty member. The course is independent research, not independent study. The research may be either experimental or theoretical in nature or a combination of both and should be hypothesis driven. It must be conducted under the supervision of a BME faculty, or

another faculty member approved by the course director. Students identify their own mentors and projects based on their research interests. Students must typically be of junior or senior standing to register for this course

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

This course requires Department Chair approval, a min. 3.0 GPA, & a signed Research contract.

### **BME 402 : Bioinformatics**

This course is designed to give students both a theoretical background and a working knowledge of the techniques employed in bioinformatics. Emphasis will be placed on biological sequence (DNA, RNA, protein) analysis and its applications.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 307](#)

**Corequisites**

None

### **BME 404 : Cardiovascular Instrumentation**

This course is concerned with theory and design of instrumentation used for the diagnosis, monitoring, treatment, and research investigation of cardiac and cardiovascular disease.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 427](#)

### **BME 406 : Quality Engineering**

The course teaches Quality Assurance in an industrial system and compares it with the existing standards and protocols, including an introduction to quality engineering, quality standards ISO 9000 and QS 9000, TQM, quality cost analysis, process modeling and hypothesis testing, statistical process control for long and short production runs, process capability analysis, capability indexes, Weibull analysis, Six sigma acceptance sampling and design of experiments.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 305](#)

**BME 408 : Lasers and Coherent Optics**

To introduce optics, lasers and optical waveguides. After taking this class, a student should understand the basics of optical fields including polarization, coherence, and behavior at dielectric interfaces. He or she should also understand the fundamentals of optical amplification, lasers, and optical waveguides.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[EE 209](#)

**BME 410 : Radiation Therapy**

The course provides the basis for understanding physical principles within radiotherapy, focusing on clinical application and equipment for generating/ delivering ionizing electron and photon radiation, clinical radiation dosimetry, characteristics and specifications of radiation fields, treatment planning (volume definitions, field setup, fractionations, modern techniques and dose calculation algorithms), brachytherapy, quality assurance, introduction to particles/heavy ions in radiotherapy and quantitative methods in radio-oncology.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 306](#)

**BME 411 : Computed Tomography (CT) Angiography Block**

The Computed Tomography (CT) course investigates the area of CT and hybrid imaging and facilitates student learning whilst encouraging the use of evidence-based practice and critical thinking. The specialization provides a theoretical understanding of the science of CT instrumentation, image formation and radiation dose minimization. Students will study the development of CT protocols and various operator selectable parameters. The content includes oral and intravenous contrast safety and administration; routine and interventional CT procedures; post processing; dual source and multi energy CT; CT

perfusion; cardiac CT; micro-, cone beam, mobile and flat panel CT; and CT in radiation therapy and hybrid imaging.

**Credits** 3

**Lab Hours** 2

**Lecture Hours** 2

**Tutoring Hours** 0

**Prerequisites**

BME 304 [BME 306](#)

**BME 412 : Data Mining and Application in Engineering**

This course introduces basic data mining concepts and techniques for discovering interesting patterns hidden in large-scale data sets, focusing on issues relating to scalability and efficiency. Topics covered in this course include data preprocessing, data warehousing, frequent pattern analysis, classification, clustering, outlier analysis, tools and technologies for data mining and algorithms for mining complex data.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 402](#)

**BME 413 : MR Block**

The MR Course is a comprehensive and in-depth program designed to provide students with a thorough understanding of Magnetic Resonance (MR) imaging technology. Through a combination of lectures, practical exercises, and hands-on training, students will gain knowledge in the principles, physics, and instrumentation of MR imaging. They will learn about image acquisition, image reconstruction, and image analysis techniques used in clinical and research settings. The course will cover various applications of MR imaging, including neuroimaging, cardiovascular imaging, musculoskeletal imaging, and oncology imaging. By the end of the course, students will have the skills to operate MR scanners, analyze MR images, and contribute to the advancement of MR imaging in the field of medical diagnosis and research.

**Credits** 3

**Lab Hours** 2

**Lecture Hours** 2

**Tutoring Hours** 0

**Prerequisites**

BME 304 [BME 306](#)

**Corequisites**

None



**BME 414 : 3D Med. Printing**

The course shows 3D Printing as a method of creation that requires some basic computer skills and a few rules of thumb. This class will allow students to discover for themselves the potential and limitations of 3D Printing through a build intensive design project. This course is an excellent window into prototyping an invention, or creating a work of art, or customizing a product or just making something cool yet lacked the skills or a fully equipped workshop. Medical angle covers medically used materials, procedures and operations. It covers the role 3D printing is currently playing in surgery, in vitro diseases, patients' needs as well as limitless other applications.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 427](#)

**BME 415 : Nuclear Block**

This course deals with the physical and technical principles of nuclear medical equipment. It provides advanced study in the fields of radiation physics and radiation protection in nuclear medicine. The block includes students training to independently, complete, calculate dose, and inject radiopharmaceuticals, and carry out commonly occurring nuclear medical examinations. The placement in the gamma camera will imply that student is trained to plan, carry out and Present commonly occurring examinations such as skeleton scintigraphy and renography. The student should develop an understanding regarding nuclear medical reconstruction and diagnostic imaging as well as shorter field studies on PET - CT.

**Credits** 3

**Lab Hours** 2

**Lecture Hours** 2

**Tutoring Hours** 0

**Prerequisites**

BME 304 [BME 306](#)

**Corequisites**

None

**BME 416 : Biomedical Materials**

This course will concentrate on fundamental principles in biomedical engineering, material science, and chemistry. This course examines the structure and properties of hard materials (ceramics, metals) and soft materials (polymers, hydrogels). Specifically, the class will be divided into three parts: (I) Biomaterial Science and Engineering, (II) Polymers, and (III)

Surfaces and Colloid Science. For each section, theoretical description of the relevant phenomena, examples of experimental measurements, specific applications, the physiological requirements/relevance, and the principles of bio interface science and technology will be covered.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 423](#)

**BME 417 : ST & Fluoroscopy Block**

This course covers Principles of radiation protection and fluoroscopic equipment, application of special equipment, illumination, anatomy and physiology of the eye and relationship of internal organs. It provides healthcare providers with an understanding of the challenges encountered when using fluoroscopy in clinical practice and the tenets of safe fluoroscopy use in clinical practice. The overall goal and purpose of radiation safety is to conduct individual radiation risk assessment for each patient, providing an opportunity to give an informed diagnosis.

**Credits** 3

**Lab Hours** 2

**Lecture Hours** 2

**Tutoring Hours** 0

**Prerequisites**

BME 304 [BME 306](#)

**Corequisites**

None

**BME 418 : Internet of Things**

This course introduces the principles, technologies, challenges, and required expertise needed for building the Internet of Things (IoT) solutions. It provides a big picture of what is involved in IoT. Topics covered in this course include analog and digital sensing, interfacing sensors with microcontrollers, digital communication protocols, microcontroller choices and capabilities, gateways, fog computing, networking, cloud computing, need and challenges for cryptography and compression, security issues, and low power/energy challenges. The course involves hands-on-experience that culminates in an implementation project.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

BME 390

### **BME 420 : Prosthetics and Orthotics**

This course is designed to explain management of patients with amputations and conditions requiring orthotics will be emphasized. The basic components of the course include types of orthotics and prosthetics, fitting, exercise programs, gait analysis and gait training. A brief overview of upper extremity orthotics and prosthetics will be provided.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 423](#)

**Corequisites**

None

### **BME 421 : Robotics**

This course covers an overview of robot mechanisms, dynamics, and intelligent controls. Topics include planar and spatial kinematics, and motion planning; mechanism design for manipulators and mobile robots, multi-rigid-body dynamics, 3D graphic simulation; control design, actuators, and sensors; wireless networking, task modeling, human-machine interface, and embedded software.

**Credits** 3

**Lab Hours** 2

**Lecture Hours** 2

**Tutoring Hours** 0

**Prerequisites**

[BME 308](#)

**Corequisites**

[BME 427](#)

### **BME 422 : Medical Device Innovation and Entrepreneurship**

This course is focused on the intricate and unique field of medical device development and the key entrepreneurship and management skills required to get the device to market, from concept to business planning and market emergence.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 427](#), [IE 315](#)

**Corequisites**

None

### **BME 423 : Bio Prosthetic Systems**

This course covers an overview of Human movement, biomechanics, skeletal and muscular anatomy, comparative anatomy, muscle physiology, and locomotion. Engineering design of artificial limbs.

**Credits** 3

**Lab Hours** 2

**Lecture Hours** 2

**Tutoring Hours** 0

**Prerequisites**

[BME 307](#), [BME 427](#)

**Corequisites**

None

### **BME 424 : Biomedical Sensors**

Introduction to biomedical sensors: definition, classification, calibration, requirements, errors and uncertainty, static and dynamic parameters, requirements and design aspects of signal conditioning circuits, temperature sensors: types, and signal processing circuits, Pressure sensors: types, operating principle, calibration techniques, medical applications and conditioning procedures, Electrochemical sensors, Ion-selective sensors, Biosensors, Ion-sensitive field effect chemo-sensors, optical sensors, Ultrasound transducers, Intelligent biomedical sensors, manufacturing of biomedical sensors.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 301](#), [BME 427](#)

**Corequisites**

None

### **BME 425 : Perfusion & Pumping Engineering**

This course covers an overview of Perfusion and pumping engineering Technology. Perfusionists are trained medical practitioners who specialize in delivering life-saving assistance for blood pumping during surgery on vital organs such as the heart, liver and lungs. During such surgery, patients need extracorporeal circulation (ECC) to sustain the defective organ. Perfusion Technology is used during open-heart surgery, cardiac failure, renal failure, and other life-threatening conditions.

**Credits** 3

**Lab Hours** 2

**Lecture Hours** 2

**Tutoring Hours** 0

**Prerequisites**



[BME 307](#), [BME 427](#)

**Corequisites**

None

**BME 426 : Tissue Engineering**

This course will introduce tissue engineering approach for augmentation or replacement of compromised tissue function in nerve, micro vessels, skin and cartilage. Integrative exploration of the use of three-dimensional polymeric scaffolds and drug delivery vehicles, and gene therapy and cellular engineering for functional repair of injured tissues.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 100](#)

**Corequisites**

None

**BME 427 : Biomedical Instrumentation II**

This course offers an in-depth study of clinical measurements and medical instrumentation. The course covers biopotentials, biopotential electrodes, biosensors, and transducers, as well as key measurements such as ECG, ENG, EMG, ERG, and EEG. Students will learn about cardiovascular and respiratory system measurements, including blood pressure, blood flow, and pulmonary function analyzers. Additional topics include audiometry, biomedical virtual instrumentation, patient monitoring systems, and biomedical wireless telemetry. The course also explores clinical laboratory instruments like electrophoresis, ELISA, hematology, chromatography, spectroscopy, and blood gas analyzers, as well as therapeutic devices such as pacemakers, defibrillators, and ventilators. Emphasis is placed on the design, operation, safety, and calibration of these instruments.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 306](#), [BME 308](#)

**Corequisites**

None

**BME 428 : Human Limbs and Their Artificial Replacements**

This course considers normal human movement; pathological conditions resulting from disease, injury,

malformations, birth, etc.; and engineering approaches such as prostheses (limb replacements) and orthoses (limb assists) that may be able to ameliorate the conditions and promote improved movement and function.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 427](#)

**Corequisites**

None

**BME 430 : Special Topics in Biomedical Engineering**

The course will provide the methodologies and applications of biomedical engineering in healthcare delivery. Topics to be taught include but are not limited to bioengineering, biosciences, and biomechanics; biomaterials science and selected emerging topics in regenerative engineering applications; medical and engineering ethics; stem cells growth and maintenance.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

TBD

**BME 430 : Genetics and Molecular Biology**

Molecular biology and genetics have become critical elements in the practice of medicine. This course is designed to give you a firm and detailed understanding of the impact of molecular biology and genetics on medicine and the connections between basic research, medical knowledge, and the perspective of patients who are impacted by our increasingly detailed conception of genetics in medicine.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

COM 200

**Corequisites**

None

**BME 431 : Artificial Intelligence**

The course teaches the theory and implementation of Artificial Intelligence through several state-of-the-art methods. It is also cross listed with SE/EE 444 Artificial Intelligence.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 307](#)

**BME 432 : Biomechanics of Movement**

This course introduces advanced undergraduate students to musculoskeletal biomechanics and the quantitative analysis of human movement. Students will learn how muscles act as mechanical actuators to produce movement. Students will also learn how to apply experimental and computational methods to evaluate how muscles, bones, and joints work together as a mechanical system. Topics covered will include rigid-body kinematics, dynamics, motion capture, external force measurement, electromyography, and mechanical properties of muscles and tendons.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 202](#)

**Corequisites**

None

**BME 433 : Machine Learning**

This course introduces machine learning and its applications in electrical engineering systems. It offers a review of relevant background in probability and background, and introduces general machine learning methods including supervised learning, unsupervised learning, and reinforcement learning. Applications instances in electrical engineering systems are discussed.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 307](#)

**BME 434 : Medical Devices, Disease, and Global Health**

Engineering and the application of technologies are important in the delivery of health care. This is true in

the developing world as well as in the developed world, however health care technologies often fail to work as intended when solutions from wealthy countries are used in poor countries. Differences in burden of disease, infrastructure, economic and social structures are examined in the context of developing practical ways to improve health in specific parts of the developing world.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 427](#)

**Corequisites**

None

**BME 435 : Cognitive Neuroscience**

The course provides a survey of the basic facts, empirical evidence, theories and methods of study in cognitive neuroscience exploring how cognition is instantiated in neural activity. Representative topics include perceptual and motor processes, decision making, learning and memory, attention, reward processing, reinforcement learning, sensory inference, and cognitive control.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[BME 301](#), [MAT 212](#)

**Corequisites**

None

**BME 436 : Photonic Information Processing**

This course will be aimed at developing a principled understanding of quantum mechanical description of light, its generation, manipulation and detection. This course will be valuable for students who intend to partake theoretical or experimental research in any area of photonic quantum information processing, such as quantum communications, sensing and computation.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[MAT 213](#), [BME 301](#), BME 304

**Corequisites**

None

**BME 438 : Nanotechnology**

Introduction to the underlying principles and applications of the emerging field of Nanotechnology and Nanoscience. Intended for a multidisciplinary audience with a variety of backgrounds. Introduces tools and principles relevant at the nanoscale dimension. Discusses current and future nanotechnology applications in engineering, materials, physics, chemistry, biology, electronics, and energy

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[PHU 103](#)

**Corequisites**

None

**BME 440 : Introduction to BioMEMS, and Bio Nanotechnology**

The course teaches economic analysis in an engineering environment considering the time value of money. Methods for evaluation of alternatives: present worth, annual equivalent worth, rate of return, payback method and benefit-cost ratio method. Replacement analysis, depreciation, inflation and cost estimation. Sensitivity and risk analysis are also considered.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[STA 212](#)

**Corequisites**

None

**BME 495 : Capstone Project I**

Students work in teams as professional engineering consultants on an independent engineering project under the supervision of a project advisor. The design process is emphasized, encompassing project definition, feasibility analysis, evaluation of alternative designs, and design computations. For each project, the scope of work is developed and negotiated between client and student consultants. The scope of work may also include fabrication, device testing, and field-testing. Projects are arranged by the students with approval of the instructor. Progress reports and a final written report are submitted to the student's project advisor. Oral Presentations of reports are made before the faculty and students. A student who

selects a project suggested by industry has the opportunity of working with an industry sponsor in an actual engineering experience.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

None

**BME 496 : Capstone Project II**

BME 496 is the second part of the two-semester capstone sequence. Students working individually or in a small team under supervision of an academic staff will be expected to continue and complete prior work initiated in BME 495. Student teams proceed with physical realization, validation and testing of their designs. Student teams are expected to deliver an engineered, validated and tested product or prototype. Scaled models may also be produced for projects involving large structures. While a successful outcome is expected, it is not required as the focus of capstone courses is on students' learning.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

None

**IE 315 : Engineering Economy and Cost Analysis**

Introduction to Principles and biomedical applications of micro-electromechanical systems (MEMS) and nanotechnology, including microfluidics, nanowire sensors, nanomotors, quantum dots, biofuel cells and molecular imaging.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[PHU 103](#)

**Corequisites**

None

# Electrical Engineering

## **BME 207 : Electrical Circuits in Biomedical Engineering**

The course teaches fundamental concepts of electrical circuits, students will be familiarized with the essential principles of electrical circuit analysis composition of components into systems and networks, and understanding the trade-offs and limits imposed by energy and noise. Students learn to apply the concepts during laboratory design.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 1

**Prerequisites**

BME 100, PHU 124

**Corequisites**

[MAT 213](#)

## **BME 207 L : Electrical Circuits in Biomedical Engineering**

Laboratory experiments dealing with Foundation of Electrical Engineering.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

BME 100, PHU 124

**Corequisites**

BME 207

## **EE 207 : Foundation of Electrical Engineering**

The course teaches fundamental concepts of electrical circuits, students will be familiarized with the essential principles of electrical circuit analysis composition of components into systems and networks, and understanding the trade-offs and limits imposed by energy and noise. Students learn to apply the concepts during laboratory design.

**Credits** 3

**Lecture Hours** 3

**Prerequisites**

PHU 124

**Corequisites**

MAT 213

## **EE 207 L : Foundation of Electrical Engineering Lab**

Laboratory experiments dealing with Foundation of Electrical Engineering.

**Credits** 1

**Tutoring Hours** 2

## **Corequisites**

EE 207

## **EE 208 : Electric Circuits**

The course teaches the design and analysis of interconnected networks of lumped circuit elements.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

BME 207

**Corequisites**

None

## **EE 209 : Applied Electromagnetics**

The course teaches the application of electromagnetic principles to classical and modern devices. The concepts of work and energy and electromagnetic fields are addressed.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

Prerequisites for Electrical Engineering students:

[EE 207](#), [MAT 211](#)

Prerequisites for Biomedical Engineering students:

[MAT 211](#), [BME 207](#)

**Corequisites**

None

## **EE 210 : Digital Logic Systems**

The course teaches theoretical foundations and concepts of digital systems and applies these concepts with design problems and projects. Students are exposed to the design and engineering of digital computers and subsystems.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

None

## **EE 210 L : Digital Logic Systems Lab**

Laboratory experiments dealing with Digital Logic Systems.

**Credits** 1

**Lab Hours** 2  
**Lecture Hours** 0  
**Tutoring Hours** 0  
**Prerequisites**  
None  
**Corequisites**  
EE 210

**EE 301 : Signals and Systems**

The course teaches fundamental concepts of signals and systems analysis, with applications drawn from filtering, audio and image processing, communications, and automatic control. The objective of the course is to allow students to develop a thorough understanding of time-domain and frequency domain approaches to the analysis of continuous and discrete systems. To provide students with necessary tools and techniques to analyze electrical networks and systems.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
[EE 208](#), [MAT 224](#)  
**Corequisites**  
None

**EE 302 : Communications Theory**

The course teaches communication systems and information theory. Topics covered include the classification of signals and systems, Fourier series and transform applications, power spectra and spectral density, band-limited signals and noise, sampling theory and digital transmission, modulation techniques and pulse code modulation.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
[EE 301](#), [STA 212](#)  
**Corequisites**  
None

**EE 302 L : Communications Theory Lab**

Laboratory experiments dealing with Communications Theory.

**Credits** 1  
**Lab Hours** 2  
**Lecture Hours** 0  
**Tutoring Hours** 0  
**Prerequisites**

None  
**Corequisites**  
EE 302

**EE 303 : Introduction to Electronics**

The course teaches the fundamentals of electronic circuits, including diode characteristics and diode circuits, transistors and applications, switches and MOS transistors, amplifiers, energy storage elements, digital circuits and applications. Design and laboratory exercises are also significant components of the course.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
EE 208  
**Corequisites**  
None

**EE 303 L : Introduction to Electronics Lab**

Laboratory experiments dealing with Introduction to Electronics.

**Credits** 1  
**Lab Hours** 2  
**Lecture Hours** 0  
**Tutoring Hours** 0  
**Prerequisites**  
None  
**Corequisites**  
EE 303

**EE 304 : Microelectronics**

This course teaches analog circuit analysis and design, including an introduction to the tools and methods necessary for the creative design of practical circuits using active devices.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
EE 303  
**Corequisites**  
None

**EE 304 L : Microelectronics Lab**

Laboratory experiments dealing with Microelectronics.

**Credits** 1  
**Lab Hours** 2  
**Lecture Hours** 0  
**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 304

**EE 305 : Computer Networks**

The course teaches the fundamental concepts of communication networks, and is concerned specifically with network architectures and protocols. The objective of the course is to allow students to develop a thorough understanding of the architectures of networks and the basic principles that allow the transmission of data over networks.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[SE 100](#), [STA 212](#), [EE 210](#) (or SE 223)

**Corequisites**

None

**EE 305 L : Computer Networks Lab**

Laboratory experiments dealing with Computer Networks.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 305

**EE 306 : Control and Feedback System Design**

The course teaches the analysis and synthesis of continuous and sampled-data linear feedback control systems, and its application to a variety of physical systems

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 301

**Corequisites**

None

**EE 306 L : Control and Feedback System Design Lab**

Laboratory experiments dealing with Control and Feedback System Design.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 306

**EE 307 : Computer Architecture**

The course introduces the architecture of digital systems, with an emphasis on the structural principles common to a wide range of computer technologies. Multilevel implementation strategies, the definition of new primitives (e.g., gates, instructions, procedures, and processes) and their mechanization using lower-level elements, the organization and operation of digital computers and the hardware/software interface are addressed.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[SE 100](#), [EE 210](#) (or SE 223)

**Corequisites**

None

**EE 307 L : Computer Architecture Lab**

Laboratory experiments dealing with Computer Architecture.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 307

**EE 308 : Electrical Energy Conversion**

The course teaches the basic concepts of electrical machines and power semiconductor converters and their application within modern power systems.

**Credits** 3

**Lab Hours** 2

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 209

**Corequisites**

None

**EE 308 L : Electrical Energy Conversion Lab**

Laboratory experiments dealing with Electrical Energy Conversion.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 308

**EE 401 : Special Topics in Electrical Engineering**

This course provides instruction and experience in timely topics related to Electrical Engineering major.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[EE 390](#)

**Corequisites**

None

**EE 401 L : Special Topics in Electrical Engineering Lab**

Laboratory experiments dealing with the special topics course. This will be offered if the special topics course has an applied side and is scheduled to be offered with a lab.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 401

**EE 402 : Introduction to Wireless Networks**

The course surveys the various types of wireless communications, the protocols involved and the design issues that nature and engineering impose upon the telecommunications engineer. Specifically, the course covers wireless network architectures including cellular networks, local area networks, multi-hop wireless networks such as ad hoc networks, mesh networks, and sensor networks; capacity of wireless networks; medium access control, routing protocols, and transport protocols for wireless networks; mechanisms to improve performance and security in wireless networks; energy-efficient protocols for sensor networks.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 305

**Corequisites**

None

**EE 403 : Wireless Communications**

The course teaches wireless communications for voice, data, and multimedia. Topics include wireless systems and standards, characteristics of the wireless channel, including path loss for different environments, random log-normal shadowing due to signal attenuation, and the flat and frequency-selective properties of multipath fading.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 413

**Corequisites**

None

**EE 403 L : Wireless Communications Lab**

Laboratory experiments dealing with Wireless Communications.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 403

**EE 404 : Data Engineering in Electrical Systems**

The course introduces students to data engineering and science (DES) techniques, with a focus on application to substantive (i.e. "applied") engineering problems. Students will gain experience in identifying which problems can be tackled by DES methods, and learn to identify which specific DES methods are applicable to a problem at hand.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 301

**Corequisites**



None

#### **EE 404 L : Data Engineering in Electrical Systems Lab**

Laboratory experiments dealing with Data Engineering in Electrical Systems.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 404

#### **EE 405 : Electric Power Systems**

The course teaches the components, analysis, and modeling of large scale electric power systems. This includes the review of single and three phase circuit variables and parameters and the per unit system. The components of the system are studied including the transformers and the transmission line parameters. In addition, the operation in terms of modeling and analysis of electric power systems is studied in steady state and transient state, with a particular focus on power flow solution methods. Case studies are introduced to prepare for more advanced topics. A project accompanies the course to introduce practical aspects of measurements and operation, with simulations addressing large scale problems.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[EE 308](#), [MAT 224](#)

**Corequisites**

None

#### **EE 406 : Digital Electronics**

This course aims to familiarize students with the basic concepts and mechanisms of operation and design of digital electronic circuits, both discrete and integrated. Topics covered include an overview of MOS and BJT types, structures and operation, digital logic inverters (voltage transfer characteristic, digital integrated circuit technologies and logic-circuit families), CMOS inverters (dynamic operation of the CMOS inverter, inverter sizing, power dissipation), logic-gate circuits (NOR, NAND, XOR), propagation delay analysis, pseudo-NMOS logic circuits, gate circuits, pass-transistor logic circuits (NMOS transistors as switches, CMOS transmission gates as switches), dynamic MOS

logic circuits (Emitter-coupled logic (ECL) and families), BiCMOS inverters and logic gates, latches, flip-flop circuits, multivibrators, and an overview of memory circuits types and architectures, and A/D and D/A converters.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 304

**Corequisites**

None

#### **EE 406 L : Digital Electronics Lab**

Laboratory experiments dealing with Digital Electronics.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 406

#### **EE 408 : Communication Electronics**

This course is designed for senior-level undergraduate students in Electrical Engineering. It builds upon prerequisite courses on signal and systems, communications, control systems, and electronics to further enhance the understanding of communication circuits operation and physical implementation. The course focuses on the field of communication electronics at levels from block diagram to circuit analysis for physical implementation. It aims to cover topics as radio frequency amplifiers, oscillators, signal spectra, noise, modulation and AM systems, transmitter and receiver circuits, sideband systems, frequency and phase modulation, phase-locked loops, and pulse and digital modulation.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 304

**Corequisites**

None

#### **EE 410 : Cyber Physical Systems**

This course takes on an updated view of electrical engineering systems, especially in light of the their

increasing predominant cyber-physical nature. It offers a review of modeling physical systems, including electrical, mechanical, thermal and fluid. It also covers notions such as hybrid (continuous-discrete) and applied control theory. Modeling computational (cyber) aspects of modern systems is then discussed, along with relevant considerations including communications, aggregate control, and connected sensing and actuation.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 306

**Corequisites**

None

#### **EE 410 L : Cyber Physical Systems Lab**

Laboratory experiments dealing with Cyber Physical Systems.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 410

#### **EE 411 : Internet of Things**

This course introduces the principles, technologies, challenges, and required expertise needed for building the Internet of Things (IoT) solutions. It provides a big picture of what is involved in IoT. Topics covered in this course include analog and digital sensing, interfacing sensors with microcontrollers, digital communication protocols, microcontroller choices and capabilities, gateways, fog computing, networking, cloud computing, need and challenges for cryptography and compression, security issues, and low power/energy challenges. The course involves a hands-on-experience that culminates in an implementation project.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[EE 390](#)

**Corequisites**

None

#### **EE 412 : Nanoelectronics**

The course teaches an introduction to the electronic properties of molecules, carbon nanotubes, crystals and other nanodevices.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 304

**Corequisites**

None

#### **EE 412 L : Nanoelectronics Lab**

Laboratory experiments dealing with Nanoelectronics.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 412

#### **EE 413 : Digital Communications**

The course teaches the principles of digital communication systems. Topics include sampling, quantization and encoding of analog signals, pulse code modulation (PCM), delta modulation (DM), noise analysis in PCM and DM systems, base-band digital systems (matched filter, probability of error, inter-symbol interference, equalization, distortionless transmission, and M-ary transmission), line codes and their power spectra, pass-band digital systems (ASK, FSK PSK, DPSK, and M-ary), bandwidth and power requirements of modulation schemes, coherent and non-coherent detection, error rate analysis, and introduction to information theory.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 302

**Corequisites**

None

#### **EE 413 L : Digital Communications Lab**

Laboratory experiments dealing with Digital Communications.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 413

**EE 417 : Digital Signal Processing**

This course presents an introduction to the techniques and algorithms of digital processing for signals and information data. It is designed for senior-level undergraduate students in electrical and computer engineering. The theory and practice covered in this course can be applied in wide range of science fields, such as image processing, communications, satellite systems, biomedical, power and electronic devices, and programmable units. The proposed content covers a review of discrete-time sequences and systems, sampling of continuous-time signals and aliasing effect, discrete Fourier transform: properties and applications; fast Fourier transform (FFT): implementation and computations, finite impulse response (FIR) filters design and analysis: low-pass, band pass, high pass, phase response etc., and infinite impulse response (IIR) filters design methods and cascaded structures. The course involves extensive software and programming experience to enrich the understanding of the covered material.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 301

**Corequisites**

None

**EE 417 L : Digital Signal Processing Lab**

Laboratory experiments dealing with Digital Signal Processing.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 417

**EE 418 : Digital Image Processing**

The course teaches an introduction to image processing and its applications, including the fundamental concepts of visual perception and image acquisition, the basic techniques of image

manipulation, segmentation and coding, and a preliminary understanding of pattern recognition and computer vision.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 301

**Corequisites**

None

**EE 418 L : Digital Image Processing Lab**

Laboratory experiments dealing with Digital Image Processing.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 418

**EE 420 : Power Electronics**

The course teaches the principles of designing power electronic circuits. Power electronics design has applications in several fields from motor drives to consumer electronics to electric power transmission over HVDC lines. Therefore, the course reviews the fundamentals before covering generic power electronic circuit topologies. This entails a review of the switching devices, e.g., diodes, thyristors, BJTs, and the review of the fundamentals of electric circuit design and magnetism. Building on the fundamentals, the course covers AC to DC, DC to DC, DC to AC, and AC to AC electric power conversion topologies. The lab component is simultaneously administered to offer a practical perspective including the selection of components vis-à-vis the application, the instrumentation. In addition, the lab goes over the prototyping and testing aspects of power electronic circuit design.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 304

**Corequisites**

None

**EE 420 L : Power Electronics Lab**

Laboratory experiments dealing with Power Electronics.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 420

**EE 422 : Antennas and Wave Propagation**

This course introduces the characteristics of electromagnetic waves and their behavior during the propagation through different media. The wave equation is derived using the Maxwell's equations for time varying fields. The electromagnetic wave propagation in different media as well as their reflection at normal and oblique angle of incidence is discussed. The concept of transmission line theory and its parameters, smith chart and its application are introduced. Waveguide and TM & TE modes are discussed. In addition the course includes Antenna characteristics, antenna types such as dipole, loop and antenna array.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 209

**Corequisites**

None

**EE 423 : Optical Fiber Communication Systems**

The course teaches the introduction to the optical fiber communications. Topics discuss dielectric slab waveguide, step-index and graded-index optical fibers, single mode and multimode fiber, attenuation and dispersion, light sources (LED and Laser diode), optical modulation and detection, noise modeling in optical receivers, and error rate analysis.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 422

**Corequisites**

None

**EE 424 : Optoelectronics**

The course teaches semiconductor light sources, such as different types of LEDs, Lasers (both gas and solid states), modulation techniques, photodetectors, PIN diode, avalanche Photo Diode (APD), the basics of optical waveguides and the principles of fiber optics

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 304

**Corequisites**

None

**EE 424 L : Optoelectronics Lab**

Laboratory experiments dealing with Optoelectronics.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 424

**EE 425 : Microwave Engineering**

The course teaches the fundamentals of Microwave Engineering. Topics include a review of electromagnetics theory, and discuss transmission lines and waveguides, microwave network analysis, impedance matching, passive microwave devices (power dividers and directional couplers), strip-line and micro-strip line circuits, microwave filters, and introduction to ferrimagnetic materials and components.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 422

**Corequisites**

None

**EE 426 : Renewable Energy**

This course covers fundamentals of renewable energy systems, Solar energy, Bio-energy, Wind energy, Hydro-power, Tidal power, Wave energy and Geothermal energy. Also integration of renewable energy systems will be covered in the course. The students will be exposed to technical aspects of mentioned topics; How to utilize renewable energy for

domestic and industrial applications; requirements and obstacles of applications; how to integrate renewable energy systems.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 405

**Corequisites**

None

#### **EE 426 L : Renewable Energy Lab**

Laboratory experiments dealing with Renewable Energy.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Corequisites**

EE 426

#### **EE 427 : Digital Control**

The course discusses digital control designs and methodologies for dynamic systems. It describes classical and state-space control methods, and applies them to selected applications. The course explores the advantages and limitations of each method, offers an overview of feedback control systems, and proposes to cover selected topics on multivariable and optimal control methods. The course involves Matlab experience to improve the understanding of the covered design methods. The topics include a review of continuous control (feedback, root locus, frequency response design, compensation, state-space design), basic digital control (digitization, sampling, PID), discrete systems (linear difference equations, z-transform, spectrum, block diagrams), discrete equivalents (design via numerical integration, zero-pole matching), transform techniques (root locus in z-plane, frequency response), state-space approaches (regulator design, integral control and disturbance estimation, controllability and observability), and an introduction to multivariable and optimal control (time-varying and LQR steady-state optimal control, multivariable design)

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 306

#### **EE 428 : Modern Control Theory**

The course covers the fundamentals of Matrix Theory including eigenvalues and eigenvectors, and the matrix representations of the Diagonal, Jordan, Controllable, and Observable forms. The student learns to represent systems in terms of their state variables and state diagrams, and then solve for their response in the time domain. The focus of the course is on linear time invariant or LTI systems. Furthermore, the controllability and observability of the LTI system is studied, before covering the design of state feedback and output feedback control techniques. In addition, observer design is covered, with the separation principle, to construct observer-based control systems.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 306

#### **EE 435 : Undergraduate Research in Electrical Engineering**

Students participate in supervised research with a faculty member. Supervised research can be: 1) independent research undertaken by the student (thesis, independent study), or 2) assistance on a faculty member's research project. Students must find a faculty member who is willing to supervise him/her as an assistant on an existing project or as the author of an individual project. The student and the faculty supervisor will complete and sign a research contract which will be turned in to the chair of the Electrical Engineering Department. Drafting the contract will allow the student to develop ideas about what should be accomplished and what the faculty supervisor's expectations are. All academic requirements are at the discretion of the supervising faculty member. Students should agree on a plan for the semester with the faculty mentor before the research begins. The plan should include academic requirements, the basis for grading the experience, and a plan for student/professor meetings for the semester. It is the student's responsibility to report progress and seek guidance when needed. Students are expected to be active and reliable participants in the research experience.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

Department Chair approval, a GPA of at least 3.0/4.0, and a signed research contract.

#### **EE 440 : Machine Learning**

This course introduces machine learning and its applications in electrical engineering systems. It offers a review of relevant background in probability and background, and introduces general machine learning methods including supervised learning, unsupervised learning, and reinforcement learning. Applications instances in electrical engineering systems are discussed.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[EE 390](#)

**Corequisites**

None

#### **EE 440 L : Machine Learning Lab**

Laboratory experiments dealing with Machine Learning.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

EE 440

#### **EE 444 : Artificial Intelligence**

The course teaches the theory and implementation of Artificial Intelligence through several state-of-the-art methods. It is also cross listed with SE 444 Artificial Intelligence

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[EE 390](#)

**Corequisites**

None

#### **EE 481 : Innovations and Entrepreneurship in Engineering**

This course guides engineers and scientists who want to create new products that that could become income-producing businesses for themselves and for investors. Students will learn to sharpen an idea and

turn it into a product, conduct patent searches, complete a provisional patent application, and prepare a business plan from a business model.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[EE 390](#)

**Corequisites**

None

#### **EE 495 : Electrical Engineering Capstone Project I**

Students work in teams as professional engineering consultants on an independent engineering project under the supervision of a project advisor. The design process is emphasized, encompassing project definition, feasibility analysis, evaluation of alternative designs, and design computations. For each project, the scope of work is developed and negotiated between client and student consultants. The scope of work may also include fabrication, device testing, and field-testing. Projects are arranged by the students with approval of the instructor. The design and methodology are emphasized in part 1. Progress reports and an end of term report are submitted to the project advisor with an oral presentation of the design and methodology of the project.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

[EE 390](#)

**Corequisites**

None

#### **EE 496 : Electrical Engineering Capstone Project II**

The students work on the implementation and validation of the designs developed in part 1. A demonstration is presented, and a final written report is submitted to the project advisor. Oral presentations of reports are made before the faculty and students. A student who selects a project suggested by the industry has the opportunity of working with an industry sponsor.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

EE 495

**Corequisites**

None

### **EE 401 : Ethics and Professional Development**

The course will integrate modules covering ethics, career and professional development, along with preparations for taking the Jahiziyah/ Saudi Engineering Council Exams. The course will introduce the professional ethics and compare it with personal ethics and common morality. The professional ethics will be studied within the Engineering context where differentiation between Ethics, Morals and the Law will be discussed. Typical Ethical issues that engineers face such as safety, health, confidentiality and conflict of interest will be covered.

The course will also cover professional development lecture series for the students to introduce them to topics and application related to their fields, job market as well as trends in the local and international economies.

The students will also be prepared for the Jahiziyah and the Saudi Engineering Council Exams through lectures, discussions and mock up exams.

**Credits** 1

## **Industrial Engineering**

### **IE 301 : Operations Research I**

The course includes deterministic operations research modelling concepts; linear programming modelling, simplex theory, duality and sensitivity analysis with economic interpretation; transportation and assignment problems; integer programming; branch and bound techniques; nonlinear optimization problems; multi-criteria decision making.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[MAT 212](#)

**Corequisites**

none

### **IE 302 : Operations Research II**

This course provides an in-depth study of stochastic models used in operations research for decision-making under uncertainty. Topics include probability theory review, decision analysis, Markov chains, Poisson processes, queueing theory, inventory models, reliability analysis, and game theory. Students will

learn how to formulate, analyze, and apply stochastic models to real-world problems. The course emphasizes both theoretical foundations and practical applications, incorporating case studies and computational tools for model implementation.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[IE 301](#), [STA 212](#)

**Corequisites**

none

### **IE 304 : Production and Service Systems Planning I**

The course teaches theory and concepts involved in model formulation for the analysis and control of production processes, including systems for planning and controlling production and service systems to achieve productivity and efficiency. The course addresses the basic issues in production planning, including aggregate production planning, master production schedule, materials requirement planning, and capacity planning. Flexible manufacturing systems, lean manufacturing, Just-in-time (JIT), and new concepts in manufacturing are addressed. Various production systems are described, including job shops, flow shop, cellular manufacturing covering scheduling and optimization.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[STA 212](#)

**Corequisites**

IE 301

### **IE 305 : Production and Service Systems Planning II**

The course teaches aspects of planning and design of logistics and inventory management in production and service systems. Optimization issues in supply chain management, distribution systems and routing, inventory control and warehousing, distributed networks, centralized and decentralized networks, facility location and layout, supply chain and strategic partnerships are addressed.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

IE 304



**Corequisites**

none

**IE 307 : Work Systems Analysis and Design**

The course teaches survey of methods for assessing and improving performance of individuals and groups in organizations. Techniques include various basic industrial engineering tools, work analysis, data acquisition and application, performance evaluation and appraisal, work measurement procedures and motion study. Layout design of work environments will include material handling systems and warehousing.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[STA 212](#)

**Corequisites**

none

**IE 307 L : Work Systems Analysis and Design Lab**

Laboratory experiments dealing with work systems analysis and design.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

none

**Corequisites**

IE 307

**IE 309 : Human Factors and Ergonomics**

The course teaches analysis of tools, work spaces and activities to achieve efficiency in modern work environments are introduced. The effects of vibration, noise, illumination, control display design, age and shift work on the performance of workers are discussed. Physiological and psychological capabilities and limitations in human factors, ergonomic measurement methods and analytical techniques, design of tools and the working ergonomic environment are addressed.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[STA 212](#)

**Corequisites**

IE 307

**IE 309 L : Human Factors and Ergonomics Lab**

Laboratory experiments dealing with human factors and ergonomics.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

none

**Corequisites**

IE 309

**IE 315 : Engineering Economy and Cost Analysis**

The course teaches economic analysis in an engineering environment considering the time value of money. Methods for evaluation of alternatives: present worth, annual equivalent worth, rate of return, payback method and benefit-cost ratio method. Replacement analysis, depreciation, inflation and cost estimation. Sensitivity and risk analysis are also considered.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[STA 212](#)

**Corequisites**

none

**IE 330 : Simulation**

This course teaches simulation modelling and analysis of production and service systems, including simulation methodology, model building in a computer environment, analysing performance measures and assessment of different policies. It also teaches simulation languages, basic and advanced modules, and statistical aspects of simulation such as fitting of input and output distributions. Validation and verification of simulation models are also covered.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[SE 100](#), [STA 212](#)

**Corequisites**

none

**IE 330 L : Simulation Lab**

Laboratory experiments dealing with the implementation of discrete-event simulation models using SIMIO software.

**Credits** 1  
**Lab Hours** 2  
**Lecture Hours** 0  
**Tutoring Hours** 0  
**Prerequisites**  
none  
**Corequisites**  
IE 330

**IE 400 : Special Topics in Industrial Engineering**

This course provides instruction and experience in timely topics related to Industrial Engineering major.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
IE 305  
**Corequisites**  
none

**IE 401 : Network Models and Project Management**

The course teaches the terminology of graphs and networks, network flow problems, algorithms and solutions. Project management, defining the project, scheduling issues in projects, project duration optimization, resources planning, evaluation and progress, estimating times and costs, critical processes in the projects, applications of project-planning and software in the strategy of projects, integration of organization with projects and probability issues in project planning are addressed.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
IE 301  
**Corequisites**  
none

**IE 406 : Quality Engineering**

This course focuses on quality control in industrial systems, with an emphasis on statistical process control (SPC) and process improvement methodologies. Key topics include process modeling, hypothesis testing, and SPC techniques for both long and short production runs. Students will learn about process capability analysis, capability indexes, and Six Sigma tools, including the DMAIC framework for systematic process improvement. Additional topics include acceptance sampling and the design of experiments to optimize production processes.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
IE 305  
**Corequisites**  
none

**IE 415 : Production Information Systems**

The course teaches the design and analysis of production information systems, critical success factors for companies, effectiveness and efficiency through information systems usage in production and service systems, success cases in industry. Investigation of data modelling, storage, acquisition and utilization in Industrial Engineering via manual and computerized methods. Development of effective spreadsheet applications, design and implementation of relational databases via E-R modelling, relational schema, normalization, SQL (Standard Query Language), web-based database applications, interface design, the system development life cycle applied to data management applications, ERP (Enterprise Resource Planning) software and decision support systems are addressed.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
IE 305  
**Corequisites**  
none

**IE 420 : Reliability and Maintenance Engineering**

This course provides an introduction to the life-cycle costing concept for equipment maintenance and replacement. Emphasis will be on the development of mathematical and simulation models for determining optimal maintenance and replacement policies for both capital equipment and components.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
IE 305  
**Corequisites**  
none

**IE 421 : Product Design and Development**

Product Design and Development is a project-based course that covers modern tools and methods for product design and development. The cornerstone is a project in which teams of management, engineering, and industrial design students conceive, design, and prototype a physical product.

**Credits** 3

**Prerequisites**

IE 308

**IE 430 : New Product Development**

This course presents state-of-the-art Product Development techniques focusing on the interdisciplinary nature of the product design activities.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

IE 309

**Corequisites**

none

**IE 435 : Undergraduate Research in Industrial Engineering**

Students participate in supervised research with a faculty member. Supervised research can be: 1) independent research undertaken by the student (thesis, independent study), or 2) assistance on a faculty member's research project. Students must find a faculty member who is willing to supervise him/her as an assistant on an existing project or as the author of an individual project. The student and the faculty supervisor will complete and sign a research contract which will be turned in to the chair of the Industrial and Mechanical Engineering Department. Drafting the contract will allow the student to develop ideas about what should be accomplished and what the faculty supervisor's expectations are. All academic requirements are at the discretion of the supervising faculty member. Students should agree on a plan for the semester with the faculty mentor before the research begins. The plan should include academic requirements, the basis for grading the experience, and a plan for student/professor meetings for the semester. It is the student's responsibility to report progress and seek guidance when needed. Students are expected to be active and reliable participants in the research experience.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

GPA of at least 3.0/4.0, a signed research contract, and consent of the departmental chair.

**Corequisites**

none

**IE 440 : Heuristic Methods for Optimization**

Introduction, simulated annealing, tabu search, genetic algorithm, ant colony optimization, ant colony, variable neighborhood search and particle swarm optimization.

**Credits** 3

**Prerequisites**

IE 302

**IE 450 : Management for Engineers**

The course focuses on learning to see and understand the fundamental activities of businesses as practiced worldwide and how to manage them. Successfully performing these activities requires vision, passion, leadership, teamwork, and integrating the many functional disciplines of business.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

IE 305

**Corequisites**

none

**IE 455 : Cognitive Ergonomics**

This course provides basic knowledge about cognitive ergonomics and Human Computer Interaction and to provide insights about those peculiar aspects that link design to ergonomics. Special attention will be given to the "communicative" aspects of user-centered design, both in reference to usability and aesthetic pleasantness, and to the methods developed to evaluate the User Experience.

**Credits** 3

**Prerequisites**

IE 309

**IE 460 : Industrial IoT**

The course teaches basics of Industrial Internet of Things (IIoT). Investigation of data modeling, storage, acquisition and utilization in Industrial and service settings via computerized methods. It develops an understanding on the data generated by IIoT and how it is collected; recognizes the problems involved with gathering data and some approaches for addressing

these problems; provides an overview of data storage; appreciate programming languages such as *Python* as time-saving tools for manipulating data, understand the process of data acquisition; analyze where to process data using Edge, Fog or Cloud; understand how, when and where to bundle and store IIoT data, appreciate the costs and benefits of live data versus stored data, learn how *Python* can be used to assist with analysis of large datasets, and understand some methods for cleaning, summarizing and visualizing large datasets.

**Credits** 3

**Prerequisites**

IE 330

### **IE 495 : Industrial Engineering Capstone Project I**

Students work in teams as professional engineering consultants on an independent engineering project under the supervision of a project advisor. The design process is emphasized, encompassing project definition, feasibility analysis, evaluation of alternative designs, and design computations. For each project, the scope of work is developed and negotiated between client and student consultants. The scope of work may also include fabrication, device testing, and field-testing. Projects are arranged by the students with approval of the instructor. Progress reports and a final written report are submitted to the student's project advisor. Oral presentations of reports are made before the faculty and students. A student who selects a project suggested by industry has the opportunity of working with an industry sponsor in an actual engineering experience.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

IE 302, IE 305

**Corequisites**

none

### **IE 496 : Industrial Engineering Capstone Project II**

Students work in teams as professional engineering consultants on an independent engineering project under the supervision of a project advisor. The design process is emphasized, encompassing project definition, feasibility analysis, evaluation of alternative designs, and design computations. For each project, the scope of work is developed and negotiated between client and student consultants. The scope of work may also include fabrication, device testing, and field-testing. Projects are arranged by the students

with approval of the instructor. Progress reports and a final written report are submitted to the student's project advisor. Oral presentations of reports are made before the faculty and students. A student who selects a project suggested by industry has the opportunity of working with an industry sponsor in an actual engineering experience.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

IE 495

### **IE 401 : Ethics and Professional Development**

The course will integrate modules covering ethics, career and professional development, along with preparations for taking the Jahiziyah/ Saudi Engineering Council Exams. The course will introduce the professional ethics and compare it with personal ethics and common morality. The professional ethics will be studied within the Engineering context where differentiation between Ethics, Morals and the Law will be discussed. Typical Ethical issues that engineers face such as safety, health, confidentiality and conflict of interest will be covered.

The course will also cover professional development lecture series for the students to introduce them to topics and application related to their fields, job market as well as trends in the local and international economies.

The students will also be prepared for the Jahiziyah and the Saudi Engineering Council Exams through lectures, discussions and mock up exams.

**Credits** 1

## **Mechanical Engineering**

### **ME 201 : Materials Science and Engineering**

This course provides an overview of the fundamental principles of materials science and engineering that are essential to an engineer. The broad areas covered are structure of crystalline solids, mechanical behavior of commonly encountered engineering materials and phase transformations. Students will encounter the inter-relationship between processing, structure and performance and how this affects design and materials selection in engineering practice.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3  
**Tutoring Hours** 0

**Prerequisites**

[CHM 102](#)

**Corequisites**

none

**ME 201 L : Materials Science and Engineering Lab**

Laboratory experiments reinforcing concepts of materials science and engineering such as microstructure, structure-property relationships, and mechanical properties.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

[CHM 102](#)

**Corequisites**

ME 201

**ME 203 : Applied Mechanics I: Statics**

The course teaches: fundamentals of forces and moments in 2 dimensions and 3 dimensions, moment about a point and about an axis, equivalent force systems, vector operations, 2D and 3D equilibrium of particles and rigid bodies, free body diagrams, center of mass, analysis of beams, trusses, frames and machines, and dry friction.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[PHU 103](#), [MAT 112](#)

**Corequisites**

none

**ME 205 : Introduction to Computer Aided Design**

The course teaches computer-aided design of mechanical systems, and includes the preliminary design, analysis, and documentation of a mechanical system. This will include first and third angle projections, solid modeling and the use of commercially available CAD software.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

none

**Corequisites**

none

**ME 206 : Thermal Fluids Engineering I**

The course teaches thermodynamics, pressure, temperature, heat and work, properties of pure materials, first law, closed and open system, second law, heat engines and cycles, including fluid mechanics, conservation laws, boundary layers, laminar and turbulent flows, pipe flows, incompressible one-dimensional flow, external flows, ideal flows, compressible flows, heat transfer, conduction, convection and radiation.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[PHU 103](#)

**Corequisites**

none

**ME 206 L : Thermal Fluids Engineering I Lab**

Laboratory experiments dealing with thermodynamics, pressure, temperature, heat and work, properties of pure materials, first law, closed and open system, second law, heat engines and cycles, including fluid mechanics, conservation laws, boundary layers, laminar and turbulent flows, pipe flows, incompressible one-dimensional flow, external flows, ideal flows, compressible flows, heat transfer, conduction, convection and radiation.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

[PHU 103](#)

**Corequisites**

ME 206

**ME 208 : Mechanics of Materials I**

The course teaches mechanics of deformable bodies. Topics covered include concepts of stress and strain, classification of materials behaviour, stress-strain relations, generalized Hook's law. It also covers applications to engineering problems: members under axial loads, torsion of circular rods and tubes, bending and shear stresses in beams, combined stresses in beams, transformations of stresses, deflection of beams, buckling and thin-walled pressure vessels.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 201, ME 203

**Corequisites**

none

**ME 208 L : Mechanics of Materials I Lab**

Laboratory experiments dealing with materials and structures, beam bending, buckling and torsion, material and structural failure, stress, strain, and heating effects.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ME 201

**Corequisites**

ME 208

**ME 216 : Fluid Mechanics**

Fluid Mechanics course addresses the basic principles of fluid statics and dynamics including practical examples of the fluid devices and systems, solving techniques, and industrial applications. The course teaches introduction and basic concepts, properties of fluids, pressure distribution and fluid statics, fluid kinematics, integral analysis of fluid flow, Bernoulli and energy equations, momentum analysis of flow systems, dimensional analysis and modeling, internal flow, external flow: drag and lift, differential analysis of fluid flow, compressible flow, and open-channel flow.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

PHU 103

**Corequisites**

None

**ME 216 L : Fluid Mechanics Lab**

Fluid Mechanics Lab course teaches experiments which address the basic principles of fluid statics and fluid dynamics. These experiments include: buoyancy force, hydrostatic pressure, pressure-volume relationship for gases, energy equation applied on pump system, pipe frictional losses laminar & turbulent flow, pressure-temperature relationship for water, velocity profile for laminar & turbulent flows for air, drag force for objects with different projected area and surface profile, pumps connected in parallel and series, jet force, energy balance calculations, and losses in bends and fittings experiments.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

ME 216

**ME 305 : Manufacturing and Workshop Training**

The course teaches an overview of modern manufacturing technology, materials and their manufacturing characteristics, Casting, Mould design Tools and fixtures, Cutting machine tools (turning, milling, drilling, broaching etc., abrasive machining processes), Joining, assembly, Manufacturing costs, design for manufacturing, Welding, EDM, Laser Machining, Industrial Manufacturing processes (metal forming, forging, extrusion, rolling), Metrology, Inspection methods and quality control.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 201

**Corequisites**

none

**ME 305 L : Manufacturing and Workshop Training Lab**

Laboratory experiments dealing with modern manufacturing processes such as machining (turning, milling, drilling, broaching etc., abrasive machining processes), forming processes (metal forming, forging, extrusion, rolling) and assembly processes such as welding.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ME 201

**Corequisites**

ME 305

**ME 306 : Instrumentation and Control Engineering**

The course teaches an introduction to the design of feedback control systems. Topics include the properties of feedback systems, time-domain and frequency-domain performance measures, stability and degree of stability, the root locus method, Nyquist criterion, frequency-domain design, and state space

methods. These concepts will be applied to a variety of mechanical and aerospace systems throughout the course.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

BME 207

**Corequisites**

none

**ME 306 L : Instrumentation and Control Engineering Lab**

Laboratory experiments dealing with feedback control systems, time-domain and frequency-domain performance measures, stability and degree of stability, the root locus method, Nyquist criterion, frequency-domain design, and state space methods.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

BME 207

**Corequisites**

ME 306

**ME 307 : Thermal Fluids Engineering II**

The course teaches applications of thermodynamics, heat transfer and fluid mechanics to the design and analysis of energy systems. Topics include energy analysis, power and refrigeration cycles, studies of laminar and turbulent flow including heat transfer in free and forced convection, in channels, and over surfaces, heat transfer, including fins, forced and free convection, boiling and condensation, radiation heat transfer, heat exchangers, multi-mode heat transfer, compressible flows in pipes, ducts, divergent and convergent flows, sonic and supersonic flows.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 206

**Corequisites**

none

**ME 307 L : Thermal Fluids Engineering II Lab**

Laboratory experiments dealing with applications of thermodynamics, heat transfer and fluid mechanics to the design and analysis of energy systems. This

includes energy analysis, studies of laminar and turbulent flow, heat transfer in free and forced convection, in channels, and over surfaces, fins, forced and free convection, boiling and condensation, radiation heat transfer, heat exchangers, compressible flows in pipes, ducts, divergent and convergent flows, sonic and supersonic flows.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ME 206

**Corequisites**

ME 307

**ME 308 : Advanced Manufacturing Processes**

The course teaches the integration of design, engineering and management disciplines and practices for analysis and design of manufacturing enterprises. The course emphasizes the physics and stochastic nature of manufacturing processes and systems, and their effects on quality, rate, cost and flexibility, process physics and control, design for manufacturing and manufacturing systems and a team project where the students design and build elements using mass-production methods to produce a product in quantity.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 305

**Corequisites**

none

**ME 308 L : Advanced Manufacturing Processes Lab**

Laboratory experiments reinforcing with integration of design, engineering and management disciplines. Students will learn about rapid prototyping using 3D printing tools and CNC technologies including using software to convert engineering designs into toolpath information.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ME 305

**Corequisites**

ME 308



**ME 310 : Mechanical Component Design**

The course teaches the creative design process via the application of appropriate physical laws and learning to complete projects on schedule. Topics include synthesis, analysis, design robustness, machine elements, manufacturability, idea generation, estimation, concept selection, visual thinking, communication, design and analysis, design for manufacturing, professional responsibilities and ethics.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[ME 311](#), [ME 312](#)

**Corequisites**

none

**ME 310 L : Mechanical Component Design Lab**

Laboratory experiments reinforcing the creative design process. Students go through the design process including idea generation, estimation, concept selection, visual thinking, communication, design and analysis, design for manufacturing, professional responsibilities and ethics.

**Credits** 1

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

[ME 311](#), [ME 312](#)

**Corequisites**

ME 310

**ME 311 : Applied Mechanics II: Dynamics**

This course teaches basic principles of kinematics and kinetics of 3D particles and planer rigid bodies. It establishes and develops the analytical skills to solve dynamics problems based on application of basic principles such as Newton's laws of motion, concepts of work and energy as well as impulse and momentum, and force and acceleration.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 203

**Corequisites**

none

**ME 312 : Mechanics of Materials II**

The course teaches an introduction to mechanical behaviour of engineering materials and the use of materials in mechanical design. The course emphasizes the fundamentals of mechanical behaviour of isotropic and anisotropic materials, as well as design with materials, including elasticity, plasticity, limit analysis, fatigue, fracture, creep, three-dimensional stress and strain problems and the selection of materials for engineering design.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 208

**Corequisites**

none

**ME 312 L : Mechanics of Materials II Lab**

The course focuses on experiments reinforcing concepts in mechanical behavior of engineering materials and the use of materials in mechanical design, including elasticity, plasticity, limit analysis, fatigue, fracture, creep, and deformation in pressurized cylinder.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ME 208

**Corequisites**

ME 312

**ME 314 : Vibration and Damping**

The course teaches single-degree and multi-degree of freedom systems. Topics covered include undamped and damped free and forced vibrations, impulse and arbitrary force response vibration, absorbers and isolators, rotating machinery fault diagnosis, modal analysis and mode shapes.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 311

**Corequisites**

none

**ME 315 : Machine Design**

This course teaches the function, design and performance of basic machine elements commonly used by mechanical engineers, such as shaft, temporary and permanent fasteners, key, thick wall vessel, etc. Students will develop skills in designing and analysing performance capabilities of these elements based on static and dynamic combined loading. The course will also cover potential topics such as part geometry, material choice, loading and environmental conditions, static and fatigue failure theories, factor of safety concept.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 208

**Corequisites**

none

**ME 316 : Engineering Thermodynamics**

The Engineering Thermodynamics course addresses the basic principles of thermodynamics including practical examples of the thermally driven devices and systems. Moreover, the course introduces different solving techniques for thermal-fluids industrial related applications. The course teaches introduction and basic concepts, energy, energy transfer, general energy analysis, properties of pure substances, energy analysis of closed systems, mass and energy analysis of control volumes, the second law of thermodynamics, entropy analysis, exergy analysis, gas power cycles, vapor and combined power cycles, refrigeration cycles, thermodynamic property relations, gas mixtures.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 216

**Corequisites**

None

**ME 400 : Special Topics in Mechanical Engineering**

The course will focus on advanced topics and recent developments in one or more of areas: control and robotics, dynamic systems, fluid mechanics, materials science and engineering, solid mechanics and structures, thermal sciences or other areas in mechanical engineering.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

Department Approval

**Corequisites**

none

**ME 401 : Computational Fluid Dynamics and Heat Transfer**

The course teaches the working principles of computational fluid dynamics and heat transfer and applies these concepts using commercially available software packages used in industry. Topics include the application, analysis and limitations of design evaluation using CFD approach. The course will equip students to model real engineering problems and correlate the working principles of fluid dynamics and heat transfer using numerical techniques.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 307

**Corequisites**

none

**ME 403 : Finite Element Modelling for Dynamic and Structural Analysis**

The course teaches the working principles of the non-linear finite element method (FEM) and applies the concepts involved using commercially available software packages used in industry. Topics include the application, analysis and limitations of design evaluation using FEM approach. The course will equip students to model real engineering problems and correlate the working principles of Mechanics and Dynamics using numerical methods.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 311, ME 312

**Corequisites**

none

**ME 403 L : Finite Element Modelling for Dynamic and Structural Analysis**

Laboratory experiments dealing with the working principles of the non-linear finite element method (FEM) and apply the concepts involved using

commercially available software packages used in industry, the application, analysis and limitations of design evaluation using FEM approach. The course will equip students to model real engineering problems and correlate the working principles of mechanics and dynamics using numerical methods.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ME 312, ME 311

**Corequisites**

ME 403

### **ME 405 : Engineering Safety and Risk Analysis**

The course aims to introduce students to hazard identification, risk assessment, risk control in industrial or commercial workplace. The course will also equip students with knowledge on health, and safe work practices, recognition and elimination of health hazards, design material handling and emergency treatment for industrial accidents. Students are expected to understand different hazard identification and control methods and able to develop risk management systems.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

STA 212

**Corequisites**

none

### **ME 406 : Mechatronics**

The course teaches the acquisition of the knowledge and skills required to design and control electromechanical systems. The basic material will be covered in classroom lectures and discussions. Much of the learning will take place in the laboratory where students will learn to build and operate representative electromechanical systems. The class includes a final project.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 306

**Corequisites**

none

### **ME 407 : Heating, Ventilation, and Air-Conditioning**

The course introduces basic concepts of heating, ventilation, and air conditioning systems (HVAC). These include: HVAC components and distribution systems, moist air properties and conditioning processes, indoor comfort conditions, heat transmission in building structures, calculation of heating loads, cooling load, duct design, fans and building air distribution, and the performance of refrigeration systems.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 206

**Corequisites**

none

### **ME 410 : Energy Conversion and Cogeneration Systems**

The course introduces various types of energy conversion and cogeneration systems. These include; advanced steam power plants, gas turbine power plants, nuclear power plants, co-generation and tri-generation, internal combustion engine, and renewable energy conversion systems. The student will learn how to do an analysis for any energy conversion system. Moreover, students will learn about the regeneration, binary, supercritical, and other advanced steam power cycles. In addition, this course teaches student how to design components of the power conversion system such as boilers, condensers, steam turbines, compressors, combustors, gas turbines, and others. The knowledge about the nuclear power plants and recent technologies is covered as well in this course. Furthermore, the course gives an introduction to the power generation using the new and renewable energy sources as well as energy storage and economy of energy.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 307

**Corequisites**

none

### **ME 412 : Renewable Energy Systems**

The course gives an overview of renewable energy sources including biomass, hydroelectricity,

geothermal, tidal, wave, wind and solar power. And it also presents the fundamentals of different renewable energy systems with a main focus on technologies with high development potential. Furthermore, it integrates maths, engineering, climate studies and economics, and enabling students to gain a broad understanding of renewable energy technologies and their potential.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 307

**Corequisites**

none

#### **ME 414 : Introduction to Compressible Flow Turbomachinery**

The course introduces various types of compressible flow turbomachineries and describes their fundamental working and design concepts. This includes; turbomachinery classification, apply dimensional analysis and similitude to turbomachines, basic governing equations for turbomachines, Euler equation, centrifugal compressors, axial flow compressors and fans, radial and axial flow turbines.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 307

#### **ME 415 : Incompressible Flow Machines**

This course is about optimal design of machinery, analysis for prevention of machine elements failure.

**Credits** 3

**Prerequisites**

ME 206

#### **ME 416 : Automotive Engineering**

This course teaches the fundamentals of Internal Combustion engines, its classifications and applications, as well as design and operating parameters. Topics include the thermodynamic analysis of fuel-air cycle, firing order, concept of combustion process in SI engines, Scavenging and design aspects of SI engines, supercharging and turbocharging, lubrication system, engine cooling system and engine heat transfer, fuel injection system in SI engines, Compression Ignition (CI) engines, conventional and non-conventional fuels in SI and CI engines.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 307

#### **ME 418 : Water Desalination**

The course aims to introduce students to fundamentals of water desalination. The course provides an overview and classification of desalination techniques such as single and multiple effect evaporation, vapor compression, single and multi-stage flash distillation, reverse osmosis, hybrid processes. It will also cover potential topics such as resources and needs for desalination, dual purpose power and desalination plants, desalination powered by renewable energy sources. Other topics such as economic analysis and brine discharge management may also be presented.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 307

#### **ME 419 : Product Design and Development**

This course will introduce students to thought frameworks, tools and methods for product design and development. The course will teach students a set of product development procedures that can be practiced in multidisciplinary teams. Topics include opportunity identification, product planning, identifying customer needs and specification, concept generation, selection and testing as well as designing of environment and manufacturing. The course will include projects-based assignments.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 308

**Corequisites**

none

#### **ME 420 : Advanced Visualization and Simulation**

This course will introduce students to use computer-aided packages in the product design and manufacturing process. Students will be exposed to CAD/CAE/CAM packages which are used in the industry to perform analysis and evaluate performance of

engineering products and to optimize manufacturing processes. The course will be hands-on and will involve ample project-based activities along with lecture-based instructions.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 308

**Corequisites**

none

### **ME 422 : Corrosion Engineering**

This is an introductory course on corrosion engineering. The course emphasizes fundamental concepts of corrosion and applies these concepts to corrosion control. The course will develop thermodynamic and kinetics framework of corrosion such as Nernst equation, electrode potentials, Pourbaix diagram, polarization, corrosion rates and passivity. Corrosion control and mitigation procedures such as materials selection, use of inhibitors and application of anodic and cathodic protection systems will be discussed.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

ME 316

**Corequisites**

None

### **ME 435 : Undergraduate Research in Mechanical Engineering**

Students participate in supervised research with a faculty member. Supervised research can be: 1) independent research undertaken by the student (thesis, independent study), or 2) assistance on a faculty member's research project. Students must find a faculty member who is willing to supervise him/her as an assistant on an existing project or as the author of an individual project. The student and the faculty supervisor will complete and sign a research contract which will be turned in to the chair of the Industrial and Mechanical Engineering Department. Drafting the contract will allow the student to develop ideas about what should be accomplished and what the faculty supervisor's expectations are. All academic requirements are at the discretion of the supervising faculty member. Students should agree on a plan for the semester with the faculty mentor before

the research begins. The plan should include academic requirements, the basis for grading the experience, and a plan for student/professor meetings for the semester. It is the student's responsibility to report progress and seek guidance when needed. Students are expected to be active and reliable participants in the research experience.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

Department Approval

**Corequisites**

none

### **ME 495 : Mechanical Engineering Capstone Project I**

The mechanical engineering curriculum culminates in a two-semester capstone sequence undertaken in a small team or, in case this is not possible, individually, under close supervision of an academic staff. Students typically choose a project that aligns with their interest. The capstone project is the foundation of the student's engineering portfolio for application to industry or graduate school. In the first semester, students enrol in ME 495 during which student teams identify scope of the project, formulate specifications, develop conceptual solutions and designs, perform concept analysis and engineering analyses to arrive at a final prototype design.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ME 307, ME 310

**Corequisites**

none

### **ME 496 : Mechanical Engineering Capstone Project II**

ME 496 is the second part of the two-semester capstone sequence. Students working individually or in a small team under supervision of an academic staff will be expected to continue and complete prior work initiated in [ME 495](#). Student teams proceed with physical realization, validation and testing of their designs. Student teams are expected to deliver an engineered, validated and tested product or prototype. Scaled models may also be produced for

projects involving large structures. While a successful outcome is expected, it is not required as the focus of capstone courses is on students' learning.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

ME 495

**Corequisites**

none

### **ME 401 : Ethics and Professional Development**

The course will integrate modules covering ethics, career and professional development, along with preparations for taking the Jahiziyah/ Saudi Engineering Council Exams. The course will introduce the professional ethics and compare it with personal ethics and common morality. The professional ethics will be studied within the Engineering context where differentiation between Ethics, Morals and the Law will be discussed. Typical Ethical issues that engineers face such as safety, health, confidentiality and conflict of interest will be covered.

The course will also cover professional development lecture series for the students to introduce them to topics and application related to their fields, job market as well as trends in the local and international economies.

The students will also be prepared for the Jahiziyah and the Saudi Engineering Council Exams through lectures, discussions and mock up exams.

**Credits** 1

## **Software Engineering**

### **SE 100 : Programming for Engineers**

SE 100: Programming for Engineers 3 (3-0-0) The course introduces the students to basic notions of computers and computing and then introduces them to programming starting from abstract ways like flowcharts and pseudocode and finally using a typical programming language. The students will be introduced to the basic concepts of data types and structures, operators, and the different ways of data storage, manipulation, and representation. Emphasis is on problem-solving and structured program design methodologies.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

SE 100 L

### **SE 100 L : Programming for Engineers Lab**

This course constitutes the lab component of the Programming for Engineer course (SE 100). The purpose of this lab is to provide hands-on training on programming concepts, technologies and techniques, introduced during lectures.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

SE 100

### **SE 117 : Software Practice and Society**

This course examines the role of computers and software and their impact on society. It discusses Ethical Foundations for IT professional and IT users; Governance, Regulations, and Computer and Internet Crimes; Intellectual Property; Privacy; Security; Professional Responsibility from the perspective of software engineering and the local and regional laws and regulations.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

None

### **SE 120 : Object-Oriented Programming I**

After completing this course, students will be equipped with the necessary skills and tools to write programs in Java based on a procedural and object-oriented approach. Topics of focus will include basic Java programming, conditional statements, strings, iteration, methods, arrays, creating classes, encapsulation, inheritance and polymorphism, abstract classes, packages, principles of object-oriented design, as well as exceptions and interfaces.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 100

**Corequisites**

SE 120 L

None

**SE 120 L : Object-Oriented Programming I Lab**

This course constitutes the lab component of the Object-Oriented Programming I course (SE 120). The purpose of this lab is to provide hands-on training on the basics of Java and advanced object-oriented programming. Topics covered include data types and operators, logical expressions, control structures, methods, arrays, inheritance; polymorphism; abstract classes and interfaces. be covered.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

SE 120

**SE 151 : Discrete Mathematics**

This course covers the mathematical elements of computer science including formal logic, propositional logic, predicate logic, logic in mathematics, sets, functions and relations, recursive thinking, mathematical induction, counting, combinatorics, algorithms, matrices, graphs, trees, and Boolean logic. Students will learn to recognize and express mathematical ideas graphically, numerically, symbolically, and in writing.

**Credits** 3

**Prerequisites**

SE 100

**SE 201 : Introduction to Software Engineering**

This course is designed to present students with several principles relevant to Software Engineering. Students will gain insights into various software process models throughout the course. The curriculum strongly emphasizes the agile software development approach, highlighting the importance of adaptability and collaborative teamwork. Students will acquire knowledge and skills in requirements engineering. The course covers systems modeling and project management strategies. It addresses the value of software reuse and introduces students to human computer interaction and software testing. The final segment of the course focuses on configuration management.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 120

**SE 212 : Discrete Structures for Software Engineers**

This course covers the mathematical elements of computer science including formal logic, propositional logic, predicate logic, logic in mathematics, sets, functions and relations, recursive thinking, mathematical induction, counting, combinatorics, algorithms, matrices, graphs, trees, and Boolean logic. Students will learn to recognize and express mathematical ideas graphically, numerically, symbolically, and in writing.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 120

**SE 214 : Algorithms and Data Structures**

The course involves the study of important data structures and sorting methods commonly encountered in object-oriented software engineering. It covers the design, performance analysis, and implementation of the related algorithms, stressing their practical use and performance.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 120

**Corequisites**

SE 214 L

**SE 214 L : Algorithms and Data Structures Lab**

Survey of important computer algorithms and related data structures used in object-oriented software engineering. Design, performance analysis and implementation of such algorithms, stressing their practical use and performance certification of large software applications. Understand how to "seal" designs to guarantee performance goals and ensure that all error conditions are caught. Laboratory experiments dealing with Algorithms and Data Structures.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0



**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

SE 214

### **SE 215 : Algorithms and Data Structures**

The course involves the study of important data structures and sorting methods commonly encountered in object-oriented software engineering. It covers the design, performance analysis, and implementation of the related algorithms, stressing their practical use and performance.

**Credits** 3

**Prerequisites**

SE 120

**Corequisites**

SE 215L

### **SE 215L : Algorithms and Data Structures Lab**

Survey of important computer algorithms and related data structures used in object-oriented software engineering. Design, performance analysis and implementation of such algorithms, stressing their practical use and performance certification of large software applications. Understand how to "seal" designs to guarantee performance goals and ensure that all error conditions are caught. Laboratory experiments dealing with Algorithms and Data Structures.

**Credits** 1

**Lab Hours** 2

**Corequisites**

SE 215

### **SE 220 : Object-Oriented Programming II**

This course should provide students with all necessary skills and tools to develop applications based on an object-oriented approach. Topics of focus will include GUI, event-driven programming, advanced GUI, text and binary I/O.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 120

**Corequisites**

SE 220 L

### **SE 220 L : Object-Oriented Programming II Lab**

This lab should provide students with all necessary hands-on practice on Object oriented II with a good review of Object oriented I basics to build GUI

applications that can help students in solving more complex problems. Laboratory experiments dealing with advanced Object-Oriented Programming.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

SE 220

### **SE 225 : Software Requirements**

Introducing key aspects of the requirements process, starting with the creation of a vision document, and establishing project scope. Elicitation techniques, system context and use case modeling, and the seamless transition from use cases to implementation and test cases will be introduced. Crucial topics will be covered like misuse case modeling, prototyping, fundamentals of goal orientation, requirements management, change management, and the creation and validation of supplementary specifications.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 201

**Corequisites**

SE 225 L

### **SE 225 L : Software Requirements Lab**

It is meant to provide hands-on training in using use case modelling and Unified Modelling Language (UML) tools for requirements. It covers Object Oriented Design (OOD) using UML. Definition and goals of software design. Relationships between classes. UML diagrams for requirements and design: class, activity, sequence. etc.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

SE 225

### **SE 239 : Computer Networks**

The course teaches the fundamental concepts of communication networks and is concerned specifically with network architectures and protocols. The

objective of the course is to allow students to develop a thorough understanding of the architectures of networks and the basic principles and protocols that allow the transmission of data over networks.

**Prerequisites**

EE 210

**SE 252 : Database Management Systems**

The focus is to teach database fundamentals required in the development and evolution of most software applications by providing a basic introduction to the principles of relational database management systems such as Entity-Relationship approach to data modeling, relational model of database management systems and the use of query languages.

**Credits 3**

**Prerequisites**

SE 215

**Corequisites**

SE 252 L

**SE 252 L : Database Management Systems Lab**

Laboratory experiments dealing with database management systems.

**Lab Hours 2**

**Corequisites**

SE 252

**SE 254 : Operating Systems**

Theory and construction of operating systems, including real-time and embedded systems aspect from an engineering point of view, stressing performance measurement and metrics. Quality of Service issues leading to certification that an operating system will satisfy hard real-time constraints.

**Credits 3**

**Prerequisites**

SE 215

**Corequisites**

SE 254 L

**SE 254 L : Operating Systems Lab**

Laboratory experiments dealing with Operating Systems.

**Lab Hours 2**

**Prerequisites**

SE 254

**SE 301 : Analysis of Algorithms**

This course examines the design and analyses algorithms with an emphasis on their application in real world environments. Topics include time complexity, space complexity, and optimization strategies for various algorithms. Students will gain

experience with sorting, searching, and graph algorithms, as well as dynamic programming techniques. Special focus will be placed on algorithmic problem-solving in real world environments.

**Credits 3**

**Prerequisites**

SE 215

**SE 310 : Software Design and Architecture**

The course gives students an understanding of the concept of software architecture and how this phase in the development between requirement specification and detailed design plays a central role for the success of a software system. The students will get knowledge of some well-known architecture patterns, and be able to design, construct and evaluate architectures for software systems. In addition, the students should get some understanding of how the developers' experiences and the technical and organizational environment will influence on the choice of architecture.

**Credits 3**

**Lab Hours 0**

**Lecture Hours 3**

**Tutoring Hours 0**

**Prerequisites**

SE 225

**SE 312 : Database Management Systems**

The course gives students an understanding of the key concepts of database management systems required in the development of most software applications by introducing the principles of relational database management systems such as basic concepts and architecture, Entity-Relationship data model and constraints, the use of basic and complex SQL query language, data normalization forms, relational algebra and calculus and transactions and concurrency control.

**Credits 3**

**Lab Hours 0**

**Lecture Hours 3**

**Tutoring Hours 0**

**Prerequisites**

SE 214

**Corequisites**

SE 312 L

**SE 312 L : Database Management Systems Lab**

This course covers basic database concepts, conceptual data modeling, relational data model,

relational theory and languages, database design, SQL, and introduction to query processing and optimization.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

SE 312

### **SE 314 : Operating Systems**

This course introduces the fundamentals of function, design, and implementation of computer/mobile operating systems. Students will learn processes, threads, concurrent programming, interrupt handling, CPU scheduling and process synchronization, memory management, deadlocks, and file system.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 214

**Corequisites**

SE 314 L

### **SE 314 L : Operating Systems Lab**

This course introduces the fundamentals of function, design, and implementation of computer/mobile operating systems. Students will learn processes, threads, concurrent programming, interrupt handling, CPU scheduling and process synchronization, memory management, deadlocks, and file system. Laboratory experiments dealing with advanced Operating Systems.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

SE 314

### **SE 316 : Application Development**

This course covers the principles of applications deployed on different platforms such as mobiles, web, and cloud. Students will explore different development environments, and understand concepts from memory management, user interface design, GPS, and motion sensing. Multiple programming languages will be

explored such as markup languages (e.g., XHTML, XML), scripting languages (e.g., JavaScript, PHP, Ruby), Ajax, web services, and database integration (e.g., MySQL). Through project-based learning, students will develop professional-quality applications for real-world deployment.

**Credits** 3

**Prerequisites**

SE 215

### **SE 322 : Internet of Things Application Development**

This course is designed to provide students with technical knowledge and skills to build Internet of Things (IoT) systems and applications. The course will cover the design of microcontroller-based embedded systems. In addition, it will cover IoT paradigms, including the integration of various components such as sensors, actuators, and communication modules, IoT design considerations, constraints, and development processes for IoT applications in different sectors.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 100, EE 305

**Corequisites**

None

### **SE 324 : Web Application Development**

The course focuses on learning fundamentals of Web-based programming techniques, Web application development and client-server database integration. It provides in-depth coverage of introductory programming principles, various markup languages, client-side scripting, server-side scripting and relational databases. The course also introduces sessions, cookies, and the application of XML in web building.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 312

**Corequisites**

SE 324 L

### **SE 324 L : Web Application Development Lab**

Laboratory experiments dealing with web application development.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

SE 312

**Corequisites**

SE 324

### **SE 328 : Mobile Application Development**

This course examines the principles of mobile application design and development. Students will learn mobile application development on different platforms. Topics will include designing and building user interface, input methods, data handling, network techniques and URL loading, and, finally, specifics such as GPS location integration, and REST API communication, along with SQLite database and Firebase integration.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 225, SE 312

**Corequisites**

SE 328 L

### **SE 328 L : Mobile Application Development Lab**

This course constitutes the lab component of the Mobile Application Development course (SE 328). It is meant to provide hands-on training on mobile application design and development. Android will be used as a basis for teaching programming techniques and design patterns related to the development of stand alone applications and mobile interfaces. Emphasis is placed on the processes, tools and frameworks required to develop applications for current and emerging mobile computing devices that rely on different types of databases including Firebase, SQLite and shared preferences.

**Credits** 1

**Lab Hours** 2

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

None

**Corequisites**

SE 328

### **SE 330 : Introduction to Cybersecurity**

The purpose of the course is to provide the students with an overview of the field of Cyber Security.

Students will be exposed to a wide spectrum of security techniques used to protect information assets, manage risk, and detect and react to threats to information assets. In this module, students will learn about data/system/network protection mechanisms, intrusion detection systems, models of security, cryptography, hashing, authentication and non-repudiation, network system security, attack strategies, malware, secure applications (development), and cyber-security policy.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

EE 305

### **SE 390 : Software Engineering Summer Internship**

An 8 – week long field training opportunity to allow students to perform discipline related tasks for leading organizations in the respective field of Software Engineering. Students are expected to commit to the framework of the organization and to relate to the general practices and workplace ethics.

**Credits** 0

**Lab Hours** 0

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

SE 324

101 CRHs passed and department approval are required.

### **SE 400 : Theory of Computation**

This course introduces fundamental concepts in the theory of computation. Students will be introduced to formal languages, automata, computability and computational complexity. These include finite automata, Turing machines, grammars, decidable problems, reductive procedures and different kinds of computational problems. The course aims to explore these theoretical concepts to apply on practical issues of interest to software engineering, data science, and AI, for instance, natural language processing, algorithmic development and evaluation of computational efficiency. By the end of this course, students will be able to assess the performance bounds of computing models and their applicability towards modern computing problems.

**Credits** 3

**Prerequisites**

SE 151, AI 347

**SE 412 : Software Testing and Quality Assurance**

The course focuses on software verification and validation throughout the software life cycle, including reviews (inspections and walkthroughs), testing techniques (functional and structural '96 black box and white box), levels of testing (unit, integration, system, and acceptance), and testing tools (static and dynamic). Testing and quality assurance standards.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 310

**SE 414 : Software Project Management**

This course introduces project management concepts, tools, and techniques. It covers the five process groups of project management namely, Initiating, Planning, Executing, Monitoring & Controlling, and Closing. In addition, the course covers how these process groups interact with the different knowledge areas of project management: integration management and project planning, scope management, scheduling, budget control, human resource management, communication management, risk analysis and management, project quality management, and procurement management.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 310

**SE 423 : Software Construction and Processes**

This course introduces principles and techniques to develop software such that it is more maintainable and evolvable. This implies that the developed software is traceable, easy to understand, and ready for change. Such qualities are necessary for all software which will have a considerable lifespan and would have additions/changes in their functionality during their lifetimes. The course will discuss the most common design patterns which help in making a software more robust. Software reengineering will also be introduced since many of the largest software systems are successors of existing systems and in the absence of clear documentation, most of the time, functional details and design choices must be extracted from existing code. The course will also introduce the concept of functional programming, its differences with imperative programming languages,

its uses and its pitfalls. Understanding of functional programming will help students explore a new programming paradigm and broaden their horizon.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 412

**SE 435 : Undergraduate Research in Software Engineering**

Students participate in supervised research with a faculty member. Supervised research can be: 1) independent research undertaken by the student (thesis, independent study), or 2) assistance on a faculty member's research project. Students must find a faculty member who is willing to supervise him/her as an assistant on an existing project or as the author of an individual project. The student and the faculty supervisor will complete and sign a research contract which will be submitted to the chair of the Software Engineering Department. Drafting the contract will allow the student to develop ideas about what should be accomplished and understand the scope and expectations of the faculty supervisor.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

SE 310, SE 322, SE 330, SE 324, SE 328

GPA of at least 3.0/4.0, signed research contract, and consent of the departmental chair.

**SE 440 : Special Topics in Software Engineering**

This course provides instruction and experience in timely topics related to the design and development of quality-engineered software.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 324

**SE 441 : Telecommunications Software Design**

Formal models for telecommunications software design and analysis. Protocol specification, design and validation. Protocol verification and testing. Conformance testing. Protocol synthesis. Protocol conversion.

**Credits** 3

**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
EE 305

**SE 442 : Social Networks for Software Engineers**

Student will learn the fundamental interface, systems, and algorithms concepts in designing social software. The case-based syllabus will cover insights from both research and industry. As a student, the student will contribute to this burgeoning field through a quarter-long, team-based project. Students are required to enter the class with an initial project idea.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
SE 324

**SE 443 : Cloud Computing for Software Engineers**

This course will leverage the World Wide Web to fulfill computing needs. It packages applications, computing power, and storage as a metered service similar to a utility. This model is designed to supplant the traditional mechanism of desktop computing in many cases. This course will cover the origin, theory, enabling technology, and hands-on labs for key concepts in cloud computing.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
SE 324, EE 305

**SE 444 : Artificial Intelligence**

In this course, students will learn the foundational principles that drive AI applications and practice implementing some of the AI-enabled systems. Specific topics include machine learning, search methods, game playing, Markov decision processes, constraint satisfaction, graphical models, and logic. Students will be introduced to tools and systems to tackle new AI problems they might encounter in life.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
SE 214, SE 324

**SE 445 : Information and Software Security**

This course provides an introduction to the topic of security in the context of computer networks. The goals are to provide students with a foundation allowing them to identify, analyze, and solve network-related security problems in information systems with the emphasis on the engineering aspects of information security and software security issues.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
STA 212, SE 324

**SE 446 : Introduction to Big Data**

In this course the students will learn the Big Data platform and data governance in order to efficiently store and manage massive amounts of data. In addition, they will learn Big Data architecture, such as Hadoop, Map Reduce, Hbase, Big SQL and BigSheets. Students will use tools to capture, store and analyze structured and unstructured data.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
SE 312, SE 314, SE 322

**SE 447 : Introduction to Machine Learning**

This course offers a hands-on introduction to machine learning, encompassing widely used models, algorithms, and tools. It delves into supervised learning techniques like linear regression, logistic regression, and neural networks, as well as unsupervised learning methods including K-means clustering, principal component analysis, and association rule learning. Additionally, the course addresses crucial practical considerations in machine learning implementation such as data visualization, model selection and workflow, evaluation techniques (including testing, validation, and addressing overfitting and underfitting), bias and variance, regularization, and strategies for large-scale machine learning applications.

**Credits** 3  
**Lab Hours** 0  
**Lecture Hours** 3  
**Tutoring Hours** 0  
**Prerequisites**  
SE 312, SE 314, SE 322

**SE 448 : Blockchain Development**

In this course the students will learn concepts of the Blockchain technology such as business networks, participants, assets, and trusted transactions. They will also learn how to develop a complete Blockchain network solution using up-to-date tools and platforms.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 324

**SE 449 : Data Analytics**

This course prepares students to gather, describe, and analyze data, and use advanced statistical tools to make decisions on operations, risk management, finance, marketing, etc. Analysis is done targeting economic and financial decisions in complex systems that involve multiple partners. Topics include probability, statistics, hypothesis testing, regression, clustering, decision trees, and forecasting.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 312, SE 314

**SE 450 : Cryptography and Data Privacy**

The course will start with modular arithmetic, prime numbers, and factorization. This would be followed by historical ciphers, how they can be broken, and what is cryptanalysis. The course will next discuss keys and key length (and the effect of length on the strength of the cryptographic algorithm), plaintext, cipher text, symmetric encryption algorithms, and asymmetric encryption algorithms. Different symmetric and asymmetric algorithms will be explored in depth. Differences between block and stream ciphers will also be discussed. Implementation level details of multiple encryption algorithms will be taught.

**Credits** 3

**Lecture Hours** 3

**Prerequisites**

STA 212, SE 330

**SE 451 : Secure Software Engineering**

This course involves an in-depth study of the processes and techniques associated with secure software engineering. The objective is to plan, manage, document, and communicate security related aspects of different phases of a secure software development

life cycle process to all stakeholders. Topics include secure software development life cycle processes, security requirements and their representation techniques and tools, security requirements engineering processes, secure design principles and guidelines and how to represent them effectively, threat modeling, risk analysis, inspection of requirements, design, and code to identify vulnerabilities, assessing the security posture of a secure software development artifact, secure implementation practices, and security testing techniques.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 310, SE 330

**SE 452 : Network Security**

The course will start with an introduction to the security concepts and how the data sent over the network is threatened by illegal activities. This course will discuss how cryptographic algorithms can be used to secure data (confidentiality and integrity). Different protocols which have been developed for securing network communication, along with their weaknesses and strengths, will be discussed. This will enable the students to deploy existing protocols, and design new ones, to make data communication more secure. The students will also understand how different factors in a real-world setup can influence the choice of network security protocols.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 330

**SE 453 : Security Risk Management & Control**

In this course the students will learn concepts of the Blockchain technology such as business networks, participants, assets, and trusted transactions. They will also learn how to develop a complete Blockchain network solution using up-to-date tools and platforms.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 330



**SE 454 : Ethical Hacking and Systems Defense**

The course will start with an analysis of various vulnerabilities in an application, system/device or a network protocol (or network) which can be exploited to threaten the data and services of a software system. Using these vulnerabilities, students will learn how to collect information before the attack, gain access, retrieve useful information, keep the access for a period of time, and avoid leaving traces of the attack. Countermeasures for each of the vulnerabilities explored will also be discussed. Students will also learn how to assess the security state of an application/system/network based on the vulnerabilities present in it. The course will include both theoretical and practical aspects: concepts learned in the lectures will be practiced in a closed environment using virtual machines.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 330, SE 452

**SE 455 : Generative AI**

This course provides an in-depth exploration of Large Language Models (LLMs) and Generative AI. Students will learn about the theoretical underpinnings, architectures, applications, and limitations of these transformative technologies. The course emphasizes practical understanding, enabling students to implement and fine-tune LLMs for various use cases, including natural language processing, content generation, and advanced reasoning tasks. Key topics include transformers, fine-tuning techniques, model evaluation, and ethical considerations. The course integrates hands-on projects, assignments, and assessments to reinforce learning outcomes.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 447

**SE 461 : Game Engine Architecture and Implementation**

This comprehensive course delves into the foundations of designing and implementing game engines. Through hands-on experience with object-oriented game engine scripting languages, used in some game engines, students will also explore event-driven and data-driven programming paradigms. The

curriculum covers essential topics such as game engine data structures, graphics concepts, and AI principles. Students will learn key aspects of game development, including asset preparation, sprite and bitmap animation, collision detection, game and level design, pathfinding algorithms, sound and music integration, game input devices, and advanced lighting techniques. This course provides a unique opportunity for students to collaborate on team projects, designing and building their own games or 3D interactive learning environments using a game engine. By the end of the course, students will have a solid understanding of game engine architecture and implementation of advanced game projects.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 328

**SE 462 : Fundamentals of Game Design**

This course introduces students to the foundational elements of game design by exploring how designers invent, test, and improve games. It provides students with fundamental learning opportunities focused especially on concept development, gameplay design, texture mapping, core mechanics, user interfaces, narratives, and storytelling. In this course, students explore the psychology and history of games, employ industry tools like game design documentation (GDD) for requirements engineering and software design and communication methods, and learn from established designers.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 310

**SE 463 : Game Mechanics, Prototyping, and Production**

This course allows students to embark on a comprehensive exploration of the dynamic world of game design by delving into the fundamentals principles of game mechanics, offering hands-on approach to understanding game rules, interactions, player motivation, engagement strategies, gaming psychology, narrative design, and systems (e.g. feedback system) that are used mainly to shape the player experience. Through practical exercises, students should learn to translate creative concepts

into tangible, playful prototypes to boost their skills in game design and to train them on refining requirements and on problem solving mechanisms. Moreover, this course focuses on the intricacies of game production which provides insights into the iterative development process and steps required for successful post-development and launch stages. It provides a holistic understanding of the game development pipeline, needed to equip students with necessary tools to navigate the complexities of game design from conceptualization to execution.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 412

#### **SE 464 : Innovative Topics in Immersive Game Development**

This course introduces the art of crafting immersive gaming experiences using extended reality (XR) technologies. Through a series of hands-on projects and guided exercises, students will learn to design and develop captivating virtual reality (VR) and augmented reality (AR) applications. They will delve into the fundamentals of XR design, exploring concepts such as spatial interaction, user interface design, and digital storytelling. Additionally, students will gain proficiency in leveraging XR platforms to create dynamic gameplay mechanics, realistic environments, and engaging narratives. Furthermore, students will explore the integration of XR with cutting-edge technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), or Cybersecurity, enhancing their understanding of the evolving landscape of game development. By the end of the course, students will emerge with a comprehensive skill set and a portfolio of innovative immersive gaming projects.

**Credits** 3

**Lab Hours** 0

**Lecture Hours** 3

**Tutoring Hours** 0

**Prerequisites**

SE 324

#### **SE 481 : Ethics for Engineers**

This course will explore the effects of technology on society. Especially the ethical questions that arise when technology interacts with humans. Topics will include secrecy of data, privacy issues, legal obligations, and protecting the society by limiting the reach of technology.

**Credits** 1

**Prerequisites**

AI 495

#### **SE 495 : Software Engineering Capstone Project I**

This course is the first part of a two-semester senior-year capstone project. It is intended to complement theory and to provide an in-depth, hands-on experience in all aspects of software engineering. The students will work in teams on projects of interest to the IT sector and will be involved in analysis of requirements, architecture and design, implementation, testing and validation, and project management. In this part students provide a project plan, software requirement specification document, and develop software high-level design.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

SE 310, SE 324

#### **SE 496 : Software Engineering Capstone Project II**

This is the second part of the capstone project started in SE 495 course. In this part, students develop a software solution based on the low-level design which was produced as a part of SE 495. This includes implementation, testing, managing, and evaluating their final product. Student teams must deliver the executable code, a final report, and present and demonstrate their software solution.

**Credits** 3

**Lab Hours** 6

**Lecture Hours** 0

**Tutoring Hours** 0

**Prerequisites**

SE 495

#### **SE 401 : Ethics and Professional Development**

The course will integrate modules covering ethics, career and professional development, along with preparations for taking the Jahiziyah/ Saudi Engineering Council Exams. The course will introduce the professional ethics and compare it with personal ethics and common morality. The professional ethics will be studied within the Engineering context where differentiation between Ethics, Morals and the Law will be discussed. Typical Ethical issues that engineers face such as safety, health, confidentiality and conflict of interest will be covered.

The course will also cover professional development lecture series for the students to introduce them to

topics and application related to their fields, job market as well as trends in the local and international economies.

The students will also be prepared for the Jahiziyah and the Saudi Engineering Council Exams through lectures, discussions and mock up exams.

**Credits** 1

## Artificial Intelligence

### **AI 213 : Introduction to Artificial Intelligence**

This course introduces students to the fundamental concepts, techniques, and tools used in artificial intelligence (AI). Topics include perception, reasoning, learning, and search algorithms (informed and uninformed). Students will gain skills in applying AI techniques to real-world problems.

**Credits** 3

#### **Prerequisites**

SE 215

### **AI 317 : Computer Vision**

This course explores the fundamental techniques and algorithms in Computer Vision, focusing on image processing, object detection, feature extraction, and pattern recognition. Students will learn to develop applications that enable computers to analyse and understand visual data from the real world.

**Credits** 3

#### **Prerequisites**

SE 215

### **AI 320 : Data Mining**

This course introduces students to the fundamentals of Data Mining, focusing on techniques used to extract patterns and knowledge from large datasets. This course covers foundational data mining techniques such as association rule mining, clustering, and classification. Emphasis is placed on understanding the theoretical concepts behind these methods while applying them to practical scenarios. Students will explore tools and libraries used for data mining tasks and tackle projects that simulate realworld applications.

**Credits** 3

#### **Prerequisites**

SE 215, DSE 201

### **AI 346 : Introduction to Big Data**

In this course the students will learn the Big Data platform and data governance to efficiently store and

manage massive amounts of data. In addition, they will learn Big Data architecture, such as Hadoop, Map Reduce, Hbase, Big SQL and BigSheets. Students will use tools to capture, store and analyze structured and unstructured data.

**Credits** 3

#### **Prerequisites**

SE 252, SE 254

### **AI 347 : Introduction to Machine Learning**

This course introduces machine learning with a practical approach covering some of the most common learning models, algorithms, tools, and techniques. From supervised learning, it covers linear regression, logistic regression, and neural networks. From unsupervised learning, it covers Kmeans clustering, dimensionality reduction (principal component analysis), and anomaly detection. The course also discusses practical aspects considered when applying machine learning: data visualization, model selection, flow, model evaluation (testing, validation, overfitting, underfitting, bias, variance), regularization, and large-scale machine learning.

**Credits** 3

#### **Prerequisites**

SE 252, SE 254

### **AI 360 : Agent Based Systems**

This course introduces machine learning with a practical approach covering some of the most common learning models, algorithms, tools, and techniques. From supervised learning, it covers linear regression, logistic regression, and neural networks. From unsupervised learning, it covers Kmeans clustering, dimensionality reduction (principal component analysis), and anomaly detection. The course also discusses practical aspects considered when applying machine learning: data visualization, model selection, flow, model evaluation (testing, validation, overfitting, underfitting, bias, variance), regularization, and large-scale machine learning.

**Credits** 3

#### **Prerequisites**

SE 215, SE 239

### **AI 361 : Human-Centered AI**

This course explores the intersection of AI and human interaction, focusing on ensuring that artificial intelligence remains under human control. It emphasizes designing AI systems that meet human needs, operate transparently, deliver fair and equitable outcomes, and respect privacy.

**Credits** 3

**Prerequisites**

AI 213

**AI 362 : Technical Elective 1 (Product Management for AI)**

This course introduces the principles of AI product management, focusing on developing, launching, and managing AI-driven products. Students will learn about the product lifecycle, from concept to market launch, while addressing key challenges such as user needs, ethics, and scalability in AI applications.

**Credits 3****Prerequisites**

AI 213

**AI 390 : Software Engineering Summer Internship**

An internship is an important aspect of the AI curriculum that provides the student with hands-on experience and a good sense of what an actual job in an organization will be like. Students are required to join an IT department in a government or private organization for a summer period of at least 8 weeks in the last summer prior to student graduation. Students should be able to relate the internship experience to the knowledge that he or she has gained through the AI program courses.

**AI 455 : Generative AI**

This course focuses on the principles and applications of generative AI, including Generative Adversarial Networks (GANs) and Large Language Models (LLMs). In this course, students explore generative AI essentials, how to ethically use artificial intelligence, its implications for authorship, and what regulations for generative AI could look like. The course emphasizes both the theoretical foundations and practical applications of generative models in areas like content generation, and AI-driven design.

**Credits 3****Prerequisites**

AI 347

**AI 471 : Technical Elective 2 (Deep and Reinforcement Learning)**

This course introduces Deep Reinforcement Learning (DRL), an emerging field combining deep learning and reinforcement learning to create intelligent agents that learn through trial and error. Students will learn the fundamentals of DRL, including core concepts, algorithms, and architectures used to build and train deep reinforcement learning models. The course also covers neural networks like CNNs and RNNs. Students will gain hands-on experience applying these techniques to real-world AI problems.

**Credits 3****Prerequisites**

AI 347

**AI 472 : Technical Elective 3 (Expert Systems)**

This course introduces students to expert systems in general and to rule-based systems in specific. Students learn how to build a rule-based expert system in a variety of application areas. They also learn advanced programming techniques which include topics of inexact reasoning, intelligent database management methods, and how to develop a community of expert systems. Students are also given the opportunity to demonstrate their understanding of the technology by building a rule-based expert system that addresses a real-world problem.

**Credits 3****Prerequisites**

AI 213

**AI 475 : Game Theory**

Game theory underpins several important recent advancements in AI such as multi-agent reinforcement learning and generative adversarial networks. Applications within computer science include the use of games in automated verification & model checking to model computing systems in an unknown and possibly adverse environment. In AI, games are applied to the analysis of multiagent systems. Recently, with the advent of the internet and e-commerce, many game theoretic questions in the interplay between economics & computing have received extensive attention. These include electronic auctions, & more generally mechanism design questions (inverse game theory) related to finding incentive structures for cooperation between independent entities on the internet. The course introduces students to the theory of non-cooperative games covering both its economic and algorithmic aspects. Topics that will be covered include equilibria, their existence and quality, equilibrium learning and computation.

**Credits 3****Prerequisites**

SE 301

**AI 480 : Natural Language Processing**

This course introduces the concepts and techniques used in natural language processing (NLP), including text preprocessing, word embeddings, and language models. Students will explore applications such as sentiment analysis, machine translation, and chatbot development. Projects focus on using modern NLP libraries and frameworks to solve practical challenges.

**Credits 3**

**Prerequisites**

SE 400

**AI 483 : Technical Elective 4 (AI in Robotics)**

This course focuses on integrating AI with robotics to develop intelligent autonomous systems. Students will study perception, decision-making, motion planning, and control using AI techniques like computer vision, reinforcement learning, and path planning algorithms. The course emphasizes practical applications in robotic systems, including autonomous navigation, object manipulation, and human-robot interaction.

**Credits 3**

**Prerequisites**

AI 213

**AI 495 : Capstone Project I**

This course is the first part of a two-semester senior-year capstone project for AI students. It aims to complement theoretical knowledge with in-depth, hands-on experience in AI project development. Students will work in teams on projects relevant to the AI sector, focusing on tasks such as requirement analysis, system architecture, design, implementation, testing, validation, project management, and maintenance. In this part, students will develop a project plan, provide a software requirement specification document, and create a high-level design for an AI-driven application or system.

**Credits 6**

**Prerequisites**

AI 346, AI 347, AI 360, AI 361

**AI 496 : Capstone Project II**

Building on the groundwork laid in AI 495, this course focuses on implementing and completing the capstone project. Students will execute their proposed solutions, including AI model development and performance evaluation. Teams will utilize industry-standard tools and techniques to develop a functional prototype or system. The course culminates with a comprehensive project report and a formal presentation to faculty and industry stakeholders, demonstrating the ability to tackle complex, real-world problems with AI-enabled strategies. Emphasis is placed on teamwork, project management, and effective communication of findings. Student teams are required to deliver the executable code, submit a final report, and present and demonstrate their AI solution, showcasing its functionality and impact.

**Credits 6**

**Prerequisites**

AI 495

**AI 401 : Ethics and Professional Development**

The course will integrate modules covering ethics, career and professional development, along with preparations for taking the Jahiziyah/ Saudi Engineering Council Exams. The course will introduce the professional ethics and compare it with personal ethics and common morality. The professional ethics will be studied within the Engineering context where differentiation between Ethics, Morals and the Law will be discussed. Typical Ethical issues that engineers face such as safety, health, confidentiality and conflict of interest will be covered.

The course will also cover professional development lecture series for the students to introduce them to topics and application related to their fields, job market as well as trends in the local and international economies.

The students will also be prepared for the Jahiziyah and the Saudi Engineering Council Exams through lectures, discussions and mock up exams.

**Credits 1**

## Cybersecurity

**CSE 230 : Programming in C**

Most security vulnerabilities are rooted in underlying software systems which make different hardware component of a computer accessible to an application. Such underlying software are usually written in low-level languages such as C. Students will learn C to understand different types of vulnerabilities and how programs interact with hardware.

**Credits 3**

**Prerequisites**

SE 120

**Corequisites**

CSE 230 L

**CSE 310 : Linux System Administration**

This course lays a strong foundation in managing Linux-based systems within professional, security conscious environments. Students learn to configure and optimize key services, administer file systems and user accounts, and automate tasks with scripting. Beyond the basics, the course covers advanced security mechanisms such as SELinux, AppArmor, and mandatory access controls to mitigate threats. Students also explore containerization (e.g., Docker,

Podman), virtualization techniques, and system monitoring tools to ensure performance and compliance with security policies. By the end of the course, students will be equipped to maintain resilient, efficient, and secure Linux infrastructures in dynamic organizational settings.

**Credits** 3

**Prerequisites**

SE 254, CSE 230

**CSE 312 : Computer Architecture**

Students will learn the low-level design of a computer. Topics will include cache hierarchies, main memory layout, addressing schemes, virtual memory, virtualization, data storage, accelerators, etc. They will conduct experiments simulating multi-threading and multi-core processing

**Credits** 3

**Prerequisites**

EE 210

**CSE 330 : Introduction to Cybersecurity**

This course provides an overview of core cybersecurity concepts, emphasizing the fundamental principles, tools, and procedures used to secure information systems. Students will employ the CIA triad as a guiding framework, explore prevalent threats, and examine various information security solutions. The course focuses on security and risk management, business impact analysis (BIA), asset security, vulnerabilities, threats and countermeasures, identity and authentication management, incident response and BCP/DRP, as well as key compliance and regulatory issues. By the end of the course, students will have broad, practical knowledge of cybersecurity, including the ability to identify security risks, implement effective defensive measures, and approach cybersecurity challenges with strategic thinking

**Credits** 3

**Prerequisites**

SE 239

**Corequisites**

SE 254

**CSE 350 : Cryptography and Data Privacy**

This course offers a comprehensive introduction to the mathematical foundations, fundamental primitives, and modern techniques of cryptography, as well as the essential principles of data privacy. Students will learn both symmetric and asymmetric encryption, hashing, digital signatures, message authentication codes (MAC), and other critical tools for protecting data and ensuring privacy, while simultaneously developing the

necessary mathematical background in number theory and algebraic structures. The course also explores modern cryptographic schemes—such as zero-knowledge proofs and homomorphic encryption—and examines their applications in current research areas. Additionally, students will study privacy-preserving methodologies, learning how to apply cryptographic techniques to safeguard sensitive information and maintain user privacy. By the end of the course, students will possess a solid understanding of cryptography and privacy theory, enabling them to apply these concepts in real-world contexts and research. Introduction to Probability and Statistics and Introduction to Cybersecurity are prerequisites for this course.

**Credits** 3

**Prerequisites**

CSE 330, STA 212

**CSE 360 : Digital Forensics**

This course introduces students to the core principles and practices involved in investigating digital assets (e.g., mobile phones, laptops, workstations) and cyber incidents. By examining methods for collecting, preserving, analysing, and presenting digital evidence, students will gain a practical understanding of forensic tools and techniques (e.g., FTK Imager, Autopsy, EnCase). Topics include chain of custody, evidence handling, imaging, file system analysis, investigations, and the use of industry-standard forensic software. Upon completing this course, students will be better prepared to conduct thorough, methodical examinations of digital devices and networks in support of security investigations.

**Credits** 3

**Prerequisites**

SE 254, CSE 330

**CSE 370 : Database Security**

This course focuses on safeguarding data at rest and in transit within various database environments. Students explore the principles of secure database design, learn to implement robust access controls, and detect and mitigate threats such as SQL injection. The curriculum covers secure database architectures, hardened configurations, and DevOps integration for continuous security testing and validation. Students also analyze case studies of large-scale data breaches to understand evolving threat patterns and compliance obligations. By the end of the course, participants will have the foundational skills required to maintain data integrity, confidentiality, and availability in diverse database systems.

**Credits** 3

**Prerequisites**

SE 252, CSE 330

**CSE 380 : Operating System Security**

In this course, students explore how operating systems manage resources, enforce security policies, and prevent unauthorized activity. Through hands-on exercises, they learn about file permissions, authentication mechanisms, secure configuration, patch management, and system hardening. By examining both traditional and emerging operating systems, students gain the skills to identify vulnerabilities and implement measures that strengthen a system's defenses against internal and external threats.

**Credits** 3

**Prerequisites**

SE 254, CSE 330

**CSE 390 : Software Engineering Summer Internship**

An internship is an important aspect of the Cybersecurity Engineering curriculum that provides the student with hands-on experience and a good sense of what an actual job in an organization will be like. Students are required to join an IT department in a government or private organization for a summer period of at least 8 weeks in the last summer prior to student graduation. Students should be able to relate the internship experience to the knowledge that he or she has gained through the CSE program courses

**CSE 410 : Security Architecture**

This course provides a comprehensive overview of designing and evaluating robust security architectures within enterprise environments. Students move beyond foundational concepts to explore layered defense models, identity and access management frameworks, and Zero Trust Network Access (ZTNA). Topics include integrating cryptographic controls, establishing secure communication channels, leveraging threat intelligence, and applying architecture frameworks such as SABSA or TOGAF. Students will also assess emerging technologies and evolving regulatory requirements to ensure that architectures remain adaptive and forward-looking. Upon completion, they will be able to create strategic, standards-based security designs that protect complex systems against diverse threats.

**Credits** 3

**Prerequisites**

SE 201, CSE 330

**CSE 442 : Network Security**

This course explores the strategies, tools, and standards used to secure data as it traverses networks. It covers intrusion detection and prevention systems, advanced firewall orchestration, zero-trust network segmentation, and the integration of software-defined networking (SDN) security controls. Students will also work with network traffic analysis tools, threat intelligence platforms, and network forensics techniques to identify advanced persistent threats and devise mitigation strategies. By the end of the course, students will have the analytical and technical skills to implement scalable security architectures and maintain secure communication channels in dynamic, distributed networks.

**Credits** 3

**Prerequisites**

CSE 350

**CSE 443 : Cybersecurity Risk Management and Control**

This course focuses on identifying, assessing, and managing security risks within organizational settings. Students will explore frameworks such as NIST and ISO, perform both quantitative and qualitative risk analyses, prioritize mitigation measures, and ensure alignment with compliance requirements and regulatory guidelines. Topics include vendor risk management, third-party audits, continuous monitoring, cyber insurance considerations, and integrating risk metrics into strategic decision-making. By the end of the course, students will be equipped to shape security governance, effectively communicate risk to stakeholders, and foster a responsive risk management culture within organizations.

**Credits** 3

**Prerequisites**

CSE 330, STA 212

**CSE 444 : Technical Elective 1 (Web and mobile security)**

This course focuses on the unique security challenges associated with web applications and mobile platforms. Students examine common vulnerabilities such as cross-site scripting, broken authentication, insecure data storage, and malicious code injection. Topics extend beyond basic weaknesses to include API security, single-page application (SPA) safeguards, mobile application sandboxes, secure session management, and hardened containerized deployments. By mastering these concepts, students

will be equipped to build and maintain secure web and mobile applications that protect user data and privacy across multiple platforms.

**Credits** 3

**Prerequisites**

SE 252, CSE 330

**CSE 451 : Technical Elective 4 (Secure Software Engineering)**

This course focuses on building security into every phase of software development through a proactive approach. Students explore secure development lifecycles (SDLCs) and engage with industry standards such as OWASP to integrate security considerations at each stage of design and implementation. Through hands-on exercises, they learn to identify and prevent common vulnerabilities, apply threat modeling techniques, and incorporate automated security testing tools— including static and dynamic analysis— into modern CI/CD pipelines. Topics include code reviewing best practices, secure coding frameworks, application security architecture, and the practical integration of cryptographic services. By applying these practices, students gain the skills to produce resilient software that can withstand attacks while protecting user data and system integrity.

**Credits** 3

**Prerequisites**

CSE 410

**CSE 454 : Technical Elective 3 (Ethical hacking)**

This course focuses on identifying, assessing, and managing security risks within organizational settings. Students will explore frameworks such as NIST and ISO, perform both quantitative and qualitative risk analyses, prioritize mitigation measures, and ensure alignment with compliance requirements and regulatory guidelines. Topics include vendor risk management, third-party audits, continuous monitoring, cyber insurance considerations, and integrating risk metrics into strategic decision-making. By the end of the course, students will be equipped to shape security governance, effectively communicate risk to stakeholders, and foster a responsive risk management culture within organizations.

**Credits** 3

**Prerequisites**

CSE 442

**CSE 472 : Technical Elective 2 (Penetration Testing)**

In this hands-on course, students learn to think like attackers to identify vulnerabilities before malicious actors can exploit them. They practice reconnaissance, vulnerability scanning, exploitation techniques, and

the safe use of testing tools. Ethical guidelines, scoping agreements, and reporting findings are integral parts of the curriculum. Students emerge with a structured methodology for uncovering system flaws and providing recommendations to strengthen defensive measures.

**Credits** 3

**Prerequisites**

CSE 442

**CSE 495 : Capstone Project I**

In this first part of the capstone sequence, students embark on a comprehensive, team-based project to address real-world cybersecurity engineering. The focus of this course is on problem identification, requirements analysis, and solution design. Students will define the project scope, conduct a literature review, and create a detailed project proposal. Emphasis is placed on applying knowledge from previous coursework to develop innovative and practical solutions. By the end of this course, students will have a clear roadmap for implementation of a cybersecurity engineering solution.

**Credits** 6

**Prerequisites**

CSE 350, CSE 360, CSE 370, CSE 380

**CSE 496 : Capstone Project II**

Building on the groundwork laid in CSE 495, this course focuses on implementing and completing the capstone project. Students will execute their proposed solutions. Teams will utilize industry standard tools and techniques to develop a functional prototype or system. The course culminates with a comprehensive project report and a formal presentation to faculty and/or industry stakeholders, demonstrating the ability to tackle complex, real-world problems with data-driven strategies. Emphasis is placed on teamwork, project management, and effective communication of findings.

**Credits** 6

**Prerequisites**

CSE 495

**CSE 401 : Ethics and Professional Development**

The course will integrate modules covering ethics, career and professional development, along with preparations for taking the Jahiziyah/ Saudi Engineering Council Exams. The course will introduce the professional ethics and compare it with personal ethics and common morality. The professional ethics will be studied within the Engineering context where differentiation between Ethics, Morals and the Law will



be discussed. Typical Ethical issues that engineers face such as safety, health, confidentiality and conflict of interest will be covered.

The course will also cover professional development lecture series for the students to introduce them to topics and application related to their fields, job market as well as trends in the local and international economies.

The students will also be prepared for the Jahiziyah and the Saudi Engineering Council Exams through lectures, discussions and mock up exams.

**Credits 1**

## Bachelor of Architecture (B. Arch)

### **ARC : Elective I: Concentration Track**

**Credits 3**

### **ARC : Elective II: Concentration Track**

**Credits 3**

### **ARC : Elective III: Concentration Track**

**Credits 3**

### **ARC 100 : Architectural Design Studio 1**

This course serves as the introduction to fundamental design concepts and methods representative of creative activity across design and artistic disciplines. They encourage entering freshmen to think critically and act creatively about and upon design, art, and the world around them as they secure a skillful level of craftsmanship in the conception, development, and making of all studio-based work.

**Credits 4**

### **ARC 101 : Architecture Design Studio 2**

This course introduces the core elements and principles of both two-dimensional and three-dimensional design. It emphasizes the development of visual design-thinking abilities and foundational skills. The course prioritizes the design process, equipping students with the essential skills required to address architectural challenges effectively. Additionally, it fosters the use of diverse communication methods, going beyond conventional drawing and sketching techniques.

**Credits 4**

### **Prerequisites**

ARC 100

### **ARC 102 : Introduction to the Architectural Discipline**

This course introduces first-year students to architecture, highlighting its identity, interconnections with related fields, and cultural context. It explores architecture's collaboration with disciplines like urban design, building science, and engineering, alongside historical and contemporary trends. Students will also examine career paths and global opportunities, particularly in Saudi Arabia. Through lectures, case studies, and discussions, the course provides a foundational understanding of architecture, inspiring students for their academic and professional journey.

**Credits 2**

### **ARC 105 : Digital Drawing and Modeling**

Building upon manual drawing skills, this course introduces students to digital tools for architectural drawing and modeling. Students will learn to create precise two-dimensional drawings and basic three-dimensional models using industry-standard software. The course emphasizes the integration of digital techniques with foundational drawing principles to enhance design communication.

**Credits 2**

### **ARC 110 : Architectural History and Theory I**

This course provides an overview of architectural history and theory, introducing students to key periods, movements, and figures that have shaped the environment built. Students will explore fundamental concepts and methodologies for analyzing architecture, setting the groundwork for advanced studies. Key topics include prehistoric to classical architecture, medieval and Renaissance developments, introduction to architectural theory and criticism, analyzing architectural form and space, and understanding cultural and historical contexts.

**Credits 3**

### **ARC 120 : Drafting and Drawing**

This course introduces students to the fundamentals of manual drawing techniques essential for architectural representation. Emphasis is placed on developing hand-eye coordination, understanding proportion, scale, and perspective, and effectively communicating spatial ideas. Students will engage in exercises that enhance observational skills and the ability to convey form and space on paper. Key topics include orthographic projections (plans, sections, elevations), perspective drawing, and introduction to architectural lettering.

**Credits 1**

**ARC 120 S : Drafting and Drawing Studio**

This course introduces students to the fundamentals of manual drawing techniques essential for architectural representation. Emphasis is placed on developing hand-eye coordination, understanding proportion, scale, and perspective, and effectively communicating spatial ideas. Students will engage in exercises that enhance observational skills and the ability to convey form and space on paper. Key topics include orthographic projections (plans, sections, elevations), perspective drawing, and introduction to architectural lettering.

**Credits 2**

**ARC 130 : Hand and Digital Sketching**

This course introduces students to fundamental sketching techniques, combining traditional hand-drawing skills with digital tools. The curriculum fosters creativity and precision, bridging artistic expression with modern technology for design visualization.

**Credits 2**

**ARC 132 : Digital Drawing and Modelling**

Building upon manual drawing skills, this course introduces students to digital tools for architectural drawing and modeling. Students will learn to create precise two-dimensional drawings and basic three-dimensional models using industry-standard software. The course emphasizes the integration of digital techniques with foundational drawing principles to enhance design communication. Key topics include Introduction to CAD software for 2D drafting, Basic 3D modeling techniques, digital layering and line weights, file management and digital workflows, and combining manual and digital representation methods.

**Credits 3**

**ARC 140 : Introduction to Architecture and the Built Environment**

This course introduces first-year students to architecture, highlighting its identity, interconnections with related fields, and cultural context. It explores architecture's collaboration with disciplines like urban design, building science, and engineering, alongside historical and contemporary trends. Students will also examine career paths and global opportunities, particularly in Saudi Arabia. Through lectures, case studies, and discussions, the course provides a foundational understanding of architecture, inspiring students for their academic and professional journey.

**Credits 3**

**ARC 202 : Architectural Design Studio 3**

Students in ARC 201 investigate the relationships between the environment and built form. Environment, from the global scale of climate to the local scale of physical context, and user needs are presented as the principal emphasis of the ARC 201 studio. These issues represent both external and internal factors that shape a building and make its presence relevant to its context. The constructed physical context and natural attributes such as solar orientation, topography, and vegetation are interpreted as critical determinants of the building design process.

**Credits 4**

**Prerequisites**

ARC 101

**ARC 203 : Architectural Design Studio 4**

Projects in ARC 202 focus on the relationship between idea and form, supported by theories of architectural ordering principles, spatial arrangements, and form. Students investigate composition and precedent in an analogous manner to develop a repertoire of conceptual form generators.

**Credits 4**

**Prerequisites**

ARC 202

**ARC 211 : Architectural History and Theory II**

This course provides an overview of architectural history and theory, introducing students to key periods, movements, and figures that have shaped the environment built. Students will explore fundamental concepts and methodologies for analyzing architecture, setting the groundwork for advanced studies. Key topics include prehistoric to classical architecture, medieval and Renaissance developments, introduction to architectural theory and criticism, analyzing architectural form and space, and understanding cultural and historical contexts.

**Credits 3**

**ARC 212 : Architectural History and Theory III**

This course explores the evolution of Islamic architecture and its integration with critical regionalism, focusing on tradition and modernity. Students examine cultural, religious, and socio-political influences, regional variations, and the impact of globalization and modernization on architecture in Saudi Arabia, the Gulf, and the MENA region. Key topics include vernacular traditions, Salmanian architecture, and significant regional projects. The

course encourages critical reflection on preserving cultural identity through contemporary design while addressing modern architectural challenges.

**Credits 3**

**Prerequisites**

ARC 211

### **ARC 220 : Structure Systems I**

The course introduces students to the fundamental principles of forces and moments in 2 dimensions and 3 dimensions, equilibrium of particles and rigid bodies, free body diagrams, and examines of beams, trusses, and frames and their components in shaping architectural spaces. In addition, the behavior of structural elements under moment, deflection, torsion, shear, and normal stresses and their distribution throughout the sections.

**Credits 3**

### **ARC 222 : Building Construction I**

This course introduces students to the fundamentals of conventional building construction systems, concentrating on the design and assembly of core architectural elements such as walls, partitions, floors, and structural frameworks. Key topics include site preparation, foundation work, load-bearing strategies, roofing, and the properties and applications of common construction materials (e.g., concrete, steel, wood, and masonry). Students will also explore how these systems integrate into the broader design process. Through lectures, practical demonstrations, and hands-on assignments, students gain foundational knowledge essential for understanding how buildings are methodically constructed and how each component contributes to overall structural integrity.

**Credits 3**

### **ARC 223 : Structure Systems II**

This course analyzes the structural elements—such as frames, trusses, beams, and columns and their grid patterns, arches, and cables—and their designs according to the fundamental principles of reinforced concrete, providing students with the knowledge and tools to enhance their architectural design skills and create structurally informed spaces.

**Credits 3**

### **ARC 224 : Building Construction II**

Building on the concepts covered in Conventional Construction Systems, this course delves into the finishing stages of architectural projects. Students investigate cladding systems, insulation methods, interior and exterior finishing materials, roofing technologies, and the detailing required to ensure

high-performance building envelopes. Emphasis is placed on material selection, installation techniques, and how finishing works enhance both the functionality and aesthetic quality of a building. Through case studies, technical drawings, and practical assignments, students develop a comprehensive understanding of finishing processes, modern innovations in construction, and the ways in which these elements harmonize with design intent.

**Credits 3**

### **ARC 233 : Advanced Digital Visualization**

This course focuses on advanced digital visualization skills, enabling students to produce high-quality architectural presentations. Students will explore rendering techniques, digital collage, and graphic design principles to effectively communicate design concepts. The course also covers the creation of presentation boards and the integration of various media to convey architectural ideas compellingly.

**Credits 2**

**Prerequisites**

ARC 105

### **ARC 234 : Integrated Visual Design**

In this visual communication course, students synthesize manual and digital skills to produce comprehensive visual representations of architectural projects. The course emphasizes the development of a personal visual style and the ability to tailor presentations to diverse audiences. Students will undertake complex projects that require the integration of various visualization methods to effectively communicate design intent. Key topics include development of a cohesive visual narrative, customization of visual styles for different audiences, advanced techniques in both manual and digital media, portfolio development and presentation skills, critique and refinement of visual communication strategies, and storyboarding in poster design.

**Credits 3**

**Prerequisites**

ARC 233

### **ARC 240 : Building Construction I**

This course introduces students to the fundamentals of conventional building construction systems, concentrating on the design and assembly of core architectural elements such as walls, partitions, floors, and structural frameworks. Key topics include site preparation, foundation work, load-bearing strategies, roofing, and the properties and applications of common construction materials (e.g., concrete, steel, wood, and masonry). Students will also

explore how these systems integrate into the broader design process. Through lectures, practical demonstrations, and hands-on assignments, students gain foundational knowledge essential for understanding how buildings are methodically constructed and how each component contributes to overall structural integrity.

**Credits 4**

**ARC 241 : Sustainability and Environmental Design**

This course explores sustainability in architectural and urban design, focusing on passive environmental strategies and design-based approaches. It emphasizes climate-responsive techniques such as solar orientation, natural ventilation, and passive heating/cooling to reduce energy consumption and enhance occupant well-being. The course integrates social, economic, and environmental dimensions of sustainability, examining the impact of design on communities, ecosystems, and resources. Key topics include bioclimatic design, green infrastructure, sustainable materials, low-impact construction, and urban nature integration, all within cultural, historical, and social contexts. Students will learn through case studies, theoretical insights, and practical design exercises, developing sustainable solutions tailored to local climates, resources, and community needs.

**Credits 3**

**ARC 270 : Building Materials and Construction Technology**

This course introduces construction materials and construction technology. Topics include construction terminology, materials and properties, manufacturing processes, construction techniques and technologies, and other related topics. Upon completion, students should detail construction assemblies and identify construction materials and properties. Additionally, students will learn about alternative, unconventional building materials and realize their applications in today's sustainable global initiatives.

**Credits 3**

**Corequisites**

ARC 270 L

**ARC 270 L : Building Materials and Construction Technology Lab**

This course provides an understanding of the basic properties of construction materials and presents current field and laboratory standards and testing requirements for these materials such as Normal Consistency & Setting Time of Cement Past; Fresh and hardened properties of Mortar; Sieve Analysis of Aggregate; Specific Gravity of Aggregate; Unit Weight

of Aggregate; Fresh and Mechanical Properties of Concrete; Mechanical Properties of Steel; Tests on wood.

**Credits 1**

**Corequisites**

ARC 270

**ARC 304 : Architectural Design Studio 5**

This studio offers an introduction to the fundamentals of building systems in architectural design. Projects emphasize tectonics, material assemblies, and strategies that incorporate building technologies into the design process.

**Credits 4**

**Prerequisites**

ARC 203

**ARC 305 : Architectural Design Studio 6**

Students in this studio investigate technical systems as fundamental elements of building design with an emphasis on lateral load resisting structural strategies, environmental control systems, energy use, and enclosure systems assembly and detailing.

**Credits 4**

**ARC 320 : Construction Drawings I**

The course teaches computer-aided design of architectural systems, and includes the preliminary design, analysis, and documentation of these systems. This will include first and third angle projections, solid modeling and the use of commercially available CAD software.

**Credits 2**

**ARC 320 S : Construction Drawings I Studio**

The course teaches computer-aided design of architectural systems, and includes the preliminary design, analysis, and documentation of these systems. This will include first and third angle projections, solid modeling and the use of commercially available CAD software.

**Credits 2**

**ARC 325 : Environmental Control**

This course explores principles of building environmental control, focusing on the design and function of building envelopes and systems that enhance thermal comfort and environmental quality. Students will examine passive and active strategies, including natural ventilation, solar shading, thermal mass, and HVAC systems, and their integration with architectural design. Key topics include optimizing

building envelopes for heat retention, daylighting, ventilation, and moisture control to achieve energy efficiency and sustainability. Through case studies and modeling, students will learn to design responsive systems tailored to climate conditions, seasonal changes, and programmatic needs.

**Credits** 3

#### **ARC 326 : Acoustics and lighting**

This course explores acoustics and lighting in architecture, emphasizing their integration to enhance the built environment. Divided into two parts, it covers sound and light from an architectural perspective, focusing on their physical principles and functional impacts without complex calculations. In acoustics, students learn to design spaces that control sound through materials and forms, improving sound quality in various settings. In lighting, the course addresses daylighting and artificial lighting, emphasizing design strategies for optimizing natural light and managing artificial light efficiently. Real-world examples and case studies are used to illustrate the role of acoustics and lighting in creating functional, aesthetically pleasing spaces.

**Credits** 3

#### **Prerequisites**

ARC 241

#### **ARC 327 : Envelope System Design**

This course examines the principles, materials, and technologies involved in facade design, emphasizing performance, aesthetics, and sustainability. Students will explore innovative systems, structural integration, and environmental responsiveness through case studies and design projects, developing skills to create advanced facade solutions for contemporary architectural challenges.

**Credits** 3

#### **Prerequisites**

ARC 241

#### **ARC 342 : Computational Architecture I**

This course introduces computational design principles, focusing on parametric modeling, algorithmic thinking, and digital workflows. Students will explore tools like Grasshopper to create dynamic, performance-driven architectural designs. Emphasizing creativity and precision, the course bridges theory and application in computational design.

**Credits** 3

#### **ARC 343 : Urban Design**

This course delves into the history and theories of urban design, emphasizing the development and transformation of public spaces, housing, and community environments. Students will explore contemporary urban design concepts, including compact cities, transit-oriented development, mixed-use planning, sustainable urbanism, street typologies, and the integration of digital technologies in smart urban design. Through lectures, case studies, and design projects, the course aims to equip students with the knowledge and skills necessary to create responsive, inclusive, and sustainable urban spaces.

**Credits** 3

#### **ARC 350 : Surveying**

This course introduces the fundamental principles and techniques of surveying, focusing on its application in architectural. Topics covered include measurement of distances, angles, and elevations; leveling; traversing; topographic mapping; and the use of modern surveying instruments such as total stations, GPS, and GIS. Students will also learn about error analysis, data interpretation, and fieldwork procedures. Practical applications emphasize site analysis, construction layout, and mapping for architectural design projects. The course includes lectures, hands-on fieldwork, and lab exercises to develop essential surveying skills.

**Credits** 3

#### **Prerequisites**

ARC 224

#### **ARC 370 : Facade Design Technology**

This course examines the principles, materials, and technologies involved in facade design, emphasizing performance, aesthetics, and sustainability. Students will explore innovative systems, structural integration, and environmental responsiveness through case studies and design projects, developing skills to create advanced facade solutions for contemporary architectural challenges.

**Credits** 3

#### **ARC 390 : Internship I**

#### **Prerequisites**

ARC 305

#### **ARC 406 : Architectural Design Studio 7**

This studio focuses on the intersection of urban planning and housing design, emphasizing the integration of social, economic, and environmental factors in creating sustainable and livable urban communities. Students will analyze urban contexts and address complex housing challenges through

innovative design solutions. The studio explores topics such as density, mixed-use development, community engagement, and public-private spaces, encouraging students to balance aesthetic, functional, and cultural considerations. Projects will involve designing housing solutions that respond to diverse user needs, site-specific conditions, and urban sustainability goals, preparing students to address real-world urban housing challenges effectively.

**Credits 5**

#### **ARC 407 : Architectural Design Studio 8**

The studio requires students to integrate site analysis, program development, sustainability, building systems, and urban context into a holistic design project. Students demonstrate mastery of spatial composition, structural integration, and critical design thinking. The comprehensive project reflects their ability to balance aesthetics, function, and meaning while addressing real-world constraints and opportunities.

**Credits 5**

#### **Prerequisites**

ARC 406

#### **ARC 414 : Contract and Quantity Surveying**

This course covers construction contracts, cost estimation, and quantity surveying techniques. Students will learn contract types, tendering processes, and legal aspects, alongside methods for accurate material and cost calculations. Emphasizing industry standards, the course equips students with essential skills for effective project management and financial control in architecture and construction.

**Credits 3**

#### **ARC 436 : Construction Drawings II**

This advanced course builds upon earlier coursework by emphasizing blow-up detailing and architectural detailing to communicate complex construction requirements. Students refine their technical expertise in representing architectural, structural, mechanical, and electrical components through CAD/BIM software, focusing on enlarged details of critical junctions and specialized assemblies. Course topics include advanced fabrication methods, digital workflows, building code compliance, and the production of thorough, precise construction documents. The overarching goal is to ensure that every aspect of the design intent—from broad layout to the smallest connection—is clearly delineated for fabrication and construction.

**Credits 2**

#### **ARC 436 S : Construction Drawings II Studio**

The studio is designed to complement Construction Drawings II, this studio provides a hands-on environment where students explore detailed blow-up drawings and architectural detailing in depth. Through project-based assignments, participants produce enlarged details of façade intersections, material connections, and technical systems, employing advanced CAD/BIM tools and processes for accuracy and clarity. Emphasis is placed on iterative feedback, interdisciplinary coordination, and the preparation of professional-grade construction documents that demonstrate both design proficiency and technical competence. By the end of the course, students will have developed a strong portfolio of meticulously detailed drawings that showcase their ability to resolve complex architectural challenges at multiple scales.

**Credits 2**

#### **ARC 444 : Computational Architecture II**

Building on foundational concepts, this course advances computational techniques in architecture, exploring generative design, optimization algorithms, and simulation-based workflows. Students will develop complex parametric models and analyze performance metrics for architectural solutions. The course emphasizes integrating computation with innovative design strategies and real-world applications.

**Credits 3**

#### **ARC 445 : Urban Planning**

This course explores the principles and practices of urban planning, focusing on sustainable development, land use, and urban design strategies. Students will analyze social, economic, and environmental factors influencing urban growth and develop planning solutions through case studies, simulations, and collaborative projects, fostering comprehensive understanding and critical thinking in urban development.

**Credits 3**

#### **ARC 451 : Contract and Quantity Surveying**

This course covers construction contracts, cost estimation, and quantity surveying techniques. Students will learn contract types, tendering processes, and legal aspects, alongside methods for accurate material and cost calculations. Emphasizing industry standards, the course equips students with essential skills for effective project management and financial control in architecture and construction.

**Credits 3**

**ARC 452 : Professional Practice**

This advanced course builds upon the foundational knowledge of architectural professional practice by focusing on construction management and project delivery. Students will explore the key aspects of managing architectural projects from conception through completion, including construction processes, project coordination, cost management, quality assurance, and timelines. Emphasizing the practical application of construction knowledge and management techniques, this course equips students with the skills necessary to successfully oversee the execution of an architectural design, ensuring that projects are completed on time, within budget, and to the required quality standards. The course covers topics such as project scheduling, resource allocation, risk management, procurement strategies, and contract administration, with a particular focus on ensuring compliance with the architect's professional, legal, and ethical obligations throughout the construction phase.

**Credits** 3

**ARC 502 : Undergraduate Design Project Studio 10**

The Studio is the culminating experience in the undergraduate architecture program, providing students with the opportunity to apply their accumulated knowledge and skills to a comprehensive architectural design project. Building upon the research and analyses conducted in the Pre-Capstone Studio Preparation course, students will engage in an iterative design process, refining their concepts through continuous testing and evaluation. The studio emphasizes creativity, critical thinking, and professional presentation, culminating in a public jury where students present their final designs to a panel of academic and professional experts.

**Credits** 6

**Prerequisites**

ARC 508

**ARC 508 : Architectural Studio 9**

Architectural Studio 9 is an advanced course focused on specialized tracks.

**Credits** 6

**Prerequisites**

ARC 407

**ARC 598 : Pre-Undergraduate Design Project**

The pre-undergraduate design project studio preparation course is designed to equip students with the analytical and research skills necessary for the successful development of a capstone project in architecture. This course emphasizes the early stages

of the design process, focusing on problem articulation, hypothesis development, and comprehensive analysis. Students will engage in defining their project scope, exploring client and user profiles, and conducting in-depth analyses of site, context, function, and form. The course culminates in the creation of a detailed thesis document, serving as a foundation for the subsequent capstone design studio.

**Credits** 2

**Prerequisites**

ARC 407

**ARC 599 : Undergraduate Design Project**

The Studio is the culminating experience in the undergraduate architecture program, providing students with the opportunity to apply their accumulated knowledge and skills to a comprehensive architectural design project. Building upon the research and analyses conducted in the Pre-Capstone Studio Preparation course, students will engage in an iterative design process, refining their concepts through continuous testing and evaluation. The studio emphasizes creativity, critical thinking, and professional presentation, culminating in a public jury where students present their final designs to a panel of academic and professional experts.

**Credits** 6

**Prerequisites**

ARC 508

## Data Sciences

**DSE 200 : Introduction to Data Science**

This course covers the mathematical elements of computer science including formal logic, propositional logic, predicate logic, logic in mathematics, sets, functions and relations, recursive thinking, mathematical induction, counting, combinatorics, algorithms, matrices, graphs, trees, and Boolean logic. Students will learn to recognize and express mathematical ideas graphically, numerically, symbolically, and in writing.

**Credits** 3

**Prerequisites**

SE 120

**Corequisites**

DSE 212

**DSE 201 : Data Visualization**

This course covers the mathematical elements of computer science including formal logic, propositional

logic, predicate logic, logic in mathematics, sets, functions and relations, recursive thinking, mathematical induction, counting, combinatorics, algorithms, matrices, graphs, trees, and Boolean logic. Students will learn to recognize and express mathematical ideas graphically, numerically, symbolically, and in writing.

**Credits** 3

**Prerequisites**

DSE 200

### **DSE 212 : Probability and Statistics for Engineers**

The course is designed to teach students the basics of probability and statistics as used in engineering and the sciences. The course covers introduction to probability theory, random variables, statistics, and regression.

**Credits** 3

**Prerequisites**

MAT 112

### **DSE 300 : Data Preparation and Feature Design**

This course delves into the critical preprocessing steps required to convert raw data into meaningful formats for analysis. Students will learn techniques for handling missing data, detecting outliers, scaling features, and encoding categorical variables. The course also emphasizes feature engineering and selection strategies to improve the performance of machine learning models. Through practical exercise.

**Credits** 3

**Prerequisites**

SE 215, DSE 200

### **DSE 301**

### **DSE 302 : Optimization for Data Science**

This course delves into the critical preprocessing steps required to convert raw data into meaningful formats for analysis. Students will learn techniques for handling missing data, detecting outliers, scaling features, and encoding categorical variables. The course also emphasizes feature engineering and selection strategies to improve the performance of machine learning models. Through practical exercise.

**Credits** 3

**Prerequisites**

DSE 212, MAT 212

### **DSE 320 : Data Mining**

Data mining focuses on extracting meaningful patterns and knowledge from large datasets. This course covers foundational data mining techniques such as association rule mining, clustering, and classification.

Emphasis is placed on understanding the theoretical concepts behind these methods while applying them to practical scenarios. Students will explore tools and libraries used for data mining tasks and tackle projects that simulate real-world applications.

**Credits** 3

**Prerequisites**

DSE 300

### **DSE 322 : Big Data and Data Warehousing**

Big data is transforming industries by enabling the analysis of massive datasets. This course focuses on the architecture, tools, and methodologies used in big data analytics and data warehousing. Students will learn about distributed systems like Hadoop and Spark, as well as the principles of data warehousing design and implementation.

**Credits** 3

**Prerequisites**

SE 252

### **DSE 323 : Cloud Computing in Data Science**

This course explores the role of cloud computing in data science, including scalable data storage, distributed computing, and cloud-based machine learning. Students will gain hands-on experience with cloud platforms like AWS and Google Cloud to execute data science workflows efficiently.

**Credits** 3

**Prerequisites**

SE 252

### **DSE 324 : Social Network Analysis**

Social networks represent complex relationships and interactions. This course introduces students to methods for analysing social networks, including graph theory, community detection, and influence propagation. Applications in marketing, public health, and communication studies are highlighted.

**Credits** 3

**Prerequisites**

DSE 301

### **DSE 390 : Software Engineering Summer Internship**

An internship is an important aspect of the DSE curriculum that provides the student with hands-on experience and a good sense of what an actual job in an organization will be like. Students are required to join an IT department in a government or private organization for a summer period of at least 8 weeks in the last summer prior to student graduation. Students should be able to relate the internship experience to the knowledge that he or she has gained through the DSE program courses.



**Credits 3****DSE 401 : Optimization Techniques for ML**

This course delves into advanced optimization methods used in machine learning, such as convex optimization, stochastic gradient descent, and optimization under constraints. Students will apply these techniques to improve machine learning model performance, focusing on real-world challenges in tuning and scalability.

**Credits 3****Prerequisites**

DSE 302, AI 347

**DSE 451 : Technical Elective 2 (Advanced Databases)**

This course introduces students to expert systems in general and to rule-based systems in specific. Students learn how to build a rule-based expert system in a variety of application areas. They also learn advanced programming techniques which include topics of inexact reasoning, intelligent database management methods, and how to develop a community of expert systems. Students are also given the opportunity to demonstrate their understanding of the technology by building a rule-based expert system that addresses a real-world problem.

**Credits 3****Prerequisites**

SE 252, DSE 322

**DSE 452 : Technical Elective 3 (Data Engineering and Pipelines)**

This course focuses on designing and implementing robust data pipelines to automate the flow of data from diverse sources. Students will learn about ETL (Extract, Transform, Load) processes, real-time data streaming, and frameworks like Apache Airflow and Kafka. Practical projects simulate building scalable and efficient pipelines for enterprise-level applications.

**Credits 3****Prerequisites**

DSE 320, DSE 322

**DSE 453 : Technical Elective 4 (Generative AI and LLM)**

This course introduces students to expert systems in general and to rule-based systems in specific. Students learn how to build a rule-based expert system in a variety of application areas. They also learn advanced programming techniques which include topics of inexact reasoning, intelligent database management methods, and how to develop a community of expert systems. Students are also given the opportunity to

demonstrate their understanding of the technology by building a rule-based expert system that addresses a real-world problem.

**Credits 3****Prerequisites**

AI 471

**DSE 495 : Capstone Project I**

This course focuses on the principles and applications of generative AI, including Generative Adversarial Networks (GANs) and Large Language Models (LLMs). Students will explore cutting edge techniques in generating synthetic data, text, and images. Applications in creative industries and ethical considerations are also discussed.

**Credits 6****Prerequisites**

DSE 320, DSE 322, DSE 323

**DSE 496 : Capstone Project II**

Building on the groundwork laid in DSE 495, this course focuses on implementing and completing the capstone project. Students will execute their proposed solutions. Teams will utilize industry standard tools and techniques to develop a functional prototype or system. The course culminates with a comprehensive project report and a formal presentation to faculty and/or industry stakeholders, demonstrating the ability to tackle complex, real-world problems with data-driven strategies. Emphasis is placed on teamwork, project management, and effective communication of findings.

**Credits 6****Prerequisites**

DSE 495

## College of Law and International Relations

**GPP 205 : Introduction to Public Policy and Policy Design**

This course introduces students to the process of public policy development, from identifying societal issues to designing and evaluating policies. The course covers the theoretical and practical aspects of public policy, exploring the roles of government, political actors, and institutions in shaping policy. Students will learn how policies are created, implemented, and evaluated, with a focus on policy design principles, tools, and frameworks. Key topics include the policy-

making process, stakeholder analysis, regulatory frameworks, and the role of evidence and data in policy formulation.

**Credits 3**

**Prerequisites**

SSC 101

### **GPP 208 : Policy Analysis**

This course provides students with the essential tools and methodologies for analyzing public policies. Students will learn to evaluate policy problems, identify alternatives, and assess the potential impacts of proposed solutions. Through case studies, group discussions, and practical exercises, students will develop critical thinking skills and a deep understanding of the policy-making process. This course equips students with the skills necessary to make informed, evidence-based decisions in a variety of policy contexts.

**Credits 3**

**Prerequisites**

GPP 205

### **GPP 221 : International Political Economy**

This course provides an in-depth examination of the key concepts, theories, and dynamics of international political economy (IPE), exploring the interaction between politics and economics in the global system. The course delves into topics such as global trade, finance, development, and international institutions, with an emphasis on how these issues affect legal frameworks, policy-making, and international governance. Students will develop an understanding of the role of law in shaping global economic relations and will critically assess the impact of political decisions on international economic outcomes.

**Credits 3**

**Prerequisites**

GPP 205

### **GPP 301 : Policy Design and Delivery**

**Credits 3**

**Prerequisites**

GPP 450

This course explores the theory and practice of public policy design and delivery within the context of contemporary governance. It equips students with the knowledge and skills required to develop, analyze, implement, and evaluate public policies that address complex social challenges. Emphasizing evidence-based policymaking, stakeholder engagement, and adaptive policy strategies, the course integrates real-world case studies and simulations to bridge the gap

between theory and practice. Students will critically assess institutional, political, and socio-economic factors influencing policy outcomes, preparing them for roles in public administration, consultancy, and policymaking institutions.

### **GPP 302 : Global Governance**

This course provides an in-depth exploration of the complex systems, structures, and processes that guide international relations and the governance of global issues. It examines how global policies are shaped and implemented through multilateral institutions, international organizations, and non-state actors. Students will learn about the dynamics of global cooperation and conflict resolution in addressing global challenges such as climate change, economic inequality, peace and security, and human rights.

**Credits 3**

**Prerequisites**

GPP 221

### **GPP 303 : Equity & Trust**

The course focuses on the equitable principles developed to complement common law and the concept of trusts as a mechanism for managing property. The course aims to provide students with a comprehensive understanding of the development of equity, the role of fiduciary relationships, the formation and operation of trusts, and the remedies available through equity. By the end of the module, students will be able to critically assess the role of equity in modern law and the impact of trusts on asset management.

**Credits 3**

**Prerequisites**

LAW 130

### **GPP 304 : Managing the Nonprofit Organization**

This course provides an in-depth exploration of managing nonprofit organizations (NPOs) in the context of governance and public policy. Students will learn about the structures, operations, and strategic management of INGOs and other nonprofit entities, emphasizing the ethical, financial, and legal aspects of nonprofit management. The course will also focus on the role of nonprofit organizations in addressing global and local social challenges and their interactions with governments, international organizations, and civil society.

**Credits 3**

**Prerequisites**

LAW 232

**GPP 311 : Introduction to Global Politics & International Relations**

This course is an introduction to International Relations with a focus on the 'global' dimension of politics. It gives an overview of the history and theory of international relations, paying attention to enduring concepts and contemporary issues of global politics. Students will study concepts and issues such as the role of the state, the nation and sovereignty in the international system; how the international relations theories conceptualize power; what are the conditions for peace and the causes of war. The knowledge of these concepts and the debates they shape in the IR field form the foundation of any understanding of past and current international affairs.

**Credits** 3

**Prerequisites**

SSC 102, GPP 205

**GPP 312 : Policy Analysis & Program Evaluation**

This course introduces students to the theories, tools, and techniques of public policy analysis and program evaluation. It emphasizes a practical, evidence-based approach to evaluating government policies and programs, focusing on policy effectiveness, efficiency, equity, and impact. Students will learn how to define policy problems, develop analytical frameworks, assess policy alternatives, design evaluation methods, and interpret results for decision-making. The course includes real-world applications and case studies to strengthen analytical reasoning, critical thinking, and ethical decision-making in the public sector.

**Prerequisites**

GPP 301, GPP 450

**GPP 313 : Ethics in Public Policy and Governance**

This course examines ethical and political questions that arise in doing public service work, whether volunteering, service learning, humanitarian endeavors overseas, or public service professions such as medicine and teaching. What motives do people have to engage in public service work? Are self-interested motives troublesome? What is the connection between service work and justice? Should the government or schools require citizens or students to perform service work? Is mandatory service an oxymoron? This course will aid you conduct a critical investigation of ethics, ideals and values commonly attributed to public service in Saudi Arabia.

**Credits** 3

**Prerequisites**

GPP 205, GPP 301

**GPP 401 : Nonprofit Organization: INGOs & Globalization**

This course explores the role of nonprofit organizations, specifically International Non-Governmental Organizations (INGOs), in the context of globalization. It examines how these organizations impact global politics, economics, human rights, development, and environmental sustainability. Students will study the legal, political, and ethical issues surrounding INGOs, as well as their contribution to the global order. By analyzing case studies and engaging with the global frameworks that govern INGOs, students will gain insights into their work, challenges, and opportunities.

**Credits** 3

**Prerequisites**

GPP 304

**GPP 402 : Governance & Public Institutions**

This course explores the fundamental principles, theories, and practices of governance and public institutions in contemporary societies. Students will analyze the role of government institutions, public administration, and their interactions with political, social, and economic systems. Emphasis will be placed on understanding governance models, public sector reforms, and institutional arrangements, with particular attention to the challenges and opportunities posed by globalization, technology, and political changes. The course aims to equip students with the necessary knowledge and skills to critically assess public institutions and propose innovative solutions to governance-related issues.

**Credits** 3

**Prerequisites**

GPP 311

**GPP 403 : Social Policy and Welfare State Governance**

This course provides an in-depth exploration of social policy and the governance structures that underpin welfare states. Students will engage with key theories, historical developments, and contemporary debates related to the design and implementation of social policies aimed at addressing inequality, poverty, healthcare, education, and other social needs. The course will also critically examine the relationship between political governance, economic systems, and welfare state outcomes across different countries.

**Credits** 3

**Prerequisites**

GPP 311

**GPP 440 : Internship****Credits 9****GPP 450 : Policy Making Process**

Regardless of where one sits in the policy system, there are opportunities to create change intentionally and unintentionally. This course aims to familiarize students with the public policy process, equipping students with analytical frameworks and practical tools to improve their engagement with the process through their work as elected public officials, public agency managers, nonprofit executives, policy analysts, street-level service providers and/or participatory citizens. The first component of the course will equip students with terminology and frameworks to help make sense of the complex moving parts that make up the policy and implementation system/subsystem. The second component of the course focuses in on three different levels of the policy ecosystem: policy fields, organizations and frontlines. Finally, the third component of the course concludes with an exploration of policy analysis and policy learning.

**Credits 3****Prerequisites**

GPP 205, SSC 103

**Corequisites**

NONE

**GPP 450 : Policy Making Process**

Regardless of where one sits in the policy system, there are opportunities to create change—intentionally and unintentionally. This course aims to familiarize students with the public policy process, equipping students with analytical frameworks and practical tools to improve their engagement with the process through their work as elected public officials, public agency managers, nonprofit executives, policy analysts, street-level service providers and/or participatory citizens. The first component of the course will equip students with terminology and frameworks to help make sense of the complex moving parts that make up the policy and implementation system/subsystem. The second component of the course focuses on three different levels of the policy ecosystem: policy fields, organizations and frontlines. Finally, the third component of the course concludes with an exploration of policy analysis and policy learning.

**Credits 3****Prerequisites**

GPP 205, LAW 102

**GPP 451 : Health and Environment Policy: A Global Perspective**

This course will explore how health and environment problems are controlled within Saudi Arabia and abroad. We will examine the policies and practices of environment and health and look upon various government programs that are established, organized, and operated to prevent or control hazards in the community, and the legal and regulatory framework behind them. This course will also provide an overview of the development, structure, function, and implementation of health and environment policy at local, national, and global scales. Case-examples will provide an in-depth understanding of health and environment policy. This course will shed enough light on the health policy, i.e., the various ways in which the government plays a role in health and in the provision of health care and it will look upon the policies that relate to the environment.

**Credits 3****Prerequisites**

GPP 205, LAW 135

**Corequisites**

NONE

**GPP 452 : Managing Government Organizations**

This course examines the enduring and changing nature of governance from both theoretical and practical perspectives. It will introduce you to a wide range of concepts in public policy. It will look into how policy-makers seek to formulate and implement public policy effectively and legitimately in the face of evolving state structures and fast shifting global context so as to serve the public good. This course will focus on governmental organization management in terms of organizational theory and management challenges facing organizations that carry out public purposes. We will also look into traditional public sector organizations, government funded bureaus and agencies that deliver public services directly to citizens but will also consider other organizations that operate in the public sector (e.g. nonprofits, private firms under contract). We will examine the backbone of public management - organizations - and ways to evaluate and understand organizations. We will also pull from organizational theory and practice to distill the core similarities and differences between public, nonprofit and private organizations.

**Credits 3****Prerequisites**

GPP 304, LAW 137

**Corequisites**

NONE

**GPP 457 : Judicial Governance**

This course provides an in-depth exploration of the principles and frameworks that guide judicial governance. It examines the critical role governance plays in ensuring judicial principles of impartiality and independence in both common law and civil law legal traditions, and upholding procedural justice while fostering efficient and high-performing court systems. Students will analyze various organizational models, investigate the complexities of judicial institutions, and assess their own court systems' structures. By the end of the course, participants will be equipped to evaluate and implement effective governance frameworks that enhance judicial operations in different legal systems.

**Credits 3****Prerequisites**

LAW 135

**INL 201 : Introduction to International Law**

This course provides an overview of the two primary branches of international law. It distinguishes between public international law, which governs the relationships between states and international organizations, covering topics like treaties, human rights, and international conflict, and private international law, which deals with cross-border legal issues between private individuals or entities, such as jurisdiction, conflict of laws, and international commercial arbitration. The course explores how these two areas interact in a globalized world, emphasizing the role of both state and non-state actors in international legal frameworks.

**Credits 3****Prerequisites**

LAW 130

**INL 431 : International Humanitarian Law of Armed Conflict**

The course addresses international humanitarian law as part of general international law. It introduces the student to the history and codification of IHL, from the 16th century until today. The course is explained by highlighting the difference between *jus ad bellum* (the legitimacy of armed operations) and the *jus in bello* (law applicable during armed conflict). The four Geneva conventions of 1949 and the two additional protocols of 1977 are looked upon into detail as well. Attention is paid to the question of law enforcement, in particular the numerous resolutions of the UN Security Council. The course illustrates IHL in some practical armed conflicts such as the NATO air campaign in Kosovo, the Libyan civil war, the Syrian

civil war and looks at some new challenges of IHL regarding armed drones, cyber warfare and '91foreign terrorist fighters'92.

**Credits 3****Prerequisites**

INL 201

**INL 432 : GCC Charter and Statutes**

This course focuses on the Cooperation Council for the Arab States of the Gulf (GCC). It explains history of the GCC, member states, the GCC charter, organizational structure, objectives and logo of the organization. Economic Cooperation Agreement is studied. Achievements of economic cooperation in the various fields is illustrated. This includes cooperation in agriculture, energy, planning statistics and development, telecommunication, transportation and communication, fight against harmful and injurious practices in international trade, VAT and other taxes, finance, the customs union, common market and economic nationality, monetary union and the single currency. Likewise, cooperation in intellectual property, human and environmental affairs, security, media and legal and judicial proceedings is reflected. Cooperation in environmental protection is focused on. The course in this respect looks into the GCC Environment Act 1997, The conservation of natural life and environment act 2010 and other environmental protection instruments in comparison with counterpart Saudi Arabia environmental law.

**Credits 3****Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**INL 433 : International Commercial Arbitration**

This course will begin by reviewing the process of creating an international arbitration agreement and potential defenses to the establishment of the same. Then the course will focus on the actual international arbitration proceedings. It will highlight the specific procedural rules that govern such proceedings and which international arbitrators and practitioners must abide by. Given the abundance of such rules, the course will focus mainly on the ICC Arbitration Rules and any arbitral awards in the required text derived from the same.

**Credits 3****Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**INL 434 : International Negotiation & Dispute Settlement**

In today's92s global marketplace, legal negotiations conducted by individuals in the context of

international business, government matters, and dispute resolution are increasingly important. Negotiation is the process by which two or more parties overcome competing interests, needs, and desires to resolve a particular problem. In the field of law, every lawyer negotiates whether it relates to commercial agreements, business relationships, real estate transactions, employment concerns, intellectual property, finance, dispute resolution (litigation/arbitration), governmental affairs, or other matters. One does not have to be a lawyer to negotiate though. Corporate workers, contract manager, governmental staff, and others negotiate on a daily basis. However, many people negotiate without sufficiently understanding the skills, strategies, approaches, and choices necessary to succeed. This course is designed to enhance your understanding of negotiations in an international context. More specifically, it is intended to teach you about the theory and practice of international business negotiations, international contract drafting, and dispute settlement.

**Credits** 3

**Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**INL 435 : European Union Law**

The course offers an introduction into the European Union law. It basically provides insights into the way the EU functions and operates; the decision-making process of the EU; the sources of EU-law; the relationship between EU-law and the law systems of EU Member States; the internal market legislation of the EU as well as into the European Convention on Human Rights and the '93Treaty on European Union'94. In a second part, the course makes decision-making in the EU evident by focusing on EU anti-corruption legislation. By doing so, it provides students with insights about the problem of corruption in Europe in general and how this affects the efforts of the Community to combat corruption. Furthermore, the course intends to embed law related questions into the wider political, social and economic EU-context.

**Credits** 3

**Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**INL 436 : Use of Force in International Law**

This course will provide students with exposure to the international laws and policies that focuses on counterterrorism efforts and will survey the wide range of legal issues implicated by such efforts within Saudi Arabia and abroad. Issues to be addressed will

also include international and domestic law applicable to counterterrorism activities, the authorities that can use force, offensive operations overseas, surveillance of terrorists, capture, detention, and interrogation of terrorism suspects, prosecutions in military commissions and domestic courts, immigration matters, and other legal authorities for addressing terrorism issues. Moreover, this course will help answer the critical question of how to design and execute peacekeeping operations that assist new leaders to provide effective governance and new security forces to control borders, police cities and protect citizens.

**Credits** 3

**Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**INR 201 : Introduction to International Relations**

This course is an introduction to International Relations with a focus on the 'global' dimension of politics. It gives an overview of the history and theory of international relations, paying attention to enduring concepts and contemporary issues of global politics. Students will study concepts and issues such as the role of the state, the nation and sovereignty in the international system; how the international relations theories conceptualize power; what are the conditions for peace and the causes of war. The knowledge of these concepts and the debates they shape in the IR field form the foundation of any understanding of past and current international affairs.

**Credits** 3

**Prerequisites**

SSC 102

**INR 221 : Saudi Arabian Foreign Relations & Diplomacy**

This course explores the evolution, objectives, and strategies of Saudi Arabia's foreign relations and diplomacy, focusing on its role within the Arab world, the Gulf region, and the international community. Students will study key aspects of Saudi foreign policy, including its interactions with major powers such as the United States, China, and regional neighbors. The course will also examine Saudi Arabia's approach to security, economic diplomacy, humanitarian concerns, energy policy, and its role in multilateral organizations like the United Nations. With a focus on contemporary issues such as Vision 2030, the course will offer students a deep understanding of Saudi Arabia's diplomatic strategies, challenges, and opportunities in the global political landscape.

**Credits** 3

**Prerequisites**

INR 201

**INR 223 : Ethics In International Affairs**

This course explores the ethical challenges that arise in international relations and foreign policy. It provides students with the tools to critically examine the moral implications of the decisions made by state actors, international organizations, and other stakeholders in global politics. By analyzing case studies, theories of ethics, and the principles of justice, fairness, and human rights, students will develop a comprehensive understanding of the role of ethics in shaping international diplomacy, conflict resolution, humanitarian aid, and global governance.

**Credits 3****Prerequisites**

INR 201

**INR 240 : Environmental Politics & Global Sustainability****Credits 3****Prerequisites**

GPP 205

**INR 301 : The Middle East Politics & Diplomacy Since 1945**

This course explores the political dynamics, conflicts, and diplomatic relations in the Middle East from the end of World War II to the present. It examines key historical events such as the creation of Israel, the Arab-Israeli conflicts, the rise of nationalism, the Cold War's impact, and the role of oil in shaping regional politics. The course also covers the influence of global powers, such as the United States, the Soviet Union, and more recently China, on Middle Eastern affairs. Students will study the region's complex relationships, including the Arab Spring and other ongoing issues. The course emphasizes the role of diplomacy, international organizations, and peace processes in addressing the region's challenges.

**Credits 3****Prerequisites**

INR 201

**INR 302 : African Politics & Development**

This course provides students an in-depth exploration of the political systems, governance structures, and socio-economic challenges across Africa. It examines the historical, cultural, and colonial legacies that have shaped contemporary African politics and development. Key topics include state-building, democracy, conflict, and the role of international organizations in Africa's development. Students will

analyze the political economy of development, focusing on issues such as poverty, inequality, governance, and the impacts of globalization. The course also explores the future prospects of Africa's political stability and economic growth, emphasizing both opportunities and challenges facing the continent in the 21st century.

**Credits 3****Prerequisites**

INR 240, INL 431, INR 201

**INR 303 : History of International Relations**

This course provides students with a comprehensive understanding of the key historical events, figures, and processes that have shaped the field of international relations (IR). By exploring the major political, economic, social, and cultural developments in the global system, students will learn how international relations have evolved from the early modern period to the present. The course will examine the historical context of global conflicts, alliances, institutions, and diplomatic efforts, providing the foundation for understanding contemporary global issues.

**Credits 3****Prerequisites**

INR 201

**INR 310 : International Security**

This course provides an in-depth examination of the key concepts, theories, and challenges in international security. It focuses on understanding the evolving nature of security in a globalized world, exploring both traditional threats such as war and territorial conflict, as well as non-traditional threats like terrorism, cyber-attacks, and environmental security. The course will analyze the roles of international organizations, states, non-state actors, and individuals in shaping security policy and practices. Students will gain a comprehensive understanding of international security dynamics and their impact on global peace and stability.

**Credits 3****Prerequisites**

LAW 130

**INR 312 : Asian Politics and International Relations**

This course provides an in-depth analysis of the political systems, foreign relations, and key international dynamics within Asia. Students will explore the political structures, economic policies, and security issues of major Asian countries such as China, India, Japan, South Korea, and Southeast Asian nations. The course also covers the role of regional organizations, such as ASEAN, and the geopolitical

interests of global powers in the region. By examining case studies and contemporary issues, students will develop a deep understanding of Asia's complex and evolving role in global politics.

**Credits 3**

**Prerequisites**

INR 201, INR 303

**INR 403 : Latin American Politics & Diplomacy**

This course provides an in-depth exploration of the political landscape and diplomatic practices in Latin America. It examines the historical, social, and economic factors that have shaped the region's politics, alongside the evolving role of Latin American countries in global diplomacy. Key themes include state sovereignty, regional cooperation, Latin American foreign policy, and the challenges posed by economic inequality, authoritarianism, and globalization. Through this course, students will gain an understanding of the region's political structures, international relations, and the strategies that influence its diplomatic actions on the global stage.

**Credits 3**

**Prerequisites**

INR 311, INR 310

**INR 404 : Media, Communication, and Diplomacy**

This course explores the intersection of media, communication strategies, and diplomacy in the modern world. It provides an understanding of how international relations and global diplomacy are shaped by media, digital communication tools, and the strategic use of information. Students will examine the role of media in international crises, the impact of public diplomacy, and how state and non-state actors utilize media for diplomatic purposes. Emphasis will be placed on practical examples and case studies that demonstrate the growing role of communication in diplomacy, particularly in the context of globalization.

**Credits 3**

**Prerequisites**

INR 311

**INR 420 : Introduction to Global Politics and International Relations**

This course is an introduction to International Relations with a focus on the '91global'92 dimension of politics. It gives an overview of the history and theory of international relations, paying attention to enduring concepts and contemporary issues of global politics. Students will study concepts and issues such as the role of the state, the nation and sovereignty in the international system; how the international relations theories conceptualize power; what are the

conditions for peace and the causes of war. The knowledge of these concepts and the debates they shape in the IR field form the foundation of any understanding of past and current international affairs.

**Credits 3**

**Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**INR 421 : The International Relations of the Contemporary Middle East**

This course examines the international relations of the Middle East, focusing on questions of how states developed, what drives conflict, and how the regional order has shifted over time. The course draws on theories of International Relations, and applies them to the politics of the Middle East. The course analyzes the interplay of levels of analyses, with specific attention to the role of ideology, identity, and the interaction between domestic and international politics, in the formulation of foreign policy. The course analyzes the development of the '93nation-state'94 system in the Middle East, and examines the nature of transnational identities and ideologies. We will consider a number of frameworks for understanding the region's international politics and Great Power involvement, roughly characterized as Realist, Liberal and Constructivist approaches, but we will always focus on how these approaches can help us understand real-world decisions and outcomes.

**Credits 3**

**Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**INR 422 : War and Diplomacy: The U.S in World Affairs**

This course explores contemporary relations between the United States and the world. The primary goal is to give students conceptual and critical tools to understand and analyze how international relations theory, U.S. foreign policy outcomes, and current events fit together, especially in the post 9/11 world. It is designed to develop students'92 capacity both to explain the foreign policy-making process in the United States, and to better understand the underlying patterns, logic, and implications of American foreign policy in the world at large.

**Credits 3**

**Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438



**INR 423 : European Foreign Policy and Security Issues**

This course will examine the issue of European foreign policy through the lens of EU integration. To what extent have EU member states constructed a coherent foreign and security policy? Is the European Union as a whole becoming a credible security actor with the ability not only to defend its common borders, but also to contribute to global security? We will also look on how forward-looking European leaders sought to end the possibility of another war by pooling the production of key military resources. Since then, despite the predominance of European economic, trade, and monetary issues and their global impact, the European Union has always been, explicitly or not, about security integration. There is much debate about whether the EU can even achieve this goal, especially in light of the recent financial crisis, declining defense budgets, division over the Iraq war, disagreement on the recognition of Kosovo, and so on. Nonetheless, some scholars have already labeled Europe a second superpower. Naturally, such developments have a strong bearing on the EU's relationship with the rest of the world.

**Credits 3****Prerequisites**

INR 310

**Corequisites**

NONE

**INR 424 : The Asia Pacific in World Affairs**

This course will introduce students to the international relations of Asia-Pacific (A-P) region and help them to think critically about the challenges facing actors in this region including the United States. This course will highlight the region's history, the latest developments in IR theory, and a healthy respect for the complexity of the region. It will also look into the impact of the region's history on contemporary politics, asking how imperialism, World War II, decolonization, the Cold War, and more recently the war on terror have influenced developments in the Asia-Pacific

**Credits 3****Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**INR 425 : Foreign Policy of Russia, Eastern Europe, and the Eurasia**

This course of Foreign Policy of Russia, Eastern Europe, and the Eurasia brings together two political regions '96Europe and the former Soviet Union. This merger is a product of the end of the Cold War and the reuniting

of Europe. It is also a result of the convergence of different intellectual traditions that developed around the study of Europe, East and West. Students in this course will think critically about the histories, cultures, religions, politics and economies of the region of the former Soviet Union, as well the often-competing ideas and interests that have shaped these histories and cultures for the past thousand years.

**Credits 3****Prerequisites**

INL 201, INR 311

**Corequisites**

NONE

**INR 429 : Advanced Topics in International Relations**

This course examines theories of conflict and cooperation in contemporary world politics. During the first half of the semester we will examine the core concepts and assumptions of several (but not all) contemporary theories of international relations. Specifically, we will examine basic and advanced theoretical approaches to understanding the changing nature of the state system and state behavior, the instruments of national power, the role of international regimes and institutions, and the emerging role of non-state actors in global politics. During the second half of the semester, we will evaluate these concepts, assumptions and theories by asking how well these approaches help us understand contemporary international policy issues.

**Credits 3****Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**INR 440 : Internship****Credits 9****LAW 102 : Introduction to Islamic Law & Jurisprudence**

Introductory to learning the law, to know the scope and main divisions of Islamic Law system, to understand differences if any between Islamic Law and major legal systems and know and comprehend the meaning of law under Islamic and other systems and the place of law and its interaction within other social, normative, and behavioral sciences.

**Credits 3****LAW 121 : English Legal Writing**

This course is designed to help students succeed in the College of Law and International Relations by focusing on and improving students' legal writing skills. Students will improve their English writing by learning

proper grammar, punctuation, and word choice. Through various readings and writing exercises, students will learn how to structure arguments, explain the law, and organize information for a variety of legal documents. Students will become more proficient legal writers through both formative and summative assessments. By receiving and providing feedback, students will gain confidence in their written communication skills.

**Credits** 3

#### **LAW 122 : Arabic Legal Writing**

This course is designed to help students succeed in the College of Law and International Relations by focusing on and improving students' legal writing skills. Students will improve their Arabic writing by learning proper grammar, punctuation, and word choice. Through various readings and writing exercises, students will learn how to structure arguments, explain the law, and organize information for a variety of legal documents. Students will become more proficient legal writers through both formative and summative assessments. By receiving and providing feedback, students will gain confidence in their written communication skills.

**Credits** 3

#### **Corequisites**

NONE

#### **LAW 130 : Introduction to Law**

Introduction to Law is designed to give students an overview of the law and the legal system. This course will provide students with an overview of legal concepts, procedures, terminology and current issues in law including constitutional law, administrative law, criminal law, contracts, family law, renters and landlords, real estate, employment law and wills, trusts and probate. The course is also designed to develop the student's issue identification skills.

**Credits** 3

#### **Corequisites**

NONE

#### **LAW 131 : Introduction to Islamic Law**

Introductory to learning the law, to know the scope and main divisions of Islamic Law system, to understand differences if any between Islamic Law and major legal systems and know and comprehend the meaning of law under Islamic and other systems and the place of law and its interaction within other social, normative, and behavioral sciences.

**Credits** 3

#### **Corequisites**

NONE

#### **LAW 132 : Islamic Jurisprudence**

Explore, define and explain the sources of Islamic law as compared with sources of law in other systems, authoritative hierarchy of sources, juristic rules for specification and classification of sources and juristic and linguistic principles of interpretation of legal texts and sources.

**Credits** 3

#### **Prerequisites**

LAW 131

#### **LAW 133 : Administrative Law**

Define explain and illustrate administrative law, its notions of due process and instances of abuses of authority and the right of persons of standing affected to file to the court for judicial review of administrative action.

**Credits** 3

#### **Corequisites**

LAW 130

#### **LAW 134 : The Law of Contracts**

Define explain and illustrate the concept of contract, contract law, its elements of offer and acceptance, Consideration, voidability, and discharge by performance or breach and instances of frustration, repudiation, revocation, illegality, and other vitiating factors and remedies of compensation, damages, and specific performance.

**Credits** 3

#### **Corequisites**

LAW 130

#### **LAW 135 : The Real Estate Law**

Define explain and illustrate the concept of Land Law, real estates and interests in land, freehold titles, buying and selling registered and unregistered land, modes of acquisition of title to land, freehold and leasehold estates, trust titles, easements, usufructuaries, contractual encumbrances, freehold covenants and Torrens land settlement and registration systems.

**Credits** 3

#### **LAW 136 : Sale of Goods**

Explore, define and explain the general principles relating to sale of goods, the extent to which general principles of contract are customized to fit this specific contract of sale, effect of Consumer Protection law on sale of goods, delivery, transfer of title, conditions of merchantability, suitability for the purpose and other statutory requirements, duties of the seller and the buyer, breach, frustration and remedies available respectively to the parties.

**Credits 3**

**Prerequisites**

LAW 134

**LAW 137 : Saudi Arabia Legal System**

Explain and describe sources and origins of laws applicable in the KSA, legislative process, administration of justice, types and hierarchies of courts and tribunals, legal institutions, advocacy , public prosecution, solicitor general and the ministry of justice.

**Credits 3**

**Prerequisites**

LAW 130

**LAW 138 : Criminal Law**

Define explain and illustrate codified types of crime inter alia against persons, property, the community, the crimes of strict responsibility, causation, responsibility of the offender and defenses.

**Credits 3**

**Corequisites**

LAW 130

**LAW 139 : Constitutional Law**

Define explain and illustrate the concept of Constitutional Law, distinct characteristics of the constitution as a fundamental law, the relationship of the executive, judicial and legislative branches of government vis a vis the constitution in different parliamentary democracies, challenging law's constitutionality, bill of rights, governance , organs of government and the limits of judicial review and remedies in constitutional litigation.

**Credits 3**

**Prerequisites**

LAW 131

**LAW 230 : Intellectual Property**

Explore, define, and explain the meaning of intellectual property, the international framework and municipal laws, patentability, patents` use, grants, infringement and revocation, copyright and related issues, designs registered or unregistered, trademarks and other image rights, confidentiality and trade secrets, computer technology and intellectual property and remedies in intellectual property litigation.

**Credits 3**

**Prerequisites**

LAW 130

**LAW 232 : Company Law**

Explore, define and explain companies as opposed to other business associations, the general principles and

statutory requirements relating to formation of a company , different types of companies, capital of the company ,organs of the company and its stakeholders, publicly traded companies, oversight by capital market authority, trade and investment and the central bank as applicable , functioning of a company , board of directors` mandate , ordinary and extra-ordinary general meeting , protection of and investors, restructuring , merger , amalgamation, take over, dissolution and insolvency. The course focusses also on corporate liability, corporate governance, liability of the directors and that of the company and limitation of liability of the shareholders and exceptions thereof.

**Credits 3**

**Prerequisites**

LAW 130

**Corequisites**

NONE

**LAW 233 : Islamic Finance**

Introduction to institutions of Islamic finance focusing on banks and cooperative insurance, explain products of Islamic financing including Murabahah, Leasing or Ijara, Salam, Istisna`a, Tawarruq, Benevolent Loaning and Sukuk. Examining how different jurisdictions deal with Islamic banking and, the feasibility of Islamic banking and central banking regulation and Islamic banking.

**Credits 3**

**Prerequisites**

LAW 131, LAW 132

**LAW 234 : Bills of Exchange**

Explore, define and explain bills of exchange including cheques , bills of exchange and promissory notes, how different from each other these species of negotiable instruments are , how different they are from financial and trade documents, form and content of bills of exchange , the concept of negotiability and transfer of bills of exchange, rights and obligations of the drawer and the drawee, criminal and civil liability for dishonored cheques , bills of exchange in international trade and issues of conflicts of laws , parties to a negotiable instrument transaction and judicial enforcement of honoring payment of negotiable instruments.

**Credits 3**

**Prerequisites**

LAW 134, LAW 136

**LAW 235 : Capital Market Law**

Explain the goals and strategies of financial regulation, theory of financial markets , capital market law and regulation , authorized persons , intermediaries and

brokers, market structure, issuer disclosure rules, trading on line , protection of investors, preconditions of listing , qualification periods, the capital market authority , the buying and selling of securities , the security depository center, types of tradeable security, the stock exchange market, brokers` regulation, investment funds , disclosure, manipulation and insider trading, price stabilization mechanism, special purpose entities, listed companies with accumulated losses, corporate governance, prudential rules, resolution of securities disputes, merger and acquisition, securities business regulation, authorized persons, market conduct, investment accounts and listing.

**Credits 3**

**Prerequisites**

LAW 134, LAW 136

#### **LAW 236 : Banking Law**

Explain the structure of banks, legal definition and privileges of banks, bank`s role as depository, current accounts, other specific accounts, clearance of cheques and other negotiable instruments, bank as payor, payment cards, bank as financier, bank securities and collaterals, guarantees, bank`s role in international trade, bank customer relationship, duty of confidentiality, money laundering and terrorism financing and prudential supervision.

**Credits 3**

**Prerequisites**

LAW 134, LAW 136

#### **LAW 237 : Insurance Law**

Explain the meaning of insurance, the nature of insurance and insurable interest, the contract of insurance, Insurance policy, payment of premiums, warranties and other terms of the policy, misrepresentation, fraud, non-disclosure, the loss, subrogation, indemnity, contribution, insurance companies, specific insurances; general principles relating to compulsory insurances, third party insurance and statutory regulation of insurance business and practices.

**Credits 3**

**Prerequisites**

LAW 134

#### **LAW 238 : Law of Tort**

Explain the meaning of Tort, difference between tort and other grounds of liability, general principles relating to Negligence, duty of care, neighbourhood concept. Causation, remoteness of damage, specific types of negligence, liability of public bodies, intentional torts against the person, torts against

moveable and immoveable property, defamation and libel, malicious prosecution, stricter tortious liability, employer`s liability, vicarious liability, tortious liability of corporate persons, remedies in tort litigation and the comparative perspective of tortious liability and issues of jurisdiction and applicable law.

**Credits 3**

**Prerequisites**

LAW 130, LAW 131

#### **LAW 239 : Labour Relations Law**

Explain selection for employment, hiring, contract of employment, employer and employee rights and obligations, rights on the job, rights in the job, rights after the job, termination of employment, expiry of a fixed term contract, dismissal, redundancy, retirement, disciplinary dismissal, hours of work, leave of absence and types thereof, occupational hazards, equality of treatment, foreign and domestic workers, employer liability insurance, severance benefits, social insurance and pensionary schemes, collective Labour relations, trade unions, collective bargaining, freedom of association, collective labour contracts and effect therefore on individual employment contract.

**Credits 3**

**Prerequisites**

LAW 133, LAW 134

#### **LAW 240 : Commercial & Consumer Law**

This course introduces students to statutory and common law concerning business and consumer transactions. An overview of the laws of contracts and torts forms the basis of business and producer/ consumer relationships. Discussion topics include sale of goods and consumer protection legislation; debtor-creditor relations; competition law; intellectual property rights and manufacturers' product liability.

**Credits 3**

**Prerequisites**

LAW 134

#### **LAW 291 : Research Methods & Legal Research**

The main objective of this course is to acquaint the student of law with the scientific method of social science research. This course is expected to provide the knowledge of the technique of selection, collection, and interpretation of primary and secondary data in socio legal research. Emphasis would be laid on practical training in conducting research in this course. By the end of the course the students are expected to develop a scientific approach to socio legal problems. They should be able to design

and execute small scale research problems. The practical skill in conducting research will be evaluated on their performance in field research and workshops/seminars.

**Credits 3**

**Prerequisites**

LAW 121

### **LAW 330 : Muslims Family Law**

Explain Islamic family law relating to marriage, competence to marry, contract of marriage, formal and essential requirements of validity, wedlock, parenthood, rights and obligations of the husband and wife inter se and vis a vis children, duty of maintenance and private accommodation, marital disputes, arbitration, extra judicial divorce, judicial separation, custody of children, obligation of the maintenance on the husband, grounds for judicial separation, who may file action for judicial separation, the effect of judgment for or against judicial separation and termination of my marriage by demise of spouse and the effects thereof.

**Credits 3**

**Prerequisites**

LAW 131, LAW 132

### **LAW 331 : Contracts of Guarantees**

Explain the full range of legal issues that need to be encountered when dealing with guarantees and sureties, the statutory and contractual requirements that need to be met, the type of guarantee and the law and regulation that may apply to each type, differences of land and movables guarantees, corporate guarantees and mandate to issue such guarantees, terms of guarantee, renewable and nonrenewable guarantees, impact of debt restructuring, waiver, death or bankruptcy on the guarantee and comparative analysis with Islamic contracts of surety, Kefala, assignment, mortgage and pledge.

**Credits 3**

**Prerequisites**

LAW 134, Law 231

### **LAW 332 : Jurisprudence**

Explains the nature of jurisprudence, the meaning of law, classical positivist theories of law, pure theory of law, modern trends in analytical jurisprudence, theories of justice, sociological jurisprudence, American and Scandinavian realism, historical and anthropological jurisprudence, Economic theories of law, critical legal studies, and postmodernist jurisprudence.

**Credits 3**

**Prerequisites**

LAW 130, LAW 131

### **LAW 333 : Criminal Procedure**

Explain rules and principles applicable in criminal Saudi courts, specifies inaugurator general principles, lodging of criminal action, Powers and procedures of interrogation, search, and detention, release on bail, criminal courts jurisdiction, trial procedure and maintenance of order in the court, public right and private rights, hearing and judgment, nullification of judgment, appeals, review and cassation, final and conclusive judgment, executable judgments and judgment issuance.

**Credits 3**

**Prerequisites**

LAW 138

### **LAW 334 : Muslims` Personal Property Law**

Explain Islamic personal property law, effect of marriage on spouses` property rights as compared with other legal systems, familial financial rights and obligations of the spouses, rules of inheritance, rules of testaments and bequeathals, gifts and rules of endowment and trusts.

**Credits 3**

**Prerequisites**

LAW 131, LAW 132

### **LAW 335 : International Business Transactions**

Explains and tackles legal issues that arise in export and import trade, describe the rules pertaining to finance of export trade, letters of credit, stand by letter of credit, documentary collection, applicable ICC Uniform Customs and Practices, transfer of export and import and responsibilities and risks of the seller, the financier, the carrier, the buyer and the in-transit insurer, Incoterms relating to CIF, FOB, C & F and other templates, resolution of disputes and overlapping of municipal law and international commercial law and ways and means to reconcile discrepancies.

**Credits 3**

**Prerequisites**

GPP 221

**Corequisites**

NONE

### **LAW 336 : Economic Crimes**

Explain the concept of economic crime, focus on money laundering and financing of terrorism discuss the commercial fraud law and regulation, examine harboring of unlicensed commercial activities law and

regulation, cover bribery, corruption and abuse of power law and regulation and explore insider dealing and market manipulation law and regulation.

**Credits 3**

**Prerequisites**

LAW 138, LAW 232, LAW 236

**LAW 337 : Conflict of Laws**

International Private Law, often referred to as 'Conflict of Laws', is that body of law which deals with disputes which involve the laws of more than one country because some of their constituent elements are connected with more than one such jurisdiction. Those elements might be the events which have given rise to the dispute, the locations which might be involved, or the residential location of the parties. The study of International Private Law is necessarily an exercise in comparative legal analysis. This course provides an advanced treatment of International Private Law consisting of three modules. The first, Jurisdiction, deals with the question of which of the state's courts will adjudicate the dispute. The second module, choice of law, deals with the question of whether the merits of the dispute will be resolved under the substantive law of the state of adjudication or under the law of another involved state. The third module, recognition of judgments, deals with the requirements under which the courts of one state will recognize /enforce a judgment rendered elsewhere.

**Credits 3**

**Prerequisites**

LAW 138, LAW 232

**LAW 338 : Evidence Law**

Explain procedural and substantive rules of evidence, burden of proof, judicial notice, standard of proof, weight of evidence, presumptions, types of proof, confession, admission, circumstantial evidence, material evidence, witness testimony, examination in chief, cross examination, reexamination, hostile witness, credibility of witness, impeachment, competence and compellability of witness, evidence of character, similar facts evidence, documentary evidence, expert evidence, opinion evidence and the difference between process of evidence under Common law ( accusatorial process) and Civil law(inquisitorial process).

**Credits 3**

**Prerequisites**

LAW 132, LAW 138

**LAW 339 : Civil & Commercial Procedure Law**

Explain rules and principles applicable in non-criminal Saudi courts, specifies rules of standing, service of

notice, international jurisdiction of Saudi Courts, jurisdiction of kind and venue, procedure of case filing, presence and absence of litigants and representatives, trial procedure and order in the court, defences, joinder, enjoiner and interlocutory orders, stay, abrogation and abandonment of claim, rules of evidence and eventual judgment and revisions. This course is of a vocational nature indispensable for those planning to join any of the legal professions.

**Credits 3**

**Prerequisites**

LAW 232, LAW 238

**LAW 430 : Domestic and International Arbitration**

Introduction to Alternative Dispute Resolution (ADR). overview of ADR methods, factors influencing the choice of arbitration, funding arbitration, professional ethics, approach of the courts to arbitration, the sanctions for refusing to engage in arbitration, recovery of arbitration fee in litigation, negotiation, and mediation, evaluation and conciliation, arbitral tribunal, arbitral award and orders, enforcement of settlement and awards and international arbitration.

**Credits 3**

**Prerequisites**

LAW 134, LAW 232

**Corequisites**

NONE

**LAW 431 : Public International Law**

This course is an introduction to the legal rules governing the conduct of states vis-à-vis other states, individuals, and international organizations, with special reference to major current events and issues. Topics include the nature, sources, and effectiveness of international law; the establishment and recognition of states; principles concerning state sovereignty, territory, and jurisdiction; the law of treaties; state responsibility; international criminal and humanitarian law; the use of force; terrorism; human rights; international trade and environmental law; and the law of the sea.

**Credits 3**

**Prerequisites**

LAW 130

**LAW 432 : Legal Professional Ethics**

Explain codes of ethics of lawyers and other members of the legal profession, lawyers` client relationship, conflict of interests, confidentiality, fee, professional privilege, third parties, authorization and matters that are ultra vires, UN standards for the judiciary, judges, members of public prosecutions and other legal officers.

**Credits 3**

**Prerequisites**

LAW 130, LAW 131

**LAW 433 : International Economic Law**

This course focuses on the law governing international trade as established by the World Trade Organization. It engages in an in-depth analysis of WTO rules and case law. The class will examine the strengths and weaknesses of the existing regime and discuss the difficulties in reforming the system. Besides focusing on the basic principles governing international monetary law, the world bank the international monetary fund and international regulation of the banking sector. The course will also examine specialized areas such as technical standards, agriculture, food safety, environment, and barriers to trade. In addition, the course will focus on the geopolitical tensions between major trading powers, particularly with respect to the US, EU, and emerging powers (China, India, Brazil).

**Credits 3**

**Prerequisites**

LAW 234, LAW 335, LAW 430

**LAW 434 : Medical Law**

This course focuses on medicine and the law. It explores the interrelationship of the two disciplines in areas such as morality, ethics, proof, and professional responsibility. Patient`s consent to treatment, confidentiality, genetic information, and duty of care are typical areas of interaction. Furthermore, ethical, and moral issues surrounding contraceptives, abortion and other fertility risks are considered. Likewise, childlessness and respective treatment of. in-vitro fertilization, donation and surrogacy are explored. Scientific research and use of human embryos in experimentation and the limits of such use are explained. Negligence and medical injuries are focused on under both statutory and general principles of liability. Medical evidence no doubt is crucial in the proof of sanity, insanity, diminished responsibility, causation, psychopathology, and other determinants of voluntary or involuntary action. Forensic medicine is of such an importance to law that it has developed into a discipline sui generis.

**Credits 3**

**Prerequisites**

LAW 238, LAW 333

**LAW 435 : Internet and Cybersecurity Law**

This course focuses on computer technology and the law. Focus is centered on transborder data flow and ways and means legislatures around the world are

pursuing to protect against computer related crimes. The US and European Union amass the biggest arsenal of laws and regulation in this respect. The course is geared towards studying Saudi Arabia relevant law and regulations against a comparative background survey of legal protection in other countries. The scope of data protection is explored. Likewise, sectoral nature of the data to be protected and the varying degree of protection allocated to government data bases, energy, financial markets, children, medicine, industrial sector, biological research and intellectual property are respectively examined.

**Credits 3**

**Prerequisites**

LAW 336, LAW 338

**LAW 436 : International Criminal Law**

This course focuses on substantive and procedural rules relating to international criminal law. It engages in an in-depth analysis of nominate crimes of geocide, crimes against humanity, crimes of aggression and torture and war crimes. The course explains types of international criminal courts including but not limited to ad hoc criminal tribunals to deal with specific events constituting any of the crimes above. It also focuses on the permanent international criminal court established by the Rome statute. The course investigates elements of crime as mutatis mutandis applicable to international crimes. Acts by subordinate and superior are examined to know the limit if any of liability. Issues of jurisdiction, sovereign immunity, availability of domestic judicial redress are central to the discussion. Instances where the international criminal court takes cognizance of a crime are discussed. Original jurisdiction of the court and jurisdiction by referral from the UN Security Council is examined.

**Credits 3**

**Prerequisites**

INL 201, INL 431

**Corequisites**

NONE

**LAW 437 : International Labour Standards**

This course focuses on international labour conventions governing individual and collective Labour relations. The course aims to explain the conventions applicable to 1. right to a job ,2. right in the job, 3. rights on the job ,4. rights after the job and 5. collective labour relations rights. Right to a job focuses on ILO conventions relating to selection for employment, equality of opportunity in employment and occupation and unemployment benefits. Rights in the job studies

ILO conventions relating to protection against arbitrary termination of employment and redundancies and remedies thereof. Rights on the job comprise the bulk of employment rights including but not limited to wages, leaves, paternity and maternity rights, occupational safety, and hours of work. Rights after the job contrast ILO conventions relating to severance benefits, pensions, and social insurance. Collective labor relations rights will focus on 8 ILO fundamental conventions that are deemed binding on all states irrespective of ratification by any such states.

**Credits 3**

**Prerequisites**

LAW 232, LAW 239, LAW 431

**LAW 438 : International Investment Law**

This course focuses on the object and purpose of international investment law , history of international investment treaties, sources of international investment law, model treaties, investors and investments covered by the regime, the concept of investment, investment contracts, admission and establishment of foreign investment, fair and equitable treatment, full protection and security, protection from expropriation, access to courts, most favored nation treatment, transfer of payment, direct and indirect investment, investing in stocks, state responsibility, settlement of investment disputes and domestic investment laws and compatibility with international standards.

**Credits 3**

**Prerequisites**

LAW 242

**Corequisites**

NONE

**LAW 440 : Summer Internship**

(8 weeks, 320 hours, Full Time)

Intensive experience with a law firm or legal public or government agency. The purpose of a Law internship is to gain full-time practical work experience to apply and further your understanding of the legal term and topics covered in the law. During the internship, the student will remain in contact with the College and the designated internship Coordinator/Supervisor. The student will create a weekly log and summary of work activity. A final report is also required. In the course of the internship, the student must not violate the company's policies on intellectual property and/or confidentiality and must abide by all other relevant

government and company policies. A mandatory advisement appointment with the College is required prior to registration.

**Credits 0**

**Prerequisites**

LAW 134, LAW 140, LAW 239, LAW 339

**LAW 441 : Intellectual Property Law**

This course explores, defines and explains the meaning of intellectual property, the international framework and municipal laws , patentability , patents` use , grants, infringement and revocation, copyright and related issues , designs registered or unregistered, trademarks and other image rights , confidentiality and trade secrets, computer technology and intellectual property and remedies in intellectual property litigation.

**Credits 3**

**Prerequisites**

LAW 134, LAW 232, LAW 338

**Law 231 : Agency Law**

Explore, define and explain the general principles relating to Agency Law, the extent to which general principles of contract are customized to fit this specific contract, rights and responsibility of the principal and agent, disclosed and undisclosed agency, rights of third parties vis a vis the principal and agent, ostensible agency, requirement of registration of commercial agencies and franchises.

**Credits 3**

**Prerequisites**

LAW 133, LAW 134

**SSC 101 : Public Speaking and Communications**

This course provides students with essential public speaking and communication skills necessary for effective legal practice and advocacy. Through practical exercises, theoretical insights, and structured feedback, students will develop their ability to speak confidently in public settings, present persuasive arguments, and engage with diverse audiences. Emphasis will be placed on verbal and non-verbal communication, structuring arguments, and adapting to the rhetorical demands of different contexts.

**Credits 3**

**SSC 102 : Theoretical Foundation of International Relations and Public Policy**

This course explores the key theoretical frameworks and concepts that underpin the study of international relations (IR) and public policy. Students will examine



classical and contemporary theories in both fields, including realism, liberalism, constructivism, institutionalism, and public choice theory, and learn how these theories are applied to real-world global issues and policy-making processes. By integrating these foundational theories with case studies and policy analysis, students will develop a deeper understanding of the dynamics of international relations and the complexities of public policy formulation and implementation.

**Credits 3**

### **SSC 103 : Writing for Policy and Politics: Mastering Daily Communications**

This course equips students with the essential skills to craft clear, persuasive, and impactful written communications for policy and political contexts. Focusing on writing for diverse audiences, including the public, policymakers, and the media, this course teaches students how to create compelling content such as policy briefs, press releases, op-eds, and speeches. Emphasizing clarity, precision, and persuasion, students will learn how to navigate the complexities of political and policy communication in fast-paced, real-world environments.

**Credits 3**

### **SSC 104 : Qualitative Research Methods for Social Sciences**

This course provides students with the skills necessary to master daily written communications in the realms of policy and politics. The course covers key writing techniques for producing clear, concise, and persuasive documents used in political and policy settings, such as policy briefs, press releases, speeches, and opinion pieces. Students will learn how to craft messages that resonate with different audiences, manage media communications effectively, and use writing as a tool for influencing policy decisions and public opinion. Through practical assignments and case studies, students will develop proficiency in communicating complex political and policy issues in accessible and impactful ways.

**Credits 3**

### **SSC 105 : Global Governance & International Organizations**

This course explores the complex world of global governance, focusing on the role and functioning of international organizations in the global system. Students will examine key concepts in international relations, global governance structures, and the impact of organizations such as the United Nations, World Trade Organization, and regional organizations

on global politics, economics, and security. The course emphasizes the theoretical and practical dynamics of global cooperation, conflict resolution, humanitarian issues, and the challenges facing international organizations in an increasingly multipolar and interconnected world.

**Credits 3**

## **Governance and Public Policy**

### **GPP 454 : Corporate Governance and Regulations**

The value of a firm depends on good corporate governance practices protecting investors. Greater protection of shareholders lowers the cost of capital due to better risk mitigation. Thus, the set of governance practices, rules, and regulations that promote private sector investment and jobs creation also promote firm value. Topics include the role and responsibilities of shareholders (principals), the boards of directors (the principals' representatives), and the executive management (agent). They also include executive compensation policies, boardroom structure and practices, corporate disclosure and transparency, and the value of the shareholder vote. The course looks into corporate pyramidal structures, hostile takeovers, and the failure of the market for corporate control. It examines the role of financial institutions and credit rating agencies in promoting corporate governance, and how transparency, accountability, responsibility, and fair and equitable treatment of all shareholders help improve corporate governance and reduce agency conflicts between principals, management, and the board of directors.

**Credits 3**

#### **Prerequisites**

LAW 232

#### **Corequisites**

NONE

## **Medicine**

### **MED 471 : Medicine**

Medical students gain initial clinical experience under direct supervision of clinical instructors. The nine weeks period of enrollment in the teaching hospitals has major and lasting effects on the medical professional. The program for medical students aims to: Provide the basic bed-side skills on history taking

and physical assessment, teach the students clinical medicine and link it to basic biomedical sciences, introduce students to work within clinical teams and acknowledge limits, acquire professionalism in medicine, respect for patients, and medical ethics, Gain experience in proper documentation, Enhance communication skills with patients, their families, nursing, and colleagues.

**Credits** 9

**Prerequisites**

MSI 361, END 362, REP 363, REN 364

**Corequisites**

[PED 472](#), [SUR 481](#), [GYN 482](#)

## Pediatrics

**PED 472 : Pediatrics**

This course will help students in the acquisition of basic knowledge of growth and development (physical, physiologic and psychosocial) and of its clinical application from birth through childhood, acquisition of the knowledge necessary for the diagnosis and initial management of common paediatric acute and chronic illnesses, an understanding of the approach of paediatricians to the health care of children, an understanding of the influence of family, community and society on the child in health and disease, development of communication skills that will facilitate the clinical interaction with children and their families and thus ensure that complete and accurate data are obtained, development of competency in the physical examination of infants and children, development of clinical problem-solving skills, development of strategies for health promotion as well as disease and injury prevention and Development of the attitudes and professional behaviors appropriate for clinical practice.

**Credits** 9

**Prerequisites**

MSI 361, END 362, REP 363, REN 364

**Corequisites**

[MED 471](#), [SUR 481](#), [GYN 482](#)

## Radiology

**RAD 245 : Radiology**

In this course, students are required to become aware of and understand the nature of all currently available imaging procedures. Acquire a basic understanding of what each imaging procedure can and cannot

accomplish and how to use these procedures in the evaluation of the clinical problem. Gain a firm knowledge of the indications, contradictions, risks and costs of commonly used imaging procedures. Learn the preparation and post procedural routines for imaging examinations. Learn to recognize basic anatomic structures as they appear on imaging studies in the normal patient and in common disease states.

**Credits** 2

**Prerequisites**

None

## Chemistry

**BIO 439 : Clinical Laboratory Science**

Clinical Laboratory Science is an advanced course designed to provide students with an understanding of the principles and practices involved in clinical laboratory testing. The course covers theoretical and practical aspects of laboratory procedures used in the diagnosis, treatment, and prevention of diseases. Topics include hematology, clinical chemistry, microbiology, immunology, and molecular diagnostics. Emphasis is placed on quality control, laboratory safety, and the ethical responsibilities of clinical laboratory professionals.

**Credits** 3

**Prerequisites**

BIO 223, CHM 212, BIO 224

**CHM 101 : General Chemistry I**

CHM 101 is the first semester course of a two semesters General Chemistry sequence for students majoring in science, or preparing for entry into health professional programs such as medicine, dentistry, pharmacy and veterinary science. CHM 101 provides a comprehensive introduction to the basic principles of chemistry including atomic and molecular structure, properties of gases, liquids and solids, and chemical thermodynamics.

**Credits** 4

**Lab Hours** 1

**Lecture Hours** 3

**Prerequisites**

None

**Corequisites**

[CHM 101 L](#)

**CHM 101 L : General Chemistry I lab**

General Chemistry I Lab provides an introduction to the fundamentals of laboratory techniques in

chemistry. Students will carry out measurements, prepare solutions, and perform qualitative and quantitative experiments.

**Credits** 1

**Corequisites**

CHM 101

### **CHM 102 : Introduction to Chemistry**

CHM 102 is a single-semester, terminal course designed to provide engineering students with a foundation in the fundamental principles and concepts of chemistry. Topics covered include atomic structure, nomenclature, chemical equations, stoichiometry, thermochemistry, chemical bonding, solution properties, kinetics, equilibrium, electrochemistry, descriptive inorganic, nuclear chemistry, and bio/organic chemistry.

**Credits** 3

**Prerequisites**

None

**Corequisites**

[CHM 102 L](#)

### **CHM 102 L : Introduction to Chemistry lab**

Introduction to chemistry lab provides an introduction to the fundamentals of laboratory techniques in chemistry. Students will carry out measurements, prepare solutions, and perform qualitative and quantitative experiments.

**Credits** 1

**Corequisites**

CHM 102

### **CHM 107 : Chemistry in the Environment and Everyday Living**

CHM 107 examines the role of chemistry in everyday life and in the environment, and is intended for students not pursuing scientific or engineering majors. Chemical principles are introduced to the extent necessary for understanding of issues.

**Credits** 3

**Prerequisites**

None

### **CHM 112 : General Chemistry II**

CHM 112 is the second of a two semester chemistry course for science majors or those preparing for entry into health professional programs such as medicine, dentistry, pharmacy and veterinary science. CHM 112 builds on fundamental principles mastered in the first semester of the course.

**Credits** 4

**Lab Hours** 1

**Lecture Hours** 3

### **Prerequisites**

CHM 101

**Corequisites**

[CHM 112 L](#)

### **CHM 112 : General Chemistry II lab**

General Chemistry II Lab ([CHM 112 L](#)) The general chemistry laboratory is designed to support and illustrate chemical concepts studied in the lecture portion of the course, as well as to introduce important laboratory techniques and encourage analytical thinking.

**Credits** 1

**Prerequisites**

CHM 101 L

**Corequisites**

[CHM 112 L](#)

### **CHM 211 : Organic Chemistry I**

CHM 211 is the first semester of a two semester sequence for science majors and those preparing for entry into health professional programs such as medicine, dentistry, pharmacy and veterinary science. CHM 211 focus on bonding principles, functional groups, isomerism, stereochemistry, nomenclature, synthesis and reactions of alkanes, cycloalkanes, alkenes, alkynes, alcohols, and alkyl halides. Addition, elimination, rearrangement, and substitution mechanisms.

**Credits** 4

**Lab Hours** 1

**Lecture Hours** 3

**Prerequisites**

CHM 112

**Corequisites**

[CHM 211 L](#)

### **CHM 211 L : Organic Chemistry I lab**

Organic chemistry I Lab provides an introduction to the fundamentals to laboratory techniques in organic chemistry. This lab introduces students to chemical reactions and syntheses of aromatic, carbonyl, and amine compounds.

**Credits** 1

**Corequisites**

CHM 211

### **CHM 212 : Organic Chemistry II**

CHM 212 is continuation of [CHM 211](#). It covers nomenclature, properties, reactions and synthesis of conjugated dienes, aromatics, organometallics, alcohols, phenols, ethers, aldehydes and ketones, carboxylic acids and derivatives, and amines.

Mechanisms include electrophilic aromatic substitution and nucleophilic addition. Carbohydrates, amino acids, proteins and nucleic acids

**Credits 4**

**Lab Hours 1**

**Lecture Hours 3**

**Prerequisites**

CHM 211

**Corequisites**

[CHM 212 L](#)

### **CHM 212 L : Organic Chemistry II lab**

Organic chemistry II Lab ([CHM 212 L](#)) introduces students to chemical reactions and syntheses of aromatic, carbonyl, and amine compounds. Special topics in carbohydrate, amino acid, and lipid chemistry. Lab work includes simple and multi-step synthesis and spectral identification.

**Credits 1**

**Corequisites**

CHM 212

### **CHM 213 : Analytical Chemistry**

Quantitative Analysis (CHM 213) provides a comprehensive introduction to the fundamental theory and laboratory techniques in analytical chemistry. This includes experimental errors and statistics, data analysis methods. Chemical equilibria, titrations, spectrophotometry, and analytical separation methods.

**Credits 3**

**Prerequisites**

CHM 112

**Corequisites**

[CHM 213 L](#)

### **CHM 232 : Organic chemistry**

Organic chemistry is the chemistry of compounds containing the element Carbon. Therefore, this course is essential to educate the students about organic nomenclature as a basic knowledge to understand the organic physical-chemical properties of drugs. The course provides the students with essential knowledge of atoms, molecules, bonds, function groups, and structure required to define alkanes, alkenes, alkynes, alcohols, ethers, carbonyl compounds, phenolic compounds, and aryl halides to understand their properties, structures and actions. The students will determine the chemical structure using Infra-Red (IR), Nuclear Magnetic Resonance (NMR) and Mass Spectroscopy (MS). The students will designate the mechanisms of organic reactions of substitution, addition, and elimination, and understand

stereochemistry to detect chiral molecules and explain the difference in stereoisomers characters and reactions. It will cover in depth physical properties of drug compounds as a basic knowledge required for further subjects such as drug delivery system and pharmaceutical chemistry. Major organic chemical reactions covered in this course will help the student to understand subjects such as pharmacology and medicinal chemistry in the coming semesters.

**Credits 4**

**Prerequisites**

[PCHE 101/112](#)

**Corequisites**

None

### **CHM 232 : Organic Chemistry**

[CHM 232](#) provides the students with essential knowledge required to define organic compounds and to understand their properties, structures and actions. The students will determine the chemical structure using IR, NMR, and Mass Spectroscopy. The mechanisms of organic reactions including addition, elimination, substitution, and rearrangement reactions will be discussed. Major organic chemical reactions covered in this course will help the student to understand subjects such as pharmacology and medicinal chemistry in the coming semesters.

**Credits 3**

**Corequisites**

CHM 232L

### **CHM 232 L : Organic Chemistry lab**

Organic chemistry Lab provides an introduction to the fundamentals to laboratory techniques in organic chemistry. This includes chemical reactions and syntheses of aromatic, carbonyl, and amine compounds discussed in [CHM 232](#) course.

**Credits 1**

**Corequisites**

CHM 232

### **CHM 310 : Introduction to Instrumental Analysis**

Introduction to the theories of analysis by instrumental methods. Basic electronics are applied to chemical measurements. Topics include an introduction to the theory of spectroscopy, ultraviolet, visible, infrared, and others. CHM 310 is an introduction to basic principles and the instrumental design of a variety of analytical techniques, including: electrochemical, spectrochemical (molecular and atomic), chromatographical and mass spectrochemical techniques.

**Credits 4**

**Lab Hours** 1

**Lecture Hours** 3

**Prerequisites**

CHM 212

**Corequisites**

[CHM 310 L](#)

**CHM 310 L : Introduction to Instrumental Analysis lab**

Introduction to Instrumental Analysis lab ([CHM 310 L](#)) will introduce the basic analysis utilizing different instruments such as UV-visible spectrophotometer, IR, NMR, GC, HPLC, Potentiostat, and equipments relevant to the materials of [CHM 310](#) course.

**Credits** 1

**Corequisites**

CHM 310

**CHM 331 : Medicinal Chemistry**

Medicinal Chemistry (CHM 331) will explore role of chemistry in the design and action of drugs. Principles of drug discovery, drug development, drug interactions, and the structure-activity relationship of drugs will be discussed. Aspects of biochemistry and physical chemistry will be covered as required to understand the chemistry of drug action and drug metabolism. Selected case studies from the major classes of drugs and literature will be used to illustrate concepts covered in the course.

**Credits** 3

**Prerequisites**

CHM 212

**CHM 332 : Environmental Chemistry**

The purpose of this course is to gain an understanding of the fundamental chemical and biochemical processes that are occurring in the environment. The course will reflect on major issues in the environment including atmospheric chemistry, air pollution, climate change, energy, water chemistry and water pollution, toxic heavy metals, organic pollutants such as pesticides, herbicides, insecticides, and waste and recycling.

**Credits** 3

**Prerequisites**

[CHM 112](#) and [CHM 211](#)

**PBIO 112 : Preparatory Biochemistry**

This introductory course is designed to provide a solid foundation in basic biochemistry for pre-medical students and students entering the allied health sciences. The course begins with a brief survey of the principles of organic chemistry including functional groups, acidity, basicity, stereochemistry, and chirality

of organic molecules. This is followed by a comprehensive survey of biochemistry with emphasis on the structure and function of biomolecules including carbohydrates, lipids, proteins, enzymes, neurotransmitters, hormones, and nucleotides. The course also provides an introduction to metabolic pathways and bioenergetics.

**Credits** 3

**Prerequisites**

PCHE 101

**PBIO 112/BIO 113 : Principles of Biochemistry**

This course will help student to understand and appreciate organic chemistry as a necessary tool and an integral part of understanding biochemistry and the important biological molecules, their physical, chemical and biological properties and functions. This course will start with reviewing general chemistry concepts, to progress with organic functional groups and important organic reactions, structure and reactivity of aromatic compounds, polymers, and biopolymers. Important structures, and functions of biological macromolecules, such as proteins, nucleic acids, carbohydrates and lipids, which provide the structure of cells will also be discussed.

**Credits** 3

**Prerequisites**

None

**PCHE 101 : Preparatory Chemistry I**

This course designed to give students a solid foundation in basic chemistry as a preparation for undergraduate studies. Students will learn of the central role of chemistry in science, the history and development of simple models used to describe the material world, with an emphasis on structure of matter at the atomic and molecular level. Students will learn how major classes of compounds, with characteristic properties, can be identified by gaining an appreciation of how different atoms interact with each other. They will understand that structure determines physical and chemical properties. They will understand different types of chemical bonds; covalent, metallic and ionic bonds. They will learn also, the structure of organic compounds and their relative properties depending on the functional groups.

**Credits** 3

**PCHE 101/ CHM 103 : Chemistry I**

This course is designed to give students a solid foundation in basic chemistry as a preparation for undergraduate studies. Students will learn of the central role of chemistry in science. They will learn the history and development of simple models used to

describe the material world, with an emphasis on structure of matter at the atomic and molecular level. Students will learn how major classes of compounds, with characteristic properties, can be identified by gaining an appreciation of chemical bonding and how different molecules interact with each other. They will understand that structure determines physical and chemical properties. Then they will learn how chemists quantify matter, and finally they will study some of the major types of chemical reactions. Students will also develop practical skills in laboratory protocols and writing of formal laboratory reports.

**Credits** 3

**Prerequisites**

None

### **PCHE 112 : Preparatory Chemistry II**

This course is designed to give students a solid foundation in basic chemistry as a preparation for undergraduate studies. Students will learn the arithmetic of chemical equations and to carry out calculations using balanced equations. They will apply kinetic theory to gases to explain their properties. Students will explore the gas laws experimentally and use these laws to carry out calculations. They will understand the thermochemical reactions and how to calculate the energy released or absorbed during a chemical change. The properties of acids and bases will be discussed along with measurement and calculation of pH. A basic appreciation of buffer action will be attained. Oxidation and reduction will be defined and reactions involving these processes will be carried out and their balanced equations deduced. Electrochemical reactions and electrochemical equations will be introduced to the students with the emphasis on the importance of the different applications of electrochemical reactions such as batteries, fuel cells and electrolytic cells.

**Credits** 3

**Prerequisites**

PCHE 101

### **PCHE 112/CHM 113 : Chemistry II**

This course is designed to give students a solid foundation in basic chemistry as a preparation for undergraduate studies. Students will learn the stoichiometry of chemical equations and to carry out calculations using balanced equations. They will apply kinetic theory to gases to explain their properties. Students will learn about the gas laws both theoretically and experimentally and use these laws to carry out calculations. They will learn about the flow of energy in chemical reactions and how energy is

quantified experimentally. The properties of acids and bases will be studied along with measurement and calculation of pH. The fundamental principles governing buffer action will be learned. Oxidation and reduction will be defined and reactions involving these processes will be carried out and their balanced equations deduced. The sources, properties and major uses of hydrocarbons will be emphasized. Students will learn to classify organic molecules according to functional groups. They will study basic reactions of selected functional groups. The importance of polymerization and polymers will be emphasized.

**Credits** 3

**Prerequisites**

None

## **English**

### **ENG 101 : Freshman English 1**

A skills-based writing-intensive course that introduces and develops the students' abilities to organize, visualize and write effective paragraphs and essays. The course covers the writing process, and academic oral and written rhetorical moves and grammatical elements specific to a variety of paragraphs and essays. Students will explore and analyse how language is used to achieve communicative goals common to academic writing in various paragraphs and essay genres through in-class writing activities, lectures and homework assignments.

**Credits** 3

**Prerequisites**

admission to AU colleges

### **ENG 102 : Freshman English 1**

A skills-based writing-intensive course that introduces and develops the students' abilities to organize, visualize and write effective paragraphs and essays. The course covers the writing process, and academic oral and written rhetorical moves and grammatical elements specific to a variety of paragraphs and essays. Students will explore and analyse how language is used to achieve communicative goals common to academic writing in various paragraphs and essay genres through in-class writing activities, lectures and homework assignments.

**Credits** 2

**Prerequisites**

admission to AU colleges



**ENG 112 : Freshman English II**

As a continuation of [ENG 101/102](#), ENG 112/113 focuses on developing the students' abilities to organize, visualize and write effective essays. The course continues to cover the writing process and the academic oral and written rhetorical moves and grammatical elements relevant to different essay types not covered in [ENG 101/102](#).

**Credits 3**

**Prerequisites**

ENG 101

**ENG 113 : Freshman English II**

As a continuation of [ENG 101/102](#), [ENG 112/113](#) focuses on developing the students' abilities to organize, visualize and write effective essays. The course continues to cover the writing process and the academic oral and written rhetorical moves and grammatical elements relevant to different essay types not covered in [ENG 101/102](#).

**Credits 2**

**Prerequisites**

ENG 102

**ENG 222 : Technical Writing**

Develops reading, listening/speaking and research skills that enhance technical discourse to facilitate advanced-level written expressions that explore the technological parameters of the students' chosen fields.

**Credits 3**

**Prerequisites**

[ENG 112](#) or [ENG 113](#)

**ENG 223 : Literature**

The course introduces students to the four major genres of literature: novels, short stories, drama, and poetry. Focus will be brought to the understanding and appreciating of different major works of literature. Students will be able to analyze and respond to major works of literature.

**Credits 3**

**Prerequisites**

[ENG 112](#) or [ENG 113](#)

**ENG 224 : English for Medical Students**

Is concerned with developing fluency and confidence in using English in medical contexts. It increases EFL medical students' familiarity with medical written language and discourse in different medical contexts. The focus is on carrying out specialized activities in English, but attention is given to reading comprehension skills (expanding the English general

and medical vocabulary repertoire through extensive readings), academic and scientific writing skills, and technical medical terms as required.

**Credits 2**

**Prerequisites**

[ENG 112](#) or [ENG 113](#)

**ENG 231 : Medical terminology**

This course is essential for students pursuing any health care profession to learn and recognize word roots, prefixes, suffixes used in medical communications, to combine words to create meaningful medical conditions as well as to realize their definition and identify the correct spelling. The students will acquire the foundation, pronunciation and abbreviation of medical terms related to different body systems (cardiovascular, respiratory, renal, gastrointestinal,.. etc.) including structures, procedures, and diseases. It assists health care professionals to comprehend and utilize medical terminology to communicate with each other and with other health care professionals efficiently to maximize patients care.

**Credits 2**

**ENG 231 : Medical Terminology**

Medical terminology is the study of the principles of building clinical terms used in health care professions. By covering essential, basic terms of the body's systems, students will be actively learning to understand and use Latin and Greek roots, suffixes, and prefixes. Etymologies of words used in the health care professions will also be emphasized as aids towards understanding and retention

**Credits 2**

**Prerequisites**

[ENG 113](#) or 112

**PENG 004 : Preparatory English Level 4**

PENG 004 is a 4-credit hour, 14-hour contact week, 8-week course that specifically aims to develop the students' four language skills: listening, speaking, reading and writing. A primary aim of the course is to develop students' reading skills including understanding main ideas, supporting details and making inferences. Goals for writing focus on understanding the structure and features of a paragraph including the topic, supporting, and concluding sentences. The emphasis of the communication component is on understanding main ideas and supporting details while listening to academic lectures on a variety of subjects.

Additionally, students will develop note-taking strategies to organize and synthesize the ideas expressed in lectures.

**Credits 4**

**Prerequisites**

acceptable minimum score on placement exams

**PENG 005 : Preparatory English Level 5**

PENG 005 is a 4-credit hour, 14-hour contact week, 8-week course that specifically aims to develop the students'92 four language skills: listening, speaking, reading and writing, with special emphasis on reading and writing. The primary aim of the course is to develop students'92 reading skills including understanding main ideas, supporting details, and making inferences. The writing component centers on extending students'92 ability to summarize and respond to a range of sources, composing clear, well-organized, and coherent texts that incorporate a variety of rhetorical modes and essay formats. The emphasis of the communication component is on understanding main ideas and supporting details while listening to academic lectures on a variety of subjects. Additionally, students will develop note-taking strategies to organize and synthesize the ideas expressed in lectures.

**Credits 4**

**Prerequisites**

[PENG 004](#) or acceptable minimum score on placement exams

**PENG 006 : Preparatory English Level 6**

PENG 006 is a 4-credit hour, 14-hour contact week, 8-week course that focuses primarily on developing reading and writing skills with specific emphasis on communication and grammar. The writing component centers on extending students'92 ability to express themselves in clear, well-organized, and coherent text. Furthermore, the reading component centers on extending students'92 ability to interact with the written word, to reflect upon, analyze, synthesize, and to critically evaluate information from a variety of textual forms. The listening component focuses on identifying main and supporting points in an academic-style lecture while developing note-taking skills. The speaking component focuses on developing students'92 ability to speak clearly and confidently on a specific subject to an audience.

**Credits 4**

**Prerequisites**

[PENG 005](#) or acceptable minimum score on placement exams

**PENG 007 : Preparatory English Level 7**

PENG 07 is a 3-credit hour, 12-hour contact week, 8-week course that specifically aims to develop the students'92 four language skills: listening, speaking, reading and writing, with special emphasis on reading and writing. The focus of the listening and speaking component centers on the retention and analysis of information based on the students'92 ability to engage in verbal discourse. Additionally, the course is focused on developing students'92 comprehension skills to read, reflect upon, analyze, synthesize, and evaluate information in a variety of texts. Furthermore, the course aims to instruct students on writing clear, well-organized and coherent academic text within diverse disciplines as well as varied settings.

**Credits 3**

**Prerequisites**

[PENG 006](#) or acceptable minimum score on placement exams

**PENG 008 : Preparatory English Level 8**

PENG 08 is a 3-credit hour, 12-hour contact week, 8-week course that specifically aims to develop the students'92 four language skills: listening, speaking, reading and writing, with special emphasis on reading and writing. The focus of the listening and speaking component centers on the retention and analysis of information based on the students'92 ability to engage in verbal discourse. Additionally, the course is focused on developing students'92 comprehension skills to read, reflect upon, analyze, synthesize, and evaluate information in a variety of texts. Furthermore, the course aims to instruct students on writing clear, well-organized and coherent academic text within diverse disciplines as well as varied settings.

**Credits 3**

**Prerequisites**

[PENG 007](#) or acceptable minimum score on placement exams

**PSCS 101 : Study and Communication Skills**

Course instruction will incorporate study skills, research skills, tech skills, and application of team and interpersonal communication skills to create effective written discourse as well as oral presentations. In turn, achievement of these skill objectives will facilitate the research and communication process as utilized by all AUPP pathway students.

**Credits 2**

**PTECH 101 : Preparatory Technical Writing I**

PTECH 101 is a 3-credit hour, 16-week course for business, engineering, and science pathway PENG-exempt students. It is a research writing-intensive



course focused specifically on the development of students'92 English language skills, i.e., with special emphasis on reading, writing, and research. The primary aim of this course is to develop students'92 ability to read, to reflect, to analyze, and to evaluate information in a variety of texts; as well as to respond with clear, well-organized and coherent academic text.

**Credits** 3

### **PTECH 112 : Preparatory Technical Writing II**

PTECH 112 is a 3-credit hour 16-week course that builds on the course learning objectives achieved in the prerequisite course: [PTECH 101](#). It is a research writing-intensive course with a more in-depth focus on the development of students'92 English language skills, i.e., with special emphasis on reading, writing, and research. The primary aim of this course is to further the development of students'92 reading comprehension; to reflect, to analyze, to synthesize, and to evaluate information in a variety of texts; as well as to respond with clear, well-organized and coherent academic discourse.

**Credits** 3

## Life Science

### **BIO 315 : Genetics**

This course concentrates on various aspects of genetics. An emphasis is placed on the structural organization of the genetic material in cells, mechanisms of its transfer between organisms and the role of genetics in determination of quantitative traits. Modern genetic methods and their applications in various areas of biology are comprehensively covered.

**Credits** 3

#### **Prerequisites**

BIO 223

### **BIO 439 : Clinical Laboratory Science**

Clinical Laboratory Science is an advanced course designed to provide students with an understanding of the principles and practices involved in clinical laboratory testing. The course covers theoretical and practical aspects of laboratory procedures used in the diagnosis, treatment, and prevention of diseases. Topics include hematology, clinical chemistry, microbiology, immunology, and molecular diagnostics. Emphasis is placed on quality control, laboratory safety, and the ethical responsibilities of clinical laboratory professionals.

**Credits** 3

#### **Prerequisites**

BIO 223, CHM 212, BIO 224

### **LST 421 : Life Science Special Topics I**

LST courses introduces special topics relevant to Biomedical Science. The course subjects can be modified according to faculty availability, students' preferences and pathways.

**Credits** 3

#### **Prerequisites**

BIO 346

### **LST 421 : Epigenetics**

The course will first review recent progress in our understanding of fundamental epigenetic mechanisms and events controlling normal human development and physiology, such as growth, metabolism and ageing processes together with environmental factors affecting human epigenome. This will follow by reviews of recent discovering of epigenetic etiology of some most significant human disorders.

## Mathematics and Computer Science

### **MAT 113 : Real Analysis**

This course is and Introduction to Real Analysis. Topics include real number system, concepts of set, intervals, rational and irrational numbers; sequences and series, criteria of convergence, divergence; limit, continuity and differentiation; the Riemann integral; sequences and series of functions, point-wise convergence, and uniform convergence; elementary metric space theory including compactness, connectedness and completeness.

**Credits** 3

## Advanced Pharmacy Practice

### **APP 600 : Advanced pharmacy practice experience rotations - sixth year**

After completion of the previous courses successfully, students will participate in a series of advanced clinical rotations in which they communicate with patients, professionals, and other health profession students; identify and assess clinical problems; further develop their skills in patient care and pharmaceutical services; contribute effectively as a member of a health care team; and formulate solutions to optimize patient

outcomes. A total of 10 clinical rotations (45 weeks) will be required during a full academic year (total of 2,000 hours) of clinically-oriented rotations offered primarily at off-campus sites.

There will be 5 core rotations that are mandatory for all (ambulatory care, general internal medicine, institutional pharmacy practice, community pharmacy practice, and pharmacy administration and management).

Another 3-5 rotations can be chosen from the selective/ elective options (general paediatrics, infectious disease, cardiology, adult critical care, drug information, TPN, and adult haematology/oncology).

The remaining 0-2 rotations are freely chosen from the free elective list that comprises (organ transplant, nephrology, acute care, pharmacy automation and informatics, surgery, pediatric/neonatal critical care, investigational drug services, medication safety, pharmacy quality improvement, pharmaceutical industry, regulatory affairs, medical toxicology). This proposed structure is the make most of the rotations focused on direct patient care and communication.

**Credits 4**

#### **APP 601 : Advanced pharmacy practice experience rotations - sixth year**

After completion of the previous courses successfully, students will participate in a series of advanced clinical rotations in which they communicate with patients, professionals, and other health profession students; identify and assess clinical problems; further develop their skills in patient care and pharmaceutical services; contribute effectively as a member of a health care team; and formulate solutions to optimize patient outcomes. A total of 10 clinical rotations (45 weeks) will be required during a full academic year (total of 2,000 hours) of clinically-oriented rotations offered primarily at off-campus sites. There will be 5 core rotations that are mandatory for all (ambulatory care, general internal medicine, institutional pharmacy practice, community pharmacy practice, and pharmacy administration and management). Another 3-5 rotations can be chosen from the selective/ elective options (general paediatrics, infectious disease, cardiology, adult critical care, drug information, TPN, and adult haematology/oncology). The remaining 0-2 rotations are freely chosen from the free elective list that comprises (organ transplant, nephrology, acute care, pharmacy automation and

informatics, surgery, and many others). This proposed structure is the make most of the rotations focused on direct patient care and communication.

**Credits 4**

## Ambulatory Care

### **AMB 5X2 : Ambulatory Care**

The ambulatory care clerkship course is designed to offer students a comprehensive overview of the important ambulatory and primary healthcare specialties. Through this clerkship course, students rotate between three specialties: anesthesia, emergency medicine, and family medicine. Students spent one week in anesthesia, three weeks in emergency medicine, and four weeks in family medicine. Through their rotations, students are exposed to the common diseases managed in these specialties and primary health care, their management, related examinations, and procedures.

**Credits 9**

#### **Prerequisites**

MED 471, PED 472, SUR 481, GYN 482

#### **Corequisites**

[IMD 591](#), [INS 592](#), SSP5X1

## Anthropology

### **ANT 101 : Introduction to Sociocultural Anthropology**

The course explores anthropology and its four major sub-branches. It focuses on the significance of sociocultural anthropology for appreciating the diversity of contemporary and past human cultures, and creating an awareness of ethnographic research methods and diverse anthropological perspectives. It enhances students' understanding of the similarities and differences among human cultures and their appreciation of cultural constructions of realities.

**Credits 3**

#### **Prerequisites**

None

### **ANT 102 : Entrepreneurial Multiculturalism**

Presents interdisciplinary knowledge on how business cultures evolve in various societies around the world. It also explores why some individuals/social groups are more successful in entrepreneurship than others within the same societies and cross-culturally.

**Credits 3**

**Prerequisites**

None

**ANT 233 : Anatomy and histology**

This course is designed to expand the basic anatomy concepts gained from human structure and function courses in the first year. It provides fundamentals of the organization of the human body and provides a comprehensive foundation for topics including anatomical structure of cell, tissues, organs, and organ systems. Organ systems covered will include central nervous system, cardiovascular system, gastrointestinal, musculoskeletal, respiratory, urinary, and others in a systemic and integrated approach to promote critical thinking of the clinical consequences of cellular disorders and tissue related diseases. In addition to lectures, students will gain practical experience of the overall structure of these organ systems and of their components by working with models and histological specimens to prepare the student for the pathophysiological concepts of diseases and their pharmacological interventions in the fourth year.

**Credits 4****Prerequisites**

PHSF 101 112

**Corequisites**

PHY 234

## Arabic

**ARB 101 : Arabic Language I**

Concentrates on developing Arabic language skills in areas related to paragraph writing, orthography, punctuation, style, vocabulary, and conversation in Standard Arabic. It also enhances students'92 literary appreciation and provides morphological and syntactic insight into text analysis. This course counts as a humanities course in the university'92s General Education Requirements.

**Credits 2****Prerequisites**

None

**ARB 102 : Elective/ Arabic language I**

This course concentrates on developing Arabic language skills in areas related to paragraph writing, orthography, punctuation, style, vocabulary, and conversation in Standard Arabic. It also enhances students'92 literary appreciation and provides

morphological and syntactic insights into text analysis. This course counts as a humanities course in the university'92s General Education requirements.

**Credits 2****Prerequisites**

CHM 232

**Corequisites**

None

**ARB 112 : Arabic Language II**

Focuses on developing students'92 Arabic language skills to higher proficiency levels in various domains, including essay writing, and conversation in Standard Arabic. The course also introduces the different literary schools and their respective characteristics. It counts as a humanities course in the university'92s General Education Requirements.

**Credits 2****Prerequisites**

ARB 101

**ARB 112 IN : Arabic language II Intermediate Level**

As a continuation of [ARB 101](#) IN, [ARB 112](#) IN focuses on Arabic syntax, semantics, report and essay writing, and literary appreciation and evaluation.

**Credits 2****Prerequisites**

[ARB 101](#) IN

**ARB 112NN : Arabic language II for Non-natives**

Continues and builds upon the fundamental elements of Arabic within a cultural context. Continued emphasis on the development of basic language skills, vis., listening, speaking, reading and writing in addition to grammar and contextual vocabulary.

**Credits 2****Prerequisites**

[ARB 101](#) NN

**ARB 113 : Arabic Language II**

Focuses on developing students'92 Arabic language skills to higher proficiency levels in various domains, including essay writing and conversation in Standard Arabic. The course also introduces the different literary schools and their characteristics. It counts as a humanities course in the university General Education Requirements.

**Credits 2****Prerequisites**

ARB 102

## Behavior Science

### **BHS 243 : Behavior Science**

This course examines progression through the life cycle, including birth through senescence '96 cognitive, language, motor skills, and social and interpersonal development - sexual development '96 influence of developmental stage on physician-patient interview and psychological and social factors influencing patient behavior '96 personality traits or coping style, including coping mechanisms '96 psychodynamic and behavioral factors, related past experience '96 family and cultural factors, including socioeconomic status, ethnicity, and gender '96 adaptive behavioral responses to stress and illness '96 maladaptive behavioral responses to stress and illness '96 interactions between the patient and the physician or the health care system '96 patient adherence (general and adolescent).

**Credits** 2

**Prerequisites**

None

## Biochemistry

### **BCH 242 : Biochemistry**

This course will build upon on the knowledge the students acquired from the biochemistry course in the first year. The course will lay the foundation for subsequent courses in pharmacology and pathophysiology by expanding students'92 knowledge about proteins, nucleic acids, carbohydrates, and lipids metabolism. It is designed to provide an understanding of the molecular and cellular features that constitute and regulate the central pathways in metabolism. Such knowledge will allow for an understanding of enzyme mechanisms, the therapeutic use of enzyme inhibitors, intermediary metabolism, and accordingly understand the effects of drugs on various metabolic pathways, signal transduction, and biotransformation processes. The laboratory sessions will deal with the isolation, characterization, and quantitative determination of carbohydrates, lipids and proteins.

**Credits** 4

## Biology

### **BIO 101 : General Biology I**

The course covers major fields and fundamental principles of modern biology and provides a foundation for more in-depth and specialized studies during the following years. The course concentrates on the core concepts of modern biology and provides knowledge about the role of various biological macromolecules in cell physiology; how different types of cells are integrated into multicellular systems; molecular and chromosomal mechanism of heredity.

**Credits** 4

**Lab Hours** 1

**Lecture Hours** 3

**Prerequisites**

None

### **BIO 103 : Introduction to Human Biology**

The course concentrates on the basic aspects of human biology and provides knowledge about the role of various biological macromolecules in the human body, how different types of cells are integrated into multicellular systems, and how organs and organisms develop and function. The course satisfies the General Education Requirements in Science.

**Credits** 3

**Prerequisites**

None

### **BIO 112 : General Biology II**

This is the second module of the general biology introductory course designed for the Life Science Major curriculum. It concentrates on the fundamental aspects of animal physiology with an emphasis on the human body. The course is focused on the evolution, development, structure, function, health and disease of major physiological systems and regulatory mechanisms coordinating their function in the human organism.

**Credits** 4

**Lab Hours** 1

**Lecture Hours** 3

**Prerequisites**

BIO 101

### **BIO 224 : Human Physiology and Anatomy**

The course covers human anatomy and physiology from a systems-based perspective, stressing the ways in which different physiological systems interact. Emphasis is on understanding the integration of human anatomy through biological function, development, evolutionary history and genetics.

Several clinical examples are given to illustrate how human variation, including congenital defects, emerges from the interaction of development, form, and function.

**Credits 4**

**Lab Hours 1**

**Lecture Hours 3**

**Prerequisites**

PBIO 112

### **BIO 325 : Conservation Biology**

This course is general in nature that provides a general introduction to conservation biology. Conservation Biology is the scientific study of the phenomena that affect the maintenance, loss, and restoration of biological diversity. Topics covered include: 1) the impacts of global warming, species invasions, and habitat destruction on biodiversity, 2) strategies developed to combat these threats, and 3) a consideration of key economic and ethical tradeoffs. Special attention will be paid to current debate and controversy within this rapidly emerging field of study.

**Credits 3**

**Prerequisites**

BIO 223

### **BIO 345 : Molecular Biology I**

As the first module of the Molecular Biology course, BIO 345 concentrates on molecular mechanisms of genetic processes. This module explains how the flow of biological information from DNA to RNA to protein gives rise to the recognizable, inherited attributes of living organisms. It uses seminal experiments to introduce the students to basic classical and molecular genetics, and then expands on these themes to include genetic engineering and genomic approaches to these phenomena.

**Credits 4**

**Lab Hours 1**

**Lecture Hours 3**

**Prerequisites**

PBIO 112, BIO 223, CHM 112, CHM 211

### **BIO 346 : Biochemistry I**

The two-module Biochemistry course concentrates on the chemical properties of biological macromolecules with particular attention to the relationship between structure and biological function. The first module specifically covers amino acids, the fundamentals of protein structure, the basics of enzyme catalysis and kinetics, lipids, and membrane structures, transport

proteins, the physicochemical basis of signal transduction, vitamins and their functional role in the body.

**Credits 4**

**Lab Hours 1**

**Lecture Hours 3**

**Prerequisites**

PBIO 112, CHM 211, BIO 223

### **BIO 357 : Molecular Biology II**

As the second module of the Molecular Biology course, BIO 357 concentrates on molecular mechanisms of cellular physiology and interactions. This module provides a detailed knowledge of the structural organization and differentiation of eukaryotic cells as well as key processes in development that are based on cell-cell communication and cell movement. It introduces fundamental properties of the cytoplasm and the roles of the cytoskeleton in fundamental biological processes including chromosome separation, cell motility and intracellular transport processes as well as the evolution, function and biogenesis of cell organelles.

**Credits 4**

**Lab Hours 1**

**Lecture Hours 3**

**Prerequisites**

BIO 345

### **BIO 358 : Biochemistry II**

The second module of the Biochemistry course concentrates on the complexity of metabolic pathways and their regulation. It reviews the inter-linked metabolic processes involved in nutrient handling and homeostasis.

**Credits 4**

**Lab Hours 1**

**Lecture Hours 3**

**Prerequisites**

BIO 346

### **BIO 405 : Human Genetics**

BIO 405 will cover: 1) the genetic and molecular basis of heredity and inherited traits, 2) how genetics and genomics help to understand the human condition, including genetic diseases, cancer, and human evolution, 3) how basic and translational genetics research is leading to improvements to human health, and 4) current ethical discussions related to human genetics.

**Credits 3**

**Prerequisites**

PBIO 112

**BIO 440 : Biotechnology**

The aim of this course is to provide a basic understanding of modern biotechnology and its applications. This course is focused on the molecular and genetic tools used to analyze and modify organisms to produce desired small molecules and proteins; discuss established and cutting-edge manipulation techniques in the field of synthetic biology. We will also cover the production of biofuels, bioplastics, amino acids, food additives, various bulk chemicals, and biopharmaceuticals.

**Credits 3**

**Prerequisites**

BIO 223, ENV 205

**PHSF 101/PHY 103 : Preparatory Human Structure and Function I**

The field of medical science and medical education has accumulated vast amounts of information about human systems biology including anatomy, physiology and molecular medicine (biochemistry, immunology, microbiology etc.). This course will concentrate on different organ systems that make up the human organism, understanding physiological processes and concepts. The laboratory section of the course is designed to augment the lectures by providing demonstrations and hands-on experimental learning. Topics include cells, body tissues, skin, the skeletal system, the muscular system, the nervous system, the endocrine system, blood and the gastrointestinal tract.

**Credits 4**

**PHSF 101/ PHY 103 and PHSF 112 / PHY 113 : Human Structure and Function I& II**

The field of medical science and medical education has accumulated huge amounts of information about human systems biology including anatomy, physiology and molecular medicine (biochemistry, immunology, microbiology etc.). This course will concentrate on knowledge (factual content, understanding processes and concepts), applied and critical cognitive skills (problem based learning, situated and experiential learning). The course will be an introduction to anatomy and human systems physiology. It is expected that students will develop a broad, general understanding of the principles and concepts of human physiology and understand the relationship of structure to function. Students will recognize that structures permit some functions while, at the same time limit others. At a content/factual level, students will have an understanding that certain molecules (for example, enzymes, amino acids, nucleic acids and ATP) are ubiquitous. Students will gain an understanding of

homeostasis in physiological systems; they will recognize the checks and balances that exist in living processes.

**Credits 4**

**Prerequisites**

None

**PHSF 112/PHY 113 : Preparatory Human Structure and Function II**

The field of medical science and medical education has accumulated vast amounts of information about human systems biology including anatomy, physiology and molecular medicine (biochemistry, immunology, microbiology etc.). This course will concentrate on different organ systems that make up the human organism, understanding physiological processes and concepts. The laboratory section of the course is designed to augment the lectures by providing demonstrations and hands-on experimental learning. Topics include the cardiovascular system, the lymphatic system, immunity, the respiratory system, the digestive system, the urinary system and the reproductive system.

**Credits 4**

**Prerequisites**

PHSF 101/PHY 103

## Biostatistics & Epidemiology

**BEP 235 : Basics of Biostatistics & Epidemiology**

The main objective of this course is to enhance your ability to understand the methods section in articles presented in medical literature and learn basic principles of biostatistics.

**Credits 2**

**Prerequisites**

None

**BST 245 : Biostatistics and basic research methods**

This course will assist the students to develop the necessary skills to understand and perform basic statistical analysis for parametric and non-parametric data using computer-based program. They will be capable of interpreting the results of biomedical research papers in the literature. The students will appreciate the fundamentals of research ethics. Planning research projects, the students will learn how to write a research proposal using systematic approach, starting with comprehensive literature review, writing an introduction, adding a methodology

section with an emphasis on data collection protocol and data analysis, summarizing results, and writing an inclusive discussion and an effective conclusion.

**Credits** 3

## Business Analytics

### **BAN 310 : Business Analytics and Visualization**

This course aims to help students apply different data analysis software-based tools to improve their results evaluation and decision-making skills. It starts with the conceptualization of empirical research and concludes with a visual display of research findings to target audiences. It provides students with a good conceptual understanding of the research process as well as practical skills in analytics and visualization necessary to model data and predict solutions to business problems.

**Credits** 3

**Core Requirement** [BCC](#)

**Prerequisites**

OPM 230, OPM 211, OPM 330

### **BAN 350 : Predictive Analytics and Data Mining**

Predictive analytics involves the art of data exploration, visualization, and communication as well as the science of analyzing large quantities of data in order to discover meaningful patterns and generate insights to support decision-making. The primary objective of this course is to introduce various techniques available to extract useful information from the large volume of data an organization can use. Through this course, students will become more competent in extracting the business value from the rich data. This course will cover the concepts, principles, methodologies, and emerging trends in data mining and predictive analytics.

**Credits** 3

**Core Requirement** [BEC](#)

**Prerequisites**

[OPM 211](#), [OPM 230](#)

### **BAN 370 : Business Big Data Intelligence**

This course uses Microsoft's new Power Tools (Power Pivot, Power Query and Power BI Desktop) to convert real world large data sets into useful information for business decision making. Students will learn how to transform data, load data, and convert the loaded data into useful information for reporting, visualizing, analytics and dashboarding.

**Credits** 3

**Core Requirement** [BEC](#)

### **Prerequisites**

[BAN 310](#)

### **BAN 380 : People Analytics and strategy**

This course will provide the students with an understanding of how organizations can leverage data science and analytics to gain competitive advantage and how to use the data to align with a company's mission and goals. Students will learn how organizations derive business value/impact, and return on investment, and the importance of interpreting and communicating the business case.

**Credits** 3

**Core Requirement** [BEC](#)

**Prerequisites**

MGT 230

### **BAN 410 : Applied Business Analytics Project**

The course provides an opportunity for students to develop a project that draws on their skills in the areas of business problem formulation, design, and statistical analysis to support data-driven decision-making processes. The project also serves to further students' skills in terms of developing business insights from quantitative analysis and knowledge of functional areas of business and/or specific industries. Projects will be based on a real business problem faced by organizations in the business community.

**Credits** 3

**Prerequisites**

[BAN 310](#)

## Cardiopulmonary Block

### **CVP 121 : Cardiopulmonary block**

This is a multidisciplinary course (block) integrating topics in basic and applied clinical anatomy, embryology, histology and physiology of respiratory and cardiovascular systems.

**Credits** 5

**Prerequisites**

None

**Corequisites**

HLS 122, REN 123

### **CVP 351 : Cardiopulmonary block**

This course examines the etiology, epidemiology, predisposing factors, pathophysiology and classification, of common respiratory and cardiovascular diseases. In-addition, students are required to relate clinical signs and symptoms result of laboratory diagnostic test, and imaging changes



with underlying pathogenesis of common respiratory and cardiovascular diseases. They are required to describe the principles of differential diagnosis and clinical investigations including laboratory and radiological test in the management of common respiratory and cardiovascular diseases. Discuss the mechanism of action of drugs used in the management of common, describe the principles and practice of prevention of communicable pulmonary diseases, and environmental pulmonary diseases and take a history and perform clinical examinations in patients with pulmonary and cardiovascular disease.

**Credits 4**

**Prerequisites**

NEU 241, HNS 242

**Corequisites**

HEM 352, MSI 361

## Communications Skills

**PRO 115 : Communications Skills**

The overall objective of this course is to understand the basics of communication skills and its major role in the daily life of health professionals. Show empathy & demonstrate breaking bad news effectively and demonstrate a willingness to be open about themselves, their skills, ideas and responses to people and situations.

**Credits 2**

**Prerequisites**

None

**PRO 234 : Introduction to Medical Skills**

During this course students will conduct and record medical interview and learn to perform general physical examination.

**Credits 2**

**Prerequisites**

None

**PRO 244 : Professional Skills IV (Integrated with Clinical Sessions)**

By the end of this course, students will be able to obtain a complete Medical Hx related to Nervous System, Otolaryngeal and Ophthalmic disorders, Communicate respectfully and effectively with patients and their family members demonstrate knowledge of appropriate communication skills in the clinical setting, exhibit keenness to acquire knowledge and skills needed for successful clinical encounter and medical interview. Prove effective utilization of self-directed learning time, exhibit compassion and

honesty with patients and their family members respect boundaries and Communicate politely with tutors, peers, and members of the medical team.

**Credits 2**

**Prerequisites**

None

**PRO 355 : Professional Skills III (Integrated with Clinical Sessions)**

By the end of this course, students will be able to obtain a complete Medical Hx of disorders related to Cardiovascular, Respiratory, Gastrointestinal and Hematological systems, obtain a detailed comprehensive Hx of the chief complaint and pertaining Hx, explore life style, environmental, and occupational factors pertinent to presentation(s) covered in each session, communicate respectfully and effectively with patients and their family members ,demonstrate knowledge of appropriate communication skills in the clinical setting, exhibit keenness to acquire knowledge and skills needed for successful clinical encounter and medical interview, prove effective utilization of self-directed learning time, exhibit compassion and honesty with patients and their family members, respect boundaries, collaborate with peers, tutors, medical team members, and hospital staff, utilize time and resources provided towards effective completion of session objectives and tasks and understand the role of physicians as health advocates.

**Credits 2**

**Prerequisites**

None

**PRO 365 : Professional Skills V (Integrated with Clinical Sessions)**

By the end of this course the students should be able to, take clinical history of a patient with Musculoskeletal, skin, renal, Endocrine and Gynecological & obstetrics problems and/or complaints, perform general physical examination, perform focused physical examination of the Musculoskeletal, skin, abdominal, and reproductive systems.

**Credits 2**

**Prerequisites**

None



# Complementary and Alternative Medicine

## **CAM 488 : Complementary and Alternative Medicine**

The course gives an overview of the most commonly used complementary and alternative medicine CAM modalities centered on the five domains of Complementary, Integrative and Alternative Medicine. These include the Alternative medical systems (traditional Chinese medicine, Unani medicine, Ayurveda, homeopathy, naturopathy); Mind-body Medicine (techniques designed to facilitate the mind's capacity to affect the physical body's functions in health and illness, such as meditation, yoga, and MBSR); Manual therapies (osteopathy, massage, and chiropractic); Energy-based therapies (biofeedback, acupuncture); and Biologically-based therapies (herbal medicine and dietary supplements). Principles of Prophetic medicine will be introduced where the major elements of traditional Islamic healing methods will be covered. The course will present theory and principles of CAM practices and train students to critically evaluate evidence of their efficacy and safety.

**Credits 2**

# Computer Science

## **CSC 101 : Introduction to Computer Science**

This course provides an introduction to a disciplined approach to computer programming and problem solving, utilizing a block-structured high-level language, with an emphasis on procedural abstraction and good programming style. Students will apply programming skills in solving a variety of problems. Algorithmic concepts are also introduced. This course also provides a survey study of data structures and data abstraction, and an introduction to complexity considerations and program verification.

**Credits 3**

### **Prerequisites**

None

## **PBUS 101 : Introduction to Business**

This course provides students with the basic theoretical and practical skills needed to undertake business studies at the undergraduate level. It achieves this feat by introducing students to the contemporary business world, entrepreneurship, the business of managing, strategy, people in

organizations, the principles of marketing, and accounting & finance. The course consists of textbook readings, lectures, interactive in-class discussions, and analyses of contemporary events relevant to business. Special attention is given to both the Saudi and U.S. business contexts.

**Credits 4**

## **PCS 112 : Basic Computer Skills**

This course is an introduction to computer terminology in terms of hardware, and software related to the business environment. Students will be introduced to the practical computer skills necessary for data and information analysis and an efficient representation of results. Techniques including word processing spreadsheets, databases, desktop publishing, presentation graphics, and business-oriented utilization of the internet will be covered.

**Credits 3**

## **PIE 112 : Introduction to Engineering Innovation**

Engineering Innovation is an exciting UPP course level for motivated new students with an aptitude in math and science and an interest in engineering. In this course students will learn how to think like an engineer and develop the necessary problem-solving skills. The course will provide students with a hands on, experiential learning experience, which will provide: working knowledge of contemporary engineering practice, the problem solving process, and the tools and technologies engineers employ, as well as an understanding of the design process including competition, cost, quality, scheduling and manufacturability considerations. Numerous topics in various engineering disciplines will be covered with inspiring presentations, guest-speakers, team projects, and hands-on activities.

**Credits 3**

# Drug Information and Evidence

## **DIT 472 : Drug information and evidence-based practice**

This course will provide the students with the necessary knowledge to build their skills required to search, retrieve, interpret, and disseminate drug information in the most efficient and effective manner with special focus on patient and medication safety using the suitable databases. This course will teach the student the critical appraisal of drug literature,

randomized clinical trials, systematic reviews with meta-analyses, clinical service literature, and quality assessment and improvement techniques. The students will learn how to balance individual patient care with population-based assessment of pharmacotherapy outcomes. The student will learn that evidence-based practice requires screening, evaluating and implementing evidence from the rapidly evolving medical literature. They will learn also how data are summarized into evidence reports and clinical guidelines and learn about the limitations of this process. In this course students will use published evidence/ practice to identify targets for quality improvement, to formulate the best strategies for identifying high-risk patients, and to evaluate patient outcomes.

**Credits** 3

## Economics

### **ECO 101 : Microeconomics**

This course introduces students to the key principles of microeconomics and its application to decisions made by households and firms. Uses the forces of supply and demand, the course studies the interaction between individuals, business firms, and government. It analyses the impact of perfect and imperfect competition on the welfare of key players in society.

**Credits** 3

**Core Requirement** BCC

### **ECO 102 : Macroeconomics**

This course introduces students to macroeconomics concepts and tools of analysis used to understand how an economy as a whole function. It discusses the determinants of standard macroeconomic concepts including inflation, unemployment, and economic growth; money supply and interest rates; and evaluates the impact of fiscal and monetary policies on the economy. The course also analyses the impact of KSA's current policies on the key indicators of the Saudi economy.

**Credits** 3

**Core Requirement** BCC

**Prerequisites**

ECO 101

### **ECO 310 : International Economics**

This course will introduce both the micro-economic and macroeconomic issues relevant to the economic relations among countries. The first half of the course explores the theoretical microeconomic foundations

of international trade covering the why, what, and how of trade versus protectionism. The second half of the course deals with issues in international finance and macroeconomics and covers such issues as currencies and exchange rate (fixed vs. flexible) policies, balance of payments.

**Credits** 3

**Core Requirement** BEC

**Prerequisites**

FIN 201

### **ECO 320 : Islamic Economics & Finance**

This course is designed to introduce foundations and instruments of Islamic economics and finance within two parts. In the first part, the course will define Islamic economics and review its fundamental economic principles and discuss the historical development of Islamic economic thought. In the second part, the course will provide a relationship between Islamic economics and finance by covering the foundations of Islamic finance and its historical development.

**Credits** 3

**Core Requirement** BEC

**Prerequisites**

FIN 201

### **ECO 482 : Pharmacoeconomics and health outcomes**

This course will provide the pharmacy student with an overview and applications to assess the value and the standards of pharmacoeconomics, health outcomes, health economics, and epidemiology. It will teach the student basic concepts, assumptions, terminology, and methods associated with pharmacoeconomics and health-related outcomes research. An overview of pharmacoeconomic analysis using cost-effectiveness, cost-minimization, cost-utility, cost-benefit, and cost-identification studies will be addressed. This course will also teach the student the basic features, strengths, and weaknesses of pharmacoepidemiological study designs. Various methods of collecting pharmacoepidemiological information, drug utilization studies, cross-sectional studies, observational studies, and clinical trials will be covered. Principles taught in this course will help the student to build their knowledge of how to assess and conduct research in the future to demonstrate the effectiveness, safety, and economic value of a new treatment.

**Credits** 3

# Endocrine Block

## **END 231 : Endocrine Block**

This is a multidisciplinary course (block) integrating topics in basic and applied clinical anatomy, histology, embryology and physiology of endocrine system.

**Credits** 2

### **Prerequisites**

CVP 121, HLS 122, REN 123

### **Corequisites**

[REP 232](#), [POD 233](#)

## **END 362 : Endocrine Block**

This course examines the functions and regulation of pituitary, thyroid, parathyroid, pancreatic and adrenal hormones. It describes the epidemiology, risk factors, pathogenesis and diagnostic workup of disorders of Pituitary, thyroid, parathyroid, pancreatic and adrenal gland. It describes the epidemiology, risk factors, pathological classifications and morphology of tumors of pituitary, thyroid, parathyroid, pancreatic and adrenal gland.

**Credits** 2

### **Prerequisites**

END 231, REP 232, POD 233, NEU 241, HNS 242

### **Corequisites**

[REP 363](#), URN 364, [GIT 353](#)

# Environmental Science & Sustainability

## **ENV 205 : Environmental Science & Sustainability**

This course is general in nature that provides a general introduction to environmental issues and sustainable development. It surveys the impacts that humans have on the environment such as pollution, climate changes, loss of agricultural land, etc. It reviews the principles of sustainability and their applications to energy, climate change, urban planning, transportation, water use, etc. The course will also address changes and steps that can be made to promote sustainability. Current environmental issues will be discussed to motivate students to be active members of society for enhancing environmental awareness and in taking action to address environmental issues and sustainability in KSA.

**Credits** 3

### **Prerequisites**

CHM 112

## **ENV 305 : Environmental Health**

The course examines the physical, biological and chemical factors affecting human health. The course also explores approaches to control the major environmental health problems in industrialized and developing countries. A range of topics are covered including how the body reacts to environmental pollutants; physical, chemical, and biological agents of environmental contamination; vectors for dissemination (air, water, soil); solid and hazardous waste; susceptible populations; the scientific basis for policy decisions; and emerging global environmental health problems.

**Credits** 3

### **Prerequisites**

BIO 223

## **ENV 310 : Environmental Toxicology**

Environmental toxicology is an elective course focusing on the study of toxic effects of environmental chemicals on living organisms (including humans). In this course, the basic concepts, methods, and approaches in environmental toxicology will be introduced. Natural and synthetic chemicals commonly encountered in the air, water, and soil will be discussed regarding their occurrence, fate and transport, and toxicological effects on ecological species and humans. Case studies will be used to illustrate the complexity of environmental toxicology issues. New trends in chemical toxicity testing will be discussed. Contaminants of emerging concerns such as pharmaceutical and personal care products and engineered nanomaterials will also be introduced.

**Credits** 3

### **Prerequisites**

ENV 205

## **ENV 315 : Earth Systems**

This course focuses on the profound transformation of Earth's environment that is now apparent, a transformation owing not to the great forces of nature or to extraterrestrial sources but to the numbers and activities of people. The phenomenon of global change. This course sets out what is known about global change and the nature of the Earth System.

**Credits** 3

### **Prerequisites**

ENV 205

## **ENV 330 : Energy & Sustainability**

This course will help students to understand the critical relationships of the environment, energy, and sustainability. Leading experts provide comprehensive coverage of each topic, bringing together diverse

subject matter by integrating theory with engaging insights. This course fills an information gap in energy, environment, and sustainability, presenting broad overviews of energy challenges and solutions along with the materials advances needed to enable rapid progress. The purpose of this course is to serve as a college-level that brings together the themes of environment and energy in the context of defining the issues, and subsequently focuses on the materials science and research challenges that need to be met.

**Credits 3**

**Prerequisites**

ENV 205

### **ENV 410 : Environmental Monitoring**

This course will cover introduction to environmental science, pollutants including chemical and biological and industrial hygiene. This will include evaluating the various sampling techniques, pollutants and analytical techniques which can contaminate water, soil/surfaces and outdoor/indoor air. Furthermore, it will emphasize on environmental pollutants detection, hazards controlling, risk reduction, selection of the appropriate instrumentation techniques, calibration, quality control and reporting.

**Credits 3**

**Prerequisites**

CHM 310

### **ENV 420 : Waste Management**

This course covers the principles of waste management. It provides an overview of municipal waste, industrial waste, and hazardous waste management including design and economic analysis. Reviews physical, chemical, biological treatment of hazardous waste, and the innovative management practices associated with different waste. Students will be exposed to real world settings through worked examples, case studies, and field trips to water and solid waste management facilities. Case studies for specific industries like petrochemicals, fertilizers, desalination and petroleum refining, etc.

**Credits 3**

**Prerequisites**

ENV 330

### **ENV 425 : Environmental Policy & Economics**

This course explores the proper role of government in the regulation of the environment. It will help students develop the tools to estimate the costs and benefits of environmental regulations. These tools will be used to evaluate a series of current policy questions, including: Should air and water pollution regulations be tightened or loosened? What are the costs of climate

change in the U.S. and abroad? Is there a "Race to the Bottom" in environmental regulation? What is "sustainable development"? How do environmental problems differ in developing countries? Are we running out of oil and other natural resources? Should we be more energy efficient? To gain real world experience, the course is scheduled to include a visit to the ministries and government institutions in KSA. We will also do an in-class simulation of discussions for and against specific case scenarios.

**Credits 3**

**Prerequisites**

ENV 330

## **Evidence Based Medicine**

### **EBM 354 : Evidence based Medicine**

In this course students learn the basic principles of epidemiologic studies and Evidence Based Medicine (EBM), identify and interpret some of the risk factors affecting patients and the community, interpret epidemiological findings in terms of the population and patients, identify issues with regards to medical research and research ethics, learn how to prepare a formal research proposal and prepare it for submission, appreciate the concept of a healthcare team and be able to collaborate effectively with other professionals and communicate effectively in an essay and in oral presentations.

**Credits 2**

**Prerequisites**

None

## **Forensic Medicine & Toxicology**

### **FMT 367 : Forensic Medicine & Toxicology**

In this course, students will learn how to describe the theoretical principles and the basic disciplines of forensic medicine and science, define and explain the importance and applications of crime scene investigation, forensic evidence, death investigation, type of wounds, biological evidence, firearms and weapons and tool marks, death investigation, questioned documents, fire and explosive examination field, different type of wounds and the forensic viewpoint of criminal scene. The students are required to describe the different type of poisons, describe the fundamental concepts of toxicology to commonly

encountered abused and toxic substances, illicit drugs and controlled substances act. They are required to describe the postmortem toxic effects of drugs chemical toxins and carcinogens and knowledge of laboratory results interpretations. Correlate and interpret the laboratory result with the clinical information or forensic investigation.

**Credits** 2

**Prerequisites**

None

## Forensic Science

### **SCI 310 : Forensic Science**

This single-semester elective course is designed to provide students with a foundation in the fundamental principles and concepts of forensic sciences. This course introduces the theory, concepts and practices used in the analysis of physical evidence performed in forensic laboratories, the fundamentals of crime scene investigation, forensic DNA analysis, illicit drugs, and forensic toxicology, hair and textile analysis, firearms and ballistics, and counterfeiting and forgery. In addition, selected case studies in different forensic disciplines will be discussed.

**Credits** 3

**Prerequisites**

[ENG 112](#) (or [ENG 113](#))

### **SCI 321 : Immunology**

SCI 321 aims to provide students with an understanding of immunology and the immunological basis of some common and well-known diseases. The course will balance basic knowledge of the underlying complexity of the immune system, such as T and B cell receptor genes, the MHC and antigen presentation, with the application of immunological aspects to infectious diseases, cancer, inflammation and autoimmunity.

**Credits** 3

**Prerequisites**

BIO 223, BIO 224

### **SCI 322 : Cancer Biology**

This course will introduce the core aspects of cancer biology. Emphasis will be placed on molecular mechanisms of cancer pathophysiology - such as signal transduction, DNA damage and repair and regulation of cell division, death and senescence as well as on system biology, microevolution of tumors,

interaction between tumor and organism. Existing and novel strategies of cancer prevention, diagnosis and treatment will be discussed.

**Credits** 3

**Prerequisites**

PBIO 112, BIO 224

### **SCI 323 : Signal Transduction**

The concept of "signal transduction pathway" is one of the major advancement in our understanding of how living cell '96 a unit of life '96 is functioning: how it adapt to changing environment and communicates with neighbours in multicellular organisms.

Perspective of "signal transduction" is essential to understand complex biological processes and diseases ranging from memory formation to diabetes and cancer. The course makes sense of the dizzying array of pathways used by the cell to communicate.

**Credits** 3

**Prerequisites**

PBIO 112, BIO 224

### **SCI 325 : Bioinformatics and Computational Genomics**

The course is a combination of lectures and instructor-guided practical sessions. SCI 325 will cover: 1) the theoretical basis of various comparative analyses of DNA and protein sequences, 2) how bioinformatics, genetics and genomics help to understand the population and evolutionary processes, 3) how computational genomic analyses generate testable hypotheses, and 4) a role of bioinformatics in conservation biology, current human genetics and medicine.

**Prerequisites**

BIO 112, STA 211

### **SCI 326 : Virology**

The course focuses on the principles of virus structure, replication and genetics. It will help the students appreciate the relevance of virology in the modern world, including the fields of vaccines, anti-viral drugs and cancer. Other acellular biological particles like prions are also discussed. The course reflects many recent developments in virology and offers deeper insights into the subject. Newly-discovered and emerging viruses are discussed.

**Credits** 3

**Prerequisites**

BIO 223

# Foundation Block

## **FON 111 : Foundation Block**

This is a multidisciplinary course (block) foundation course integrating topics in basic and applied clinical anatomy, histology, embryology, and physiology.

**Credits** 2

### **Prerequisites**

None

### **Corequisites**

[MSK 112](#), [GIT 113](#)

# French

## **FRE 101 : French I**

It introduces the fundamental elements of the French language within a cultural context. Emphasis is placed on the development of the basic language skills, vis. listening, speaking, reading, and writing, in addition to grammar and vocabulary skills.

**Credits** 3

### **Prerequisites**

None

## **FRE 112 : French II**

It builds upon the fundamental elements of the French language within a cultural context. Continued emphasis is placed on the development of basic language skills, vis. listening, speaking, reading and writing in addition to grammar and vocabulary skills.

**Credits** 3

### **Prerequisites**

FRE 101

# Gastrointestinal Block

## **GIT 113 : Gastrointestinal Block**

The overall objective of this course is to stress structural/functional correlates of the different organs within the GIT and how they contribute to the digestion and absorption of ingested nutrients.

**Credits** 3

### **Prerequisites**

None

### **Corequisites**

FON 111, MSK 112

## **GIT 353 : Gastrointestinal Block**

This course examines the etiology, epidemiology, predisposing factors, pathophysiology, and

classification, of common gastrointestinal, liver, and pancreato-biliary diseases. Relate clinical signs and symptoms, result of laboratory diagnostic tests, and radiological changes with underlying pathogenesis of common gastrointestinal, hepatic and pancreaticobiliary diseases. Describe the principles of deferential diagnosis and clinical investigations including laboratory and radiological test in the management of common gastrointestinal, hepatic and pancreaticobiliary diseases. Discuss the mechanism of action of drugs used in the management of common gastrointestinal, hepatic and pancreaticobiliary diseases describe the principles and practice of prevention of communicable and environmental gastrointestinal, hepatic and pancreaticobiliary diseases

**Credits** 3

### **Prerequisites**

END 231, REP 232, POD 233, NEU 241, HNS 242

### **Corequisites**

[REN 364](#), [END 362](#), [REP 363](#)

# Genetics

## **GEN 124 : Genetics**

The Genetics course is designed to provide medical students with specific knowledge, skills, and behaviors that are essential competencies to the field of medical genetics.

**Credits** 2

### **Prerequisites**

None

# German

## **GER 101 : German I**

It introduces the fundamental elements of the German language within a cultural context. Emphasis is placed on the development of the basic language skills, vis. listening, speaking, reading, and writing, in addition to grammar and vocabulary skills.

**Credits** 3

### **Prerequisites**

None

## **GER 103 : Medical German I**

The course introduces the fundamental elements of the German language within a medical context. Emphasis is placed on the development of the basic language skills such as listening, speaking, reading,

and writing, in addition to grammar and vocabulary skills that aim to prepare for basic communication in a working environment at German clinics and hospitals.

**Credits** 3

**GER 112 : German II**

It builds upon the fundamental elements of the German language within a cultural context. Continued emphasis is placed on the development of basic language skills, vis. listening, speaking, reading and writing in addition to grammar and vocabulary skills.

**Credits** 3

**Prerequisites**

GER 101

**GER 113 : Medical German II**

The course builds upon the fundamental elements of the German language within a medical context. Continued emphasis is placed on the development of basic language skills such as listening, speaking, reading, and writing, in addition to grammar and vocabulary skills that aim to prepare for basic communication in a working environment at German clinics and hospitals.

**Credits** 3

**Prerequisites**

GER 101, GER 103

**GER 213 : Medical German III**

The course seeks to build medical student's German language communication skills with patients and hospital / clinical staff. Furthermore, the course mediates strategies to cope with advanced medical terminology and hospital paperwork to motivate students to carry on their German language studies in the medical field. Additionally, the course takes the standardized examinations for non-native medical practitioners carried out by the German medical state boards into consideration. Accordingly, the course will prepare students to accomplish tasks required in the three-part language examination: doctor-patient consultation, 2) document findings in the patient records and 3) justifying findings to other medical staff and colleagues.

**Credits** 3

**Prerequisites**

GER 103 , GER 113

## Gynecology

**GYN 482 : Obstetrics & Gynecology**

The specific objectives of this rotation are to cover different aspects in Obstetrics & Gynecology which include, master history taking from both obstetrics and gynecology patients, perform and appropriately record the essentials of a breast, abdominal and pelvic examination (including speculum and bi-manual pelvic exam), and obtain a Pap smear and cervical/ vaginal cultures uc0u61623 Physiology of pregnancy, normal antenatal and postnatal care, care of medical diseases associated with pregnancy, common obstetric emergencies, common obstetric related problems: multiple gestation, preeclampsia/eclampsia, Rh isoimmunization, preterm delivery, etc. evaluation and monitoring of normal labor, distinguish between the various techniques of antepartum fetal assessment and their indications based on maternal/fetal risk factors, common causes of infertility and their management, describe the common gynecologic neoplasms, including the presentation, diagnosis and treatment; understand the general principles of staging and principles of family planning and different contraceptive techniques.

**Credits** 9

**Prerequisites**

MSI 361, END 362, REP 363, REN 364

**Corequisites**

MED 471, PED 472, SUR 481

## Head & Neck & Special Senses Block

**HNS 242 : Head & Neck and Special Senses Block**

This block is fully integrated covering normal structure and function as well as integrating disease processes and pharmacotherapy of the diseases related to Otolaryngology and Ophthalmology.

**Credits** 3

**Prerequisites**

FON 111, MSK 112, GIT 113, CVP 121, HLS 122, REN 123

**Corequisites**

NEU 241



# Health Economics and Health Care Management

## **HEN 367 : Health economics and Hospital management**

In this course students will learn about health economics and applies the tools of economics to issues of the organization, delivery, and financing of health care. The objectives of this course are to: (1) develop an understanding of the relevance of economic concepts to the health care sector, (2) describe the system of health care financing and delivery arrangements in the health care sector, and (3) impart an understanding of the role of economic factors in the development of public policy concerning health and health care.

**Credits** 2

### **Prerequisites**

None

## **HEN 483 : Health Economics and Health Care Management**

Health economics applies the tools of economics to issues of the organization, delivery, and financing of health care. The objectives of this course are to: (1) develop an understanding of the relevance of economic concepts to the health care sector, (2) describe the system of health care financing and delivery arrangements in the health care sector, and (3) impart an understanding of the role of economic factors in the development of public policy concerning health and health care.

**Credits** 2

### **Prerequisites**

Semesters 5 and 6

# Hematology-Oncology Block

## **HEM 352 : Hematology-Oncology Block**

In this course students will learn how to review hematopoiesis and red cell structure, function and metabolism, describe the pathophysiology, clinical features, diagnostic workup and management of red and white cell disorders, bleeding disorders and thrombophilias, diseases of spleen and thymus, interpret the clinical and laboratory information to understand and classify different types of anemia ,describe the mechanisms of hemostasis and

thrombosis and correlate it with the interpretation of coagulation tests and the role of coagulants and anticoagulants in the treatment of various diseases, discuss the basis of blood grouping and blood transfusion and perform blood grouping and identify the different types of stem cell transplant currently available and the indications for SCT.

**Credits** 2

### **Prerequisites**

END 231, REP 232, POD 233, NEU 241, HNS 242

### **Corequisites**

CVP 351, MSI 361

# Hematopoietic & Lymphatic System Block

## **HLS 122 : Hematopoietic & Lymphatic System**

This is a multidisciplinary block integrating topics in basic and applied clinical anatomy, histology, embryology, and physiology related to hemopoietic system.

**Credits** 2

### **Prerequisites**

None

### **Corequisites**

[CVP 121](#), [REN 123](#)

# History

## **HIS 101 : Islamic Civilization and Mediaeval Europe**

The course introduces the foundations of Islamic civilization, its development and prosperity, places of contact between Europeans and Muslims, and means of influence, such as direct contact and the translation of Islamic books in science, medicine, philosophy, literature and the arts.

**Credits** 3

### **Prerequisites**

None

# Immunology

## **IMM 244 : Immunology**

This course is designed to provide students with a basic understanding of immunology. The study of the principles of immunology will provide students with an understanding of how the immune system functions in



protecting the human body against non-self, including infectious threats and transformed cells. These concepts will also form the basis of understanding altered immune responses including autoimmune disorders, allergic reactions and immunodeficiencies. Using a diversity of teaching approaches including lectures and case discussions, it is expected that this course will provide the basic scientific principles necessary for developing a solid foundation needed for the clinical immunology course to be offered in the senior year of this program.

**Credits** 2

### **IMM 355 : Clinical Immunology**

This course will build on the basic concepts the students learnt in Immunology course. In the first weeks of the course, the applications of these concepts in the context of normal host immune responses such as inflammatory response and mucosal immunity, immunodiagnostic approaches, immunotherapy and immunization will be addressed. In the second half of the course, we will use examples of various immunological disorders as the basis for correlating basic concepts, clinical presentation, immunodiagnostic and immunotherapy approaches. Large group tutorial and laboratory demonstration sessions will be used to reinforce various concepts. In addition, this course will expose the students to emerging clinical immunotherapeutic applications.

**Credits** 1

#### **Prerequisites**

IMM 244

#### **Corequisites**

None

## Integrated Neuroscience

### **INS 592 : Integrated Neuroscience**

By the end of this clerkship students will be able to perform a detailed neurological examination, psychiatric evaluation, make the differential diagnosis and plan initial treatment for patients with neurological and psychiatric disorders by applying clinical reasoning and evidence based medicine, evaluate and analyze prognosis and clinical outcomes.

**Credits** 9

#### **Prerequisites**

MED 471, PED 472, SUR 481, GYN 482

#### **Corequisites**

[IMD 591](#), SSP 5X1, AMB 5X2

## Integrated Pharmacotherapy

### **IPH 5X1 : Integrated pharmacotherapy VII: Haematology/ Oncology/ palliative care and GIT**

Integrated pharmacotherapy courses aims to build the knowledge of the students about how to manage patients with different pathological conditions. It will start by delivering lectures in pathophysiology about a certain disease that belongs to the system covered in the course, followed by pharmacology lectures that cover pharmacological actions of drugs designed to treat such condition and the physiological responses of the body to these drugs. Current practice guidelines for the management for such diseases will follow along with a small exercise that introduces a one simple case to discuss the therapeutics options suitable. This course in particular will introduce the student to common haematological, and neoplastic disorders, and conclude the last pharmacotherapy course with the concept of palliative care and common GIT disorders. Application of the knowledge acquired in this course will be applied in the '93case based seminar'94 course that run in parallel to it in 7 weeks period.

**Credits** 3

#### **Prerequisites**

BPH 365

#### **Corequisites**

IPH 5X2

### **IPH 5X2 : Integrated pharmacotherapy VII: Haematology/ Oncology/ palliative care and GIT '93case-based seminars'94**

Case based seminars is a practical application of the knowledge the students acquired from the concomitant pharmacotherapy course. This course in particular will focus on application of the knowledge acquired from haematology, oncology pharmacotherapy and palliative care course with regard to pathophysiology, pharmacology, and current management guidelines of common haematological and neoplastic disorders, along with principles of palliative care and GIT disorders. Case based seminars applies '93case-based collaborative learning'94 which integrate problem-based learning (PBL), with team-based learning (TBL). The students are divided into small groups with the help of the tutor, to work on a case-based scenario that works as a problem they might see in the future. The group will analyze the case, and determine the learning objectives that helps to find the best management plan for it. The group

needs to work as a team on the management plan that will be eventually presented as student seminars to their colleagues. Seminar presentation is a good experience to develop their presentation and communication skills, and their ability to handle discussion. This course should parallel integrated pharmacotherapy: haematology, oncology, palliative care, and GIT course that will be delivered over 7 week '92s period.

**Credits 1**

**Prerequisites**

BPH 366

**Corequisites**

IPH 5X1

**IPH 473 : Integrated pharmacotherapy I: - CVS and renal I**

Integrated pharmacotherapy courses aims to build the knowledge of the students about how to manage patients with different pathological conditions. It will start by delivering lectures in pathophysiology about a certain disease that belongs to the system covered in the course, followed by pharmacology lectures that cover pharmacological actions of drugs designed to treat such condition and the physiological responses of the body to these drugs. Current practice guidelines for the management for such diseases will follow along with a small exercise that introduces a one simple case to discuss the therapeutics options suitable. This course in particular will introduce the student to basic cardiovascular and renal disease scenarios. Application of the knowledge acquired will be applied in the '93case based seminar'94 course that run in parallel to it in 7 weeks period.

**Credits 3**

**Prerequisites**

BPH 365

**Corequisites**

[IPH 474](#)

**IPH 474 : Integrated pharmacotherapy I: -CVS and renal I '93case-based seminars'94**

Case based seminars is a practical application of the knowledge the students acquired from the concomitant pharmacotherapy course. This course in particular will focus on application of the knowledge acquired from cardiovascular and renal pharmacotherapy course I with regard to pathophysiology, pharmacology, and current management guidelines of basic cardiovascular diseases, a renal conditions. Case based seminars applies '93case-based collaborative learning'94 which integrate problem-based learning (PBL), with team-

based learning (TBL). The students are divided into small groups with the help of the tutor, to work on a case-based scenario that works as a problem they might see in the future. The group will analyze the case, and determine the learning objectives that helps to find the best management plan for it. The group needs to work as a team on the management plan that will be eventually presented as student seminars to their colleagues. Seminar presentation is a good experience to develop their presentation and communication skills, and their ability to handle discussion. This course should parallel integrated pharmacotherapy: cardiovascular and renal I course that will be delivered over 7 week '92s period.

**Credits 1**

**Prerequisites**

BPH 366

**Corequisites**

IPH 473

**IPH 475 : Integrated pharmacotherapy II: - MSK and - RES**

Integrated pharmacotherapy courses aims to build the knowledge of the students about how to manage patients with different pathological conditions. It will start by delivering lectures in pathophysiology about a certain disease that belongs to the system covered in the course, followed by pharmacology lectures that cover pharmacological actions of drugs designed to treat such condition and the physiological responses of the body to these drugs. Current practice guidelines for the management for such diseases will follow along with a small exercise that introduces a one simple case to discuss the therapeutics options suitable. This course in particular will teach the student pathophysiology of inflammation and drugs working as anti-inflammatory agents in preparation to discuss common musculoskeletal related conditions such as muscle injury, bursitis, tendinitis, gouty arthritis, along with more difficult conditions to manage such as rheumatoid arthritis. The second half of this course will introduce the student to the pathophysiology and pharmacological management of allergic conditions, and common respiratory disorders such as; bronchial asthma and chronic obstructive airway disease. Application of the knowledge acquired in this course will be applied in the '93case based seminar'94 course that run in parallel to it in 7 weeks period.

**Credits 3**

**Prerequisites**

BPH 365

**Corequisites**

#### [IPH 476](#)

##### **IPH 476 : Integrated pharmacotherapy II: -MSK and - RES '93case-based seminars'94**

Case based seminars is a practical application of the knowledge the students acquired from the concomitant pharmacotherapy course. This course in particular will focus on application of the knowledge acquired from musculoskeletal and respiratory pharmacotherapy course with regard to pathophysiology, pharmacology, and current management guidelines of common inflammatory/ rheumatological disorders, and common allergic and respiratory diseases. Case based seminars applies '93case-based collaborative learning'94 which integrate problem-based learning (PBL), with team-based learning (TBL). The students are divided into small groups with the help of the tutor, to work on a case-based scenario that works as a problem they might see in the future. The group will analyze the case, and determine the learning objectives that helps to find the best management plan for it. The group needs to work as a team on the management plan that will be eventually presented as student seminars to their colleagues. Seminar presentation is a good experience to develop their presentation and communication skills, and their ability to handle discussion This course should parallel to integrated pharmacotherapy: musculoskeletal and respiratory course that will be delivered over 7 week'92s period.

**Credits 1**

##### **Prerequisites**

BPH 366

##### **Corequisites**

IPH 475

##### **IPH 483 : Integrated pharmacotherapy IV: Endocrine and women'92s health**

Integrated pharmacotherapy courses aims to build the knowledge of the students about how to manage patients with different pathological conditions. It will start by delivering lectures in pathophysiology about a certain disease that belongs to the system covered in the course, followed by pharmacology lectures that cover pharmacological actions of drugs designed to treat such condition and the physiological responses of the body to these drugs. Current practice guidelines for the management for such diseases will follow along with a small exercise that introduces a one simple case to discuss the therapeutics options suitable. This course in particular will teach the student pathophysiology of common endocrine disorders and topics related to female and male

reproduction. Common dermatological conditions will be discussed briefly at the end of the course.

Application of the knowledge acquired in this course will be applied in the '93case based seminar'94 course that run in parallel to it in 7 weeks period.

**Credits 3**

##### **Prerequisites**

BPH 365

##### **Corequisites**

[IPH 484](#)

##### **IPH 484 : Integrated pharmacotherapy IV: Endocrine and women'92s health '93case-based seminars'94**

Case based seminars is a practical application of the knowledge the students acquired from the concomitant pharmacotherapy course. This course in particular will focus on application of the knowledge acquired from endocrine and women'92s health pharmacotherapy course with regard to pathophysiology, pharmacology, and current management guidelines of common endocrine conditions and topics related to female and male reproduction. Common dermatological scenarios will be also included in the cases discussed briefly at the end of the course. Case based seminars applies '93case-based collaborative learning'94 which integrate problem-based learning (PBL), with team-based learning (TBL). The students are divided into small groups with the help of the tutor, to work on a case-based scenario that works as a problem they might see in the future. The group will analyze the case, and determine the learning objectives that helps to find the best management plan for it. The group needs to work as a team on the management plan that will be eventually presented as student seminars to their colleagues. Seminar presentation is a good experience to develop their presentation and communication skills, and their ability to handle discussion This course should parallel to integrated pharmacotherapy: endocrine and women'92s health course that will be delivered over 7 week'92s period.

**Credits 1**

##### **Prerequisites**

BPH 366

##### **Corequisites**

IPH 483

##### **IPH 485 : Integrated pharmacotherapy III: - CNS -**

Integrated pharmacotherapy courses aims to build the knowledge of the students about how to manage patients with different pathological conditions. It will start by delivering lectures in pathophysiology about a

certain disease that belongs to the system covered in the course, followed by pharmacology lectures that cover pharmacological actions of drugs designed to treat such condition and the physiological responses of the body to these drugs. Current practice guidelines for the management for such diseases will follow along with a small exercise that introduces a one simple case to discuss the therapeutics options suitable. This course in particular will teach the student pathophysiology of central nervous system disorders. Application of the knowledge acquired in this course will be applied in the '93case based seminar'94 course that run in parallel to it in 7 weeks period.

**Credits 3**

**Prerequisites**

BPH 365

**Corequisites**

[IPH 486](#)

**IPH 486 : Integrated pharmacotherapy III: - CNS - '93case-based seminars'94**

Case based seminars is a practical application of the knowledge the students acquired from the concomitant pharmacotherapy course. This course in particular will focus on application of the knowledge acquired from central nervous system CNS pharmacotherapy course with regard to pathophysiology, pharmacology, and current management guidelines of common CNS disorders. Case based seminars applies '93case-based collaborative learning'94 which integrate problem-based learning (PBL), with team-based learning (TBL). The students are divided into small groups with the help of the tutor, to work on a case-based scenario that works as a problem they might see in the future. The group will analyze the case, and determine the learning objectives that helps to find the best management plan for it. The group needs to work as a team on the management plan that will be eventually presented as student seminars to their colleagues. Seminar presentation is a good experience to develop their presentation and communication skills, and their ability to handle discussion. This course should parallel to integrated pharmacotherapy: CNS course that will be delivered over 7 week'92s period.

**Credits 1**

**Prerequisites**

BPH 366

**Corequisites**

IPH 485

**IPH 591 : Integrated pharmacotherapy V:- CVS and renal II**

Integrated pharmacotherapy courses aims to build the knowledge of the students about how to manage patients with different pathological conditions. It will start by delivering lectures in pathophysiology about a certain disease that belongs to the system covered in the course, followed by pharmacology lectures that cover pharmacological actions of drugs designed to treat such condition and the physiological responses of the body to these drugs. Current practice guidelines for the management for such diseases will follow along with a small exercise that introduces a one simple case to discuss the therapeutics options suitable. This course in particular will build further the knowledge that the student acquired from basic cardiovascular and renal disease I course, by progressing to a more advanced scenarios with emergency presentation. Application of the knowledge acquired in this course will be applied in the '93case based seminar'94 course that run in parallel to it in 7 weeks period.

**Credits 3**

**Prerequisites**

IPH 473

**Corequisites**

[IPH 592](#)

**IPH 592 : Integrated pharmacotherapy V: CVS and renal II '93case-based seminars'94**

Case based seminars is a practical application of the knowledge the students acquired from the concomitant pharmacotherapy course. This course in particular will focus on application of the knowledge acquired from cardiovascular and renal pharmacotherapy II course with regard to pathophysiology, pharmacology, and current management guidelines of advanced cardiovascular and renal conditions. Emergency scenarios and cases with complications will be covered in this course. Case based seminars applies '93case-based collaborative learning'94 which integrate problem-based learning (PBL), with team-based learning (TBL). The students are divided into small groups with the help of the tutor, to work on a case-based scenario that works as a problem they might see in the future. The group will analyze the case, and determine the learning objectives that helps to find the best management plan for it. The group needs to work as a team on the management plan that will be eventually presented as student seminars to their colleagues. Seminar presentation is a good experience to develop their presentation and communication skills, and their

ability to handle discussion This course should parallel integrated pharmacotherapy: cardiovascular and renal II course that will be delivered over 7 week'92s period.

**Credits 1**

**Prerequisites**

IPH 474

**Corequisites**

IPH 591

**IPH 593 : Integrated pharmacotherapy VI: Infectious diseases**

Integrated pharmacotherapy courses aims to build the knowledge of the students about how to manage patients with different pathological conditions. This course in particular will focus on application of the knowledge acquired from microbiology, advanced microbiology, pharmacotherapy of antimicrobial agents, to progress with understanding the clinical microbiology, and pathophysiology of common infectious diseases. Current practice guidelines for the management for such diseases will follow along with a small exercise that introduces a one simple case to discuss the therapeutics options suitable. Application of the knowledge acquired in this course will be applied in the '93case based seminar'94 course that run in parallel to it in 7 weeks period.

**Credits 3**

**Prerequisites**

BPH 365, BPH 367

**Corequisites**

[IPH 594](#)

**IPH 594 : Integrated pharmacotherapy VI: Infectious diseases '93case-based seminars'94**

Case based seminars is a practical application of the knowledge the students acquired from the concomitant pharmacotherapy course. This course in particular will focus on application of the knowledge acquired from microbiology, advanced microbiology, pharmacotherapy of antimicrobial agents, and infectious disease pharmacotherapy courses with regard to microbiology, pathophysiology, pharmacology, and current management guidelines of common infectious diseases. Case based seminars applies '93case-based collaborative learning'94 which integrate problem-based learning (PBL), with team-based learning (TBL). The students are divided into small groups with the help of the tutor, to work on a case-based scenario that works as a problem they might see in the future. The group will analyze the case, and determine the learning objectives that helps to find the best management plan for it. The group needs to work as a team on the management plan that

will be eventually presented as student seminars to their colleagues. Seminar presentation is a good experience to develop their presentation and communication skills, and their ability to handle discussion This course should parallel to integrated pharmacotherapy: infectious disease course that will be delivered over 7 week'92s period.

**Credits 1**

**Prerequisites**

BPH 366, BPH 367

**Corequisites**

IPH 593

## Introductory Pharmacy Practice

**IPP 5X5 : Introductory Pharmacy Practice Experience III**

In these two introductory pharmacy practice experience courses, the student is required to spend 5 hours/week; comprising 75 hours of training in each course (150 hr of total training) in an institutional environment. These two courses will provide the students with great practice experiences in institutional outpatient pharmacy services and institutional inpatient pharmacy services, respectively. Students will apply basic practice skills and interface with patients and providers including evaluating medication orders, prescriptions, dispensing of medications and other pharmaceutical services.

**Credits 2**

**IPP 489 : Introductory pharmacy practice experience I (IPPE)**

In this introductory pharmacy practice experience, the student is required to spend 4 weeks of training (40 hours/week) for a total of 160 hours, to gain experience in clinical pharmacy practice in the community setting. The students will be distributed among community pharmacies via placement in traditional community pharmacies or in an outpatient pharmacy in primary health care centers. This course represent a great opportunity to apply basic practice and communication skills and to interface with patients and healthcare providers. Students will also participate in community service that can be planned with the college as an educational campaign focusing on face-to-face interaction with the community. It will serve as an important introduction of the clinical pharmacy profession to the community.

**Credits 3**



**IPP 596 : Introductory Pharmacy Practice Experience II**

In these two introductory pharmacy practice experience courses, the student is required to spend 5 hours/week; comprising 75 hours of training in each course (150 hr of total training) in an institutional environment. These two courses will provide the students with great practice experiences in institutional outpatient pharmacy services and institutional inpatient pharmacy services, respectively. Students will apply basic practice skills and interface with patients and providers including evaluating medication orders, prescriptions, dispensing of medications and other pharmaceutical services.

**Credits 2**

## Islamic Studies

**ISL 101 : Islamic Studies I**

Introduces Islamic culture and stresses its importance and contribution to humanity. It addresses Sharia Law in terms of sources, underpinnings, and objectives. It also enhances students'92 faith in viability of Sharia Law and its all-inclusiveness. The course counts as the social science component of the university'92s General Education Requirements.

**Credits 2**

**Prerequisites**

None

**ISL 102 : Elective/ Islamic studies I**

This course will introduce Islamic culture and stresses its importance and contribution to humanity. It addresses Sharia Law in terms of sources, underpinnings, and objectives. It also enhances students'92 faith in its viability and all-inclusiveness. The course counts as the social science component of the university General Education requirements.

**Credits 2**

**ISL 102 : Islamic Studies I**

Introduces Islamic culture and stresses its importance and contribution to humanity. It presents Sharia Law in terms of sources, underpinnings, and objectives. It also enhances students'92 faith in the viability of Sharia Law and its all-inclusiveness. The course counts as a social science component of the university General Education Requirements.

**Credits 3**

**Prerequisites**

None

**ISL 112 : Islamic Studies II**

Discusses both community and family systems in Islam, their underpinnings and mechanisms for reform. It examines the problems these systems encounter, and shatters misconceptions about them. It also presents the application of Sharia Law in pertinent contexts. The course counts as the social science component of the university'92s General Education Requirements.

**Credits 2**

**Prerequisites**

ISL 101

**ISL 113 : Islamic Studies II**

Islamic Medical Jurisprudence introduces the importance of learning medicine in Islam and presents the Islamic legislative rulings related to various medical issues. It also includes the principles of jurisprudence and their legislative objectives. It presents contemporary medical issues and Islamic legislative stances. The course counts as the social science component of the university'92s General Education Requirements.

**Credits 2**

**Prerequisites**

ISL 101

## Mathematics

**CAL 351 : Pharmacy calculations**

This course will introduce the students to the knowledge and skills of fundamental mathematical calculations utilized in pharmacy practice. It will explain to the students the important basic conversions, how drugs strengths are expressed, and how to do the required calculations for compounding medications. Topics include: systems of measurement, expressions of concentrations, general considerations in calculation of doses, calculation of doses according to the patient parameters, buffer system calculations, isotonicity calculations and electrolytes specific calculations. Principles taught in this course will allow the students to interpret and dispense prescriptions and medication orders.

**Credits 1**

**Prerequisites**

MAT 235

**Corequisites**

None

**MAT 100 : Pre-calculus**

This course builds sound and strong basic mathematics that are required for studying undergraduate mathematics. This course is particularly important to students whose mathematical skills are not sufficiently developed at the high school level. The course covers materials that include algebraic operations, radical and rational expression, equalities and in-equalities, functions and analytic geometry, special types of functions (linear, quadratic, inverse, polynomial, rational, exponential, logarithmic and trigonometric), solution to equations, and identities involving some types of functions.

**Credits 3****Prerequisites**

None

**MAT 101 : Calculus I**

This course introduces the basic concepts of mathematical analysis used in science and engineering. The course teaches an introduction to differential and integral calculus. Topics include limits; the derivative; rates; Newton's method; the mean-value theorem; max-min problems; the integral and the fundamental theorem of integral calculus; areas, volumes, and average values.

**Credits 3****Prerequisites**

None

**MAT 102 : Mathematics for Medical Students**

This course will cover basic topics in algebra and serves as an introduction to trigonometry. Topics covered include the real line and coordinate system, functions and graphs, symmetry and translation, inverse functions, polynomial and rational functions, exponential and logarithmic functions, trigonometric functions and special identities. Some applications of these concepts to problems that may be helpful to the further study of quantitative methods in the medical sciences will be considered.

**Credits 2****Prerequisites**

None

**MAT 105 : Calculus for Biomedical Sciences I**

This course offers a solid introduction to differential and integral calculus and is designed for students in the biomedical sciences. The course begins with an intensive review of important topics from pre-calculus and an introduction to discrete time and population models. Then it proceeds to cover limits, continuity, differentiation, derivative rules, curve sketching,

optimization, difference equations, anti-derivatives, Riemann sums, definite integral, fundamental theorem of calculus, applications of integration.

**Credits 3****Prerequisites**

UPP College Algebra or Equivalent.

**MAT 111 : Business Calculus**

The main objective of this course is to help the student in understanding the basic concepts of calculus on the one hand, and to develop the skills needed for using calculus as a viable tool to solve problems that arise in the study of business and economics. Topic covered include, limits, types of functions (polynomial, rational, exponential and logarithmic), their derivatives, anti-derivatives and their various applications.

**Credits 3****Prerequisites**

MAT 100

**MAT 112 : Calculus II**

This course is a continuation to Calculus I. The course covers basic mathematical analysis and mathematical tools that are widely used and are essential for mathematical analysis and applications. Topics include sequences; infinite series; power series; conics; polar, cylindrical, and spherical coordinates; vectors and the geometry of space; and vector valued functions.

**Credits 3****Prerequisites**

MAT 101

**MAT 116 : Calculus for Biomedical Science II**

This course is a continuation of [MAT 105](#). The course covers further integration techniques, such as integration by parts, by substitution and by partial fractions. Other topics include improper integrals, sequences and series, convergence tests, power and Taylor series, solving differential equations, limits and continuity of functions of two variables, partial derivatives, the double integral.

**Credits 3****Prerequisites**

MAT 105

**MAT 211 : Calculus III**

This course deals with multi-dimensional calculus. It is designed primarily for engineering majors and is taken by other technical majors. The student will develop an understanding of limits and continuity of functions of several variables; compute partial derivatives and apply to optimization problems; set up and compute

iterated integrals to compute areas, volumes of solids; understand and apply Green's Theorem, the Divergence Theorem and Stoke's Theorem.

**Credits 3**

**Prerequisites**

MAT 112

### **MAT 212 : Linear Algebra**

The course teaches an introduction to linear algebra. Topics include complex numbers, geometric vectors in two and three dimensions and their linear transformations, the algebra of matrices, determinants, and solutions of systems of equations, vector space, eigenvalues and eigenvectors.

**Credits 3**

**Prerequisites**

MAT 112

### **MAT 213 : Differential Equations**

This course is an introduction to the theory and application of ordinary differential equations and the Laplace transform. The main objective is for the student to develop competency in the basic concepts and master certain solution methods. Topics covered include linear and nonlinear first order equations; higher order linear differential equations; undetermined coefficients method; variation of parameters method; Cauchy-Euler equation; Laplace transform; linear systems solution; solution by series method.

**Credits 3**

**Prerequisites**

MAT 112

### **MAT 224 : Numerical Methods**

This course introduces the basic concepts of numerical analysis that are employed in science and engineering. It includes a solid introduction to the basic methods and approximation techniques in use, and to the reliability and accuracy of the approximations. Applications of the methods to simplified/model problems that represent real-life problems are also included. Programming skills (based on MATLAB/OCTAVE) needed to implement the methods on a computer are also covered.

**Credits 3**

**Prerequisites**

[MAT 212](#), CSC 112 or equivalent

### **MAT 235 : Calculus**

Calculus is the mathematical study of change with two major branches, differential calculus (concerning rates of change and slopes of curves), and integral calculus (concerning accumulation of quantities and the areas

under and between curves). This course will provide a comprehensive introduction to calculus as applied to the study of pharmacokinetics and the practice of pharmacy. In this the course, concepts of functions, domain and range, composition and finding the inverse of a function, limits (understand the concept of limits, one- sided and two-sided limits, existence of limits, infinite limits, vertical asymptotes and learn the limit rules), continuity, and develop skills for their determinations. They will recognize the derivative, and develop skills for using rules of differentiation. They will also understand the integral concept and its use in computing areas of various regions with curved boundaries.

**Credits 3**

**Prerequisites**

PAM 101

**Corequisites**

None

### **PAB 101 : Preparatory Algebra for Business I**

This course reviews and develops basic and intermediate Algebra skills. The primary learning outcome for this course is quantitative reasoning, which will require students to read and analyze data, develop mathematical models, draw inferences and support conclusions based on mathematical reasoning. A graphical approach will be utilized throughout the course with an emphasis on solving application problems. Topics include properties of exponents, algebraic expressions, polynomials, functions, the graphs of functions, linear functions, linear equations and systems of linear equations.

**Credits 3**

### **PAB 112 : Preparatory Algebra for Business II**

This course reviews and develops basic and intermediate Algebra skills. The primary learning outcome for this course is quantitative reasoning, which will require students to read and analyze data, develop mathematical models, draw inferences and support conclusions based on mathematical reasoning. A graphical approach will be utilized throughout the course with an emphasis on solving application problems. Topics include rational expressions, radical expressions, quadratic functions, exponential functions, logarithmic functions, graphs of functions and equations (rational, radical, quadratic, exponential and logarithmic).

**Credits 3**

**Prerequisites**

PAB 101



**PAM 101 : Preparatory Algebra for Medicine**

This course reviews and develops basic and intermediate Algebra skills. The primary general learning outcome for this course is quantitative reasoning, which will require students to read and analyze data, develop mathematical models, draw inferences and support conclusions based on mathematical reasoning. A graphical approach will be utilized throughout the course with an emphasis on solving application problems. Topics include properties of exponents, algebraic expressions, polynomials, functions, the graphs of functions, linear functions, linear equations, systems of linear equations, rational expressions, radical expressions, quadratic functions, exponential functions, logarithmic functions, graphs of functions and equations (rational, radical, quadratic, exponential and logarithmic)

**Credits 3**

**PAM 101/MAT 103 : Algebra**

This course specifically aims to review and develop basic and intermediate Algebra skills. It focuses on the fundamentals of algebra with an emphasis on linear, quadratic, rational, radical, exponential and logarithmic functions. All topics include applications and problem solving techniques. The primary general education learning outcome for this course is quantitative reasoning, which will require students to read and analyze data, develop mathematical models, draw inferences and support conclusions based on mathematical reasoning. A graphical approach will be utilized throughout the course with an emphasis on solving application problems.

**Credits 3**

**Prerequisites**

None

**PBS 112 : Business Statistics**

This course of Statistics is the collection, display, and analysis of data; it is the art of making wise decisions in the face of uncertainty. The purpose of this course is to introduce students on how to think critically about data'97how it was collected and analyzed'97and its uses in addressing relevant questions. Basic statistical concepts and methods are presented in a manner that emphasizes understanding the principles of data collection and analysis rather than theory. There is an emphasis on statistical terminology and the use of Microsoft Excel for applications of data analysis and presentation.

**Credits 3**

**PPC 101 : Preparatory Pre-Calculus for Engineering and Science I**

This course reviews and develops intermediate and advanced Algebra skills. The primary learning outcome for this course is quantitative reasoning, which will require students to read and analyze data, develop mathematical models, draw inferences and support conclusions based on mathematical reasoning. A graphical approach will be utilized throughout the course with an emphasis on solving application problems. Topics include algebraic expressions, mathematical models, polynomials, functions, graphs of functions, systems of linear and non-linear equations and equations (linear, absolute value, quadratic, polynomial, rational and radical).

**Credits 3**

**PPC 112 : Preparatory Pre-Calculus for Engineering and Science II**

This course reviews and develops intermediate and advanced Algebra skills. The primary learning outcome for this course is quantitative reasoning, which will require students to read and analyze data, develop mathematical models, draw inferences and support conclusions based on mathematical reasoning. A graphical approach will be utilized throughout the course with an emphasis on solving application problems. Topics include exponential functions, logarithmic functions, and trigonometric functions, analytic trigonometry, polar coordinates and graphs of polar equations.

**Credits 3**

**Prerequisites**

PPC 101

## Medical Imaging

**MIM 599 : Medical imaging for pharmacists**

This course will discuss the principles and applications of medical imaging in patient care. Great emphasis will be on radiopharmaceuticals and nuclear medicine imaging (SPECT and PET) but other imaging technologies such as; MRI, ultrasound, x-ray, mammography and CT scan will be discussed briefly. These technologies are applied greatly in diagnosing various disease states such as; infectious diseases, cancer, cardiovascular, hepatobiliary, renal and neurological disorders. The emerging role of molecular imaging using PET and SPECT in selecting patients for personalized medicines for cancer as well as monitoring response to these new therapies will be also discussed.

**Credits** 3

## Medical Informatics

### **MIF 356 : Medical Informatics**

This course provides the future healthcare leaders an understanding of the value and capability of information and technology to lead the transformation of healthcare, contain costs, reduce medical errors, and optimize the delivery of services across all healthcare professions. Understand the nature of medical data and the electronic medical records (EMR), knowledge of standards, coding and classifications in medical informatics, an overview of the informatics tools and systems in healthcare and their associated medical departments and clinical support systems, familiar with the foundations of quality, patient safety, and risk management sciences. Demonstrate best practices through quality improvement tools and techniques and educate students to be agents to facilitate patient safety culture.

**Credits** 2

#### **Prerequisites**

None

## Medication Safety

### **MSF 5X3 : Medication safety and health informatics**

Medication safety deals with the identification and prevention of medication errors. Students will learn about different types of medication errors, factors that contribute to their occurrence, their severity, and the steps required for their prevention. They will be provided with the core knowledge and skills needed to understand the background and culture of patients' safety, data privacy and security. Students in this course will gain experience in collecting data on medication errors, analyzing the findings, communicating with other health care professionals and administrators through a reporting mechanism, and tracking and trending an area of failure and success. The students will encourage developing their own ideas of implementing patients' safety, especially for those graduate seeking careers in: health-system, ambulatory, and community pharmacy management and leadership. This course will also teach the concepts and tools required to understand informatics in pharmacy practice. The field of health

informatics includes the development, deployment, and use of hardware and software technologies to enhance patient care including improvements in efficiency and safety. Key items that will be discussed include software's, such as; electronic medical records, computerized provider order entry/e-prescribing, and clinical decision support tools as well as hardware solutions, such as; robotic dispensing/picking, bar code medication administration, and automated dispensing cabinets.

**Credits** 3

## Medication Therapy Management

### **MTM 471 : Medication therapy management**

Medication Therapy Management (MTM) is a distinct service that optimize therapeutic outcomes for individual patients. This course will introduce the students to the MTM service in pharmacy practice and its five core elements; medication therapy review (MTR), personal medication record (PMR), medication-related action plan (MAP), intervention and/or referral, documentation and follow-up, with brief discussion of topics in social and cognitive pharmacy. MTM service emphasizes on performing a comprehensive medication therapy review to identify medication-related problems, and to create an individualized therapy plan to resolve them. Part of MTM is to enhance the patient understanding of appropriate drug use, improve patient adherence with prescribed drugs and reduce the risk of adverse events associated with inappropriate drug use. It will introduce the student to the concept of evaluating complicated medication regimens as a scope of therapy management career. Ultimately this service is capable of increasing safety of healthcare practices. Practical application of the knowledge gained in this course will be done in patient care and health system management laboratory courses I-IV.

**Credits** 2

#### **Prerequisites**

BPH 365

#### **Corequisites**

None

# Medicinal Chemistry

## **MCH 241 : Medicinal chemistry**

This course introduces the concepts required to understand how the biological activities of drugs will be derived from their chemical structures and physicochemical properties of various organic functional groups. In this course the students will understand functional groups, drug pKa, lipophilicity/hydrophilicity, potency, stereochemistry, the effect of structural modifications on stability, and molecular targets. In general these properties will determine drug's metabolic pathways, types of metabolites expected to have biological activity, signal transduction and drug-receptor interactions. The course will discuss different analytical methods used to assay pharmaceuticals and will classify drugs acting on different systems, their mechanisms of action, structure activity relationship and issues related to their pharmacology and clinical use.

**Credits 4**

### **Prerequisites**

CHM 232

### **Corequisites**

None

# Microbiology

## **BIO 223 : Microbiology**

The course provides a basic understanding of modern medical microbiology with emphasis on the contribution microorganisms make to human health and welfare and intensive study of the processes by which microorganisms cause human disease, how the pathogens can be recognized (identified) and what steps can be taken for the prevention and treatment of infections. The emphasis on the development of observational, practical and analytical skills through supervised laboratory work and demonstrations.

**Credits 4**

**Lab Hours 1**

**Lecture Hours 3**

### **Prerequisites**

BIO 101, CHM 112

## **MIC 243 : Microbiology**

This course will provide the students with a basic understanding of modern medical and general microbiology with emphasis on role of microorganisms in human health and disease. The course will address the fundamental concepts on

characteristics of microorganisms of medical importance including bacteria, virus, fungi, protozoa, and helminthes. The basics of the taxonomy and classification, morphology, nutrition, growth conditions, metabolism and genetics of these microbes will be discussed. The concept of host-parasite relationship, pathogenicity and microbial virulence factors will also be addressed. Using an integrated approach, the students will then be able to explore how these concepts relate to the infectious disease process, laboratory diagnosis and identification of microbes and targets of antimicrobial drugs. The students will explore the development of antimicrobial resistance and correlate microbial gene transfer mechanisms with dissemination of resistance genes. This course will use a diversity of teaching approaches such as lectures, laboratory practical sessions and interactive large group discussions, through which, it is expected that this course will equip students with the basic principles of microbiology. This will serve as a basis for their continuing understanding of infectious diseases in later stages of the curriculum.

**Credits 3**

## **MIC 354 : Advanced Microbiology**

This course will introduce students to key concepts and principles of infection control in relation to pharmaceutical practice. The various approaches to control of growth of microbial agents and the types of microbial control agents utilized in healthcare and industrial settings will be addressed. In this course students learn about the indications, approaches, equipment and agents utilized for cleaning, sterilization and disinfection processes in the healthcare setting as well as in industrial pharmaceutical settings. They will begin to understand the criteria for selecting and monitoring the usefulness of the agents, equipment and monitoring approaches used for sterilization & disinfection. The course will also address approaches to infection control practices in the community with special emphasis on community pharmaceutical practices.

**Credits 2**

### **Prerequisites**

MIC 243

### **Corequisites**

None

# Molecular Medicine

## **MOL 114 : Molecular Medicine I (Biochemistry & Cell Biology)**

The overall objective of this course to introduce the student to the molecular mechanisms by which cells interact with their environment and some of the biochemical processes involved in the generation of metabolic energy. To achieve this objective, the course will address basic biochemical properties of amino acids and proteins, protein assembly and folding into three dimensional structures required for function, and principles of enzyme kinetics. In addition, key topics on cell structure, protein trafficking, extracellular matrix and cell signaling will also be discussed. Finally, a review of carbohydrate metabolism and the generation of usable chemical energy by the cell will be presented.

**Credits** 3

### **Prerequisites**

None

## **MOL 125 : Molecular Medicine II (Biochemistry & Cell Biology)**

The overall objective of this course to introduce the student to the molecular mechanisms by which cells interact with their environment and some of the biochemical processes involved in the generation of metabolic energy. Molecular Medicine II is a continuation of the Molecular Medicine I course. The cell cycle and cell response to external stresses will be addressed. The biochemical pathways involved in lipid metabolism will be reviewed and clinically relevant topics discussed, such as atherosclerosis, obesity, diabetes. Further, protein metabolism and disposal of nitrogen will be addressed. Other relevant topics covered include vitamins and trace elements, haemoglobin, and biomarkers of disease

**Credits** 3

### **Prerequisites**

None

# Musculoskeletal Block

## **MSI 361 : Musculoskeletal and integumentary block**

This course examines the etiology, epidemiology, predisposing factors, pathophysiology, and classification of common major musculoskeletal and skin diseases. Relate clinical signs and symptoms, result of laboratory diagnostic tests, and radiological

changes with underlying pathogenesis of common major musculoskeletal and skin diseases. Describe the principles of differential diagnosis and clinical investigations of musculoskeletal and skin disorders. Discuss the mechanism of action of drugs used in the management of common major musculoskeletal and skin diseases.

**Credits** 3

### **Prerequisites**

END 231, REP 232, POD 233, NEU 241, HNS 242

### **Corequisites**

CVP 351, HEM 352

## **MSK 112 : Musculoskeletal Block**

This is a multidisciplinary course (block) integrating topics in basic and applied clinical anatomy, histology, embryology and physiology related to musculoskeletal system.

**Credits** 4

### **Prerequisites**

None

### **Corequisites**

[FON 111](#), [GIT 113](#)

# Nanomaterials & Nanotechnology

## **BSN 430 : Nanomaterials & Nanotechnology**

The course is designed to introduce students to the emerging area of nanomaterials and nanotechnology. The course intends to prepare and train students in the evolving areas of nanoscience and nanotechnology which lies at the interfaces of chemistry, physics, and biology. It will cover the basic fundamentals of Nanoscience and Nanotechnology including properties of nanomaterials, nanoscale phenomena, synthesis and fabrication, and characterization of nanomaterials. In addition, the emerging and potential applications of nanomaterials will be reviewed with more focus on applications related to life sciences.

**Credits** 3

### **Prerequisites**

CHM 310

# Neuroscience Block

## **NEU 241 : Neuroscience Block**

This block is fully integrated covering normal structure and function as well as integrating disease processes

and pharmacotherapy of the diseases related to neurology and psychiatry. The course is runs over eleven weeks. All the learning activities are centered on weekly themes. A typical week starts with the teaching of structure and function followed by disease processes and pharmacotherapy. In the last part of the week clinical lectures are delivered to relate clinical features with the disease processes, and to discuss diagnostic approaches to different clinical presentations. A PBL case relevant to the theme of the week is discussed and serves to anchor the learning around that theme.

**Credits** 6

**Prerequisites**

FON 111, MSK 112, GIT 113, CVP 121, HLS 122, REN 123

**Corequisites**

[HNS 242](#)

## Nutrition

**NTN 368 : Nutrition**

In this course students will learn how to recognize the major macro and micronutrients relevant to human health, and understand their roles and importance, understand the scientific grounds of determining the nutritional requirements of healthy individuals and communities, as well as specific populations, such as children, elderly, and pregnant and lactating women, discuss how nutrition relates to preventing or causing various illnesses, particularly chronic diseases, discuss major nutrition-related disorders and conditions and Suggest a community-based nutritional awareness plan.

**Credits** 2

**Prerequisites**

None

## Orientation and Academic Success

**COB 100 : Student Orientation and Academic Success**

**Credits** 1

## Parenteral Therapy

**PTH 362 : Parenteral Therapy**

This course will introduce the students to parenteral routes of drug administration, including; Intramuscular, Intravenous, Intra-arterial, Intra-cardiac, Intra-theal, Intradermal (Intra-cutaneous) and Subcutaneous route (Hypodermic). Topics such as intravenous admixture preparation, compatibility of parenteral products, hazardous drugs and radiopharmaceuticals preparations will be covered. This course will also focus on the clinical aspects of enteral feeding and parenteral nutrition therapy. The practical sessions of the course will enable the student to prepare individualized sterile medications, suitable for specific patient needs; containing the prescribed ingredients in the correct amounts, free from microbial and pyrogenic contaminants as well as undesirable levels of particulate or other toxic contaminants. Product stability, compatibility, labelling, and storage according to the principles of good drug quality control will be emphasized. This course will be highly dependent on mathematical and pharmaceutical knowledge the students acquired in previous courses to make this service feasible and efficient.

**Credits** 2

**Prerequisites**

CAL 351

**Corequisites**

None

## Pathogenesis of Diseases

**POD 233 : Pathogenesis of Diseases (Basic Principles of Pharma, Micro, Patho & Immuno)**

During this course, students will become conversant with basic characteristics of disease, classification, etiology, pathogenesis, structural and functional manifestations, complications, sequelae, and prognosis. This course deals with basic principles of pharmacology, pathology, immunology, and microbiology in an integrated approach.

**Credits** 5

**Prerequisites**

FON 111, MSK 112, GIT 113, CVP 121, HLS 122, REN 123

**Corequisites**

END 231, REP 232

# Patient Care

## **PCL 5X4 : Patient care and health system management laboratory IV**

Patient care and health system management laboratory courses are designed to build and reinforce contemporary pharmacy practice skills in the provision of patient care and health systems management. Throughout the course series students will participate in practicum and simulation components of the lab, to expand their practice skills in preparation for advanced pharmacy practice experience (APPE) rotations. In particular, patient care and health system management laboratory courses III and IV will give the student the experience required in hospital, and other alternative settings by focusing on foundational practice skills that are aligned with the fifth year '93integrated pharmacotherapy courses'94 and their '93case-based seminars'94, such as;

- Hospital medication order processing and dispensing (automated medication dispensing devices, and bar coding)
- Handling prescription and dispensing of commonly used prescription and non-prescription medications in a patient with multiple co-morbidities
- Advanced level patient assessment
- Patient counselling on medications, especially those with communication barriers
- Patient counselling in a team-based setting
- Development of comprehensive patient care plans
- Identification of complex drug therapy problems
- Pharmacy-based immunization training
- Interprofessional education

**Credits 2**

### **Prerequisites**

[PCL 477](#), [PCL 487](#)

### **Corequisites**

IPH 591, IPH 592, IPH 593, IPH 594

## **PCL 477 : Patient care and health system management laboratory I**

Patient care and health system management laboratory courses are designed to build and reinforce contemporary pharmacy practice skills in the provision of patient care and health systems management. Throughout the course series students will participate in practicum and simulation components of the lab, to expand their practice skills in preparation for advanced pharmacy practice experience (APPE) rotations. In particular, patient care and health system

management laboratory courses I and II will give the student the experience required in community, hospital, ambulatory care, and alternative settings by focusing on foundational practice skills that are aligned with the fourth year '93integrated pharmacotherapy courses'94 and their '93case-based seminars'94, such as;

- Handling prescription and dispensing of commonly used prescription and non-prescription medications and various dosage formulations
- Patient assessment
- Communication skills including patient counselling on medications and/or devices
- Development of patient care plans
- Community and hospital medication review and dispensing (including intravenous dosage forms)
- Application of medication safety principles while handling community/ ambulatory/ institutional prescription orders

**Credits 2**

### **Prerequisites**

BPH 366

### **Corequisites**

IPH 473, IPH 474, IPH 475, IPH 476

## **PCL 487 : Patient care and health system management laboratory II**

Patient care and health system management laboratory courses are designed to build and reinforce contemporary pharmacy practice skills in the provision of patient care and health systems management. Throughout the course series students will participate in practicum and simulation components of the lab, to expand their practice skills in preparation for advanced pharmacy practice experience (APPE) rotations. In particular, patient care and health system management laboratory courses I and II will give the student the experience required in community, hospital, ambulatory care, and alternative settings by focusing on foundational practice skills that are aligned with the fourth year '93integrated pharmacotherapy courses'94 and their '93case-based seminars'94, such as;

- Handling prescription and dispensing of commonly used prescription and non-prescription medications and various dosage formulations
- Patient assessment
- Communication skills including patient counselling on medications and/or devices
- Development of patient care plans
- Community and hospital medication review and dispensing (including intravenous dosage forms)
- Application of medication safety principles while handling community/ ambulatory/ institutional prescription orders

**Credits 2**

**Prerequisites**

BPH 366

**Corequisites**

IPH 473, IPH 474, IPH 475, IPH 476

**PCL 595 : Patient care and health system management laboratory III**

Patient care and health system management laboratory courses are designed to build and reinforce contemporary pharmacy practice skills in the provision of patient care and health systems management. Throughout the course series students will participate in practicum and simulation components of the lab, to expand their practice skills in preparation for advanced pharmacy practice experience (APPE) rotations. In particular, patient care and health system management laboratory courses III and IV will give the student the experience required in hospital, and other alternative settings by focusing on foundational practice skills that are aligned with the fifth year "integrated pharmacotherapy courses" and their "case-based seminars", such as;

- Hospital medication order processing and dispensing (automated medication dispensing devices, and bar coding)
- Handling prescription and dispensing of commonly used prescription and non-prescription medications in a patient with multiple co-morbidities
- Advanced level patient assessment
- Patient counselling on medications, especially those with communication barriers
- Patient counselling in a team-based setting
- Development of comprehensive patient care plans
- Identification of complex drug therapy problems

- Pharmacy-based immunization training
- Interprofessional education

**Credits 2**

**Prerequisites**

PCL 477, PCL 487

**Corequisites**

IPH 591, IPH 592, IPH 593, IPH 594

## Pharmaceutical Industry

**PHI 597 : Pharmaceutical industry**

This course is designed to expose students to the pharmaceutical industry, its environment, inner workings, and approach to engaging customers and stakeholders. It is intended to broaden the pharmacy students' understanding of this industry, introduce critical concepts and terminology, build confidence and prepare students who may seek a career in Pharmaceutical industry. Pharmacy students will learn the principles of pharmaceutical manufacturing and the requirements for good manufacturing practices (GMP) certification. The basic operations involved in the production of a dosage form; from research and development (R&D) until quality control (QC) procedures involved will be demonstrated. It involves different visits to local pharmaceutical companies to follow the manufacturing processes in general and tableting process, in particular, starting with excipients' selection, tableting steps and coating techniques, and ending with the required QC procedures to evaluate the outcome.

**Credits 3**

## Pharmaceutics

**PHC 353 : Pharmaceutics I: Dosage Forms and Stability**

This course introduces the student to the technologies involved in pharmaceuticals development processes and their required pharmaceutics components or excipients. Students will learn the basic requirements of good manufacturing practices (GMP) followed worldwide for drug or pharmaceuticals development. The students will differentiate between the most common dosage forms, their routes of administrations, and the use of bioavailability and bioequivalence for formulations' assessments. The major classifications and pharmaceutical compounding of dosage forms will be covered, including; powders and granules, capsules, tablets

(coating, disintegration, dissolution), solutions (solubility, polymorphism, crystal structure), polyphases systems (colloids, gels, suspension, emulsions, surface tension, surfactants, HLB), topical dosage forms (creams, ointments, absorption), and mucosal delivery (nasal, pulmonary, buccal). Stability and quality control studies of each dosage form will be addressed. The basic principles associated with pharmaceutical (extemporaneous) compounding will be explained. There will be laboratory sessions to provide general principles and hands-on experience in the preformulation, formulation, manufacturing, and quality control fields that are necessary in design, formulation, compounding and manufacturing of drug dosage forms.

**Credits** 3

### **PHC 361 : Pharmaceutics II: Drug Delivery**

This course will introduce students to the pharmaceutical aspects of drug delivery systems as well as alternative application sites with a view to optimize therapeutic effect. It will discuss selected modern formulation principles (applied as well as potential) theoretically and methodically to explain problems/issues concerning the optimization of absorption, selective transport and targeting as well as the properties and effect of excipients. The course will cover drug classes (small molecules, prodrugs, peptides, proteins, nucleotides, etc.); applicable delivery systems (solid dispersions, self-emulsifying systems, cyclodextrins, polymeric nanoparticles, liposomes, etc.) and administration routes (oral, IV, IM, topical, pulmonary, nasal, etc.). Students will learn the development and characterization of drug delivery systems, release models, transport and absorption studies in in vitro and in vivo models.

**Credits** 2

#### **Prerequisites**

PHC 353

#### **Corequisites**

None

## Pharmacogenomics

### **PHG 478 : Pharmacogenomics and personalized medicine**

This course will teach the students the basic principles of human genetics and how it contributes to inter-individual variation in treatment strategies. They will apply the principles of molecular and cellular biology to understand how genetic variability in genes encoding drug metabolizing enzymes, drug

transporting proteins, and drug receptors (targets) can contribute to variability in drug disposition and action. Accordingly the genetic makeup of an individual will lead to major changes in pharmacokinetics, pharmacodynamics, and clinical outcome. They will be able to discuss the impact of pharmacogenomics in different therapeutic areas, using case studies reporting the clinical consequences of pharmacogenomics on therapeutic efficacy or toxicity. They will apply pharmacogenomics concept to a particular drug therapy to solve relevant problems in pharmaceutical care. The societal and ethical implications of genetic testing and the resultant individualization of drug therapy will be covered in this course. By the end of this course, the students will be equipped to critically evaluate the current and future literature in the area of pharmacogenomics.

**Credits** 2

## Pharmacokinetics

### **KIN 352 : Pharmacokinetics**

The interrelationship of the physical-chemical properties of the drug, and the LADME properties of a drug (liberation, absorption, distribution, metabolism and excretion) will be explained in this course. Drug modelling such as one and two compartment open models will be covered. Effect of route of administration on the drug disposition after IV bolus, IV continuous infusion and oral administrations will be also addressed. In this course, the students will understand the difference between linear and non-linear pharmacokinetics, drug interactions, bioavailability, bioequivalence, and the factors affecting drug elimination (metabolism and excretion). The relationship between drug concentration, effect, and side effects will be explored in this course. Tutorial sessions for problem based learning using case scenarios will be an integral part of this course. The aim of these tutorial sessions is to help students grasp the basic theories and basic skills of pharmacokinetics, and to develop the students' ability to analyze and solve problems. At the end of this course, the student will be able to design and adjust a patient's drug dosage regimen to obtain a plasma/serum concentration within a desired therapeutic range.

**Credits** 3

#### **Prerequisites**

MAT 235

#### **Corequisites**

None



**KIN 481 : Clinical Pharmacokinetics**

This course involves clinical applications of pharmacokinetic principles. Emphasis is placed on the identification of actual and theoretical factors that contribute to variabilities in pharmacokinetic parameters and associated pharmacological responses. Design of optimized dosing regimens for patient care utilizing drug monitoring techniques and computer technology will be also covered in this course. Case studies with different patient population and with co-morbidities are utilized whereby students will apply pharmacokinetic concepts in a clinical context and discuss drug dosing and therapeutic drug monitoring. Latest standardized techniques and dosing methods are critically explored, contrasted, and applied to patient-specific dosing scenarios. The student will apply the principles for pharmacokinetics and therapeutic drug monitoring in decision-making and improvement of patient care.

**Credits 2****Prerequisites**

KIN 352

**Corequisites**

None

## Pharmacotherapy

**BPH 365 : Basic pharmacotherapy**

Integrated pharmacotherapy courses in this program will be introduced via an introductory basic pharmacotherapy course, where it will teach the students basic pharmacodynamic principles. It will introduce the students to the normal physiology of Autonomic nervous system ANS and the pharmacology of drugs acting on parasympathetic and sympathetic nervous system. This knowledge will give the student a fundamental background to understand the actions of various groups of drugs and their clinical applications. This course also will cover drug toxicity and poisoning lectures along with principles of treatment of poisoning. The concepts of environmental, occupational, and forensic toxicology will be introduced to the students by the end of the course. This course is quiet important because it will introduce the student to the concept of integration in learning process as, various discipline are involved such as; pharmacology, physiology, pathology, as well as pharmaceutical practice.

**Credits 3****Prerequisites**

None

**Corequisites**[BPH 366](#)**BPH 366 : Basic Pharmacotherapy '93case-based seminars'94**

Case based seminars is a practical application of the knowledge the students acquired from the concomitant pharmacotherapy course. This course in particular will focus on application of the knowledge acquired from basic pharmacotherapy course with regard to pharmacodynamics, autonomic nervous system, drug poisoning and environmental as well as occupational toxicology. The course will start with a series of lectures focusing on communication and presentation skills. Followed by the usual conduct of such course via '93case based seminars'94 which applies '93case-based collaborative learning'94 which integrate problem-based learning (PBL), with team-based learning (TBL). The students are divided into small groups with the help of the tutor, to work on a case-based scenario that works as a problem they might see in the future. The group will analyze the case, and determine the learning objectives that helps to find the best management plan for it. The group needs to work as a team on the management plan that will be eventually presented as student seminars to their colleagues. Seminar presentation is a good experience to develop their presentation and communication skills, and their ability to handle discussion. This course should parallel basic pharmacotherapy course delivery over 7 week'92s period.

**Credits 1****Prerequisites**

None

**Corequisites**

BPH 365

**BPH 367 : Pharmacotherapy of antimicrobial agents**

Antimicrobials are a large group of diverse structures with myriad mechanisms of actions against bacteria, viruses, fungi, and parasites. This course will introduce the student to general classes of antimicrobial drugs. The student will understand how the biological activities will be derived from their chemical structures and physicochemical properties. Pharmacological principles of these classes will be covered afterwards, such as pharmacokinetics, mechanism of action, patterns of kill, adverse effects and mechanisms of resistance. The concept of antimicrobial stewardship will be introduced to the student to emphasize its

goals; to enhance patient health outcomes, reduce resistance to antimicrobial agents, and to decrease unnecessary costs.

**Credits 3**

**Prerequisites**

MIC 354

**Corequisites**

None

## Pharmacy & Marketing

### **MRT 598 : Marketing for pharmacists**

This course examines the underpinning theoretical concepts and applied techniques of marketing that are used in the delivery of pharmaceutical care in the for-profit and/or not-for-profit environment as well as the practical marketing strategies that can be used in day to day pharmacy management. Throughout the course, topics relevant to public policy formation and evaluation will be central to discussion. Topics will include important marketing concepts, managing service performance, advertising and promotion, significant laws affecting pharmacy practice management, consumer behavior, strategic marketing planning, segmentation, communication, pricing pharmacist services, channels of distribution and marketing ethics. Lectures will focus on theoretical concepts and examples of strategies currently being used within pharmacy and the broader health care environment. This course will be of value to pharmacy students seeking careers in pharmaceuticals companies, management, and industrial pharmacy.

**Credits 3**

## Pharmacy Practice

### **PRC 356 : Pharmacy Practice and Health Care Systems**

This course introduces students to the profession of pharmacy and the diversity of pharmacy-related services that relates to the modern health care system. Students will be introduced to the contribution of pharmacy to health care systems in different settings such as; community-, hospital-based. It will also enable the students to develop a more specialized range of attributes to the healthcare system. It will introduce the student to clinical pharmacy practice, patient counselling and compliance, drug utilization reviews, drug interactions, treatment of poisoning and

other areas of practice. Special emphases will be on the role of pharmacist's in patient care and public health in Saudi Arabia-health care system.

**Credits 3**

## Pharmacy Regulations

### **REG 363 : Pharmacy Regulations and Health Ethics**

This course will introduce the students to pharmacy law and the regulatory aspects applicable to pharmaceutical products and the practice of pharmacy internationally. Students should learn the various laws and regulations that will govern their daily practice in connection with the principal authority that is; Saudi Food and Drug authority (SFDA). The role of such authority in drug registration, licensing and control will also be explained. Laws and regulation set by ministry of health that govern medication dispensing and control substances will be also explained. This course will teach the students the ethics related to pharmacy practice and ethical consideration in clinical trials and research. These ethics are set via rules and regulations of SFDA.

**Credits 2**

## Philosophy

### **PHL 369 : Medical Ethics**

This course introduces students to the ethical dimensions of clinical medicine and the related sciences. It offers them basic language and methodology to critically examine these dimensions. The course format integrates lecture and active case discussion to provide both the necessary philosophical grounding and the real-world skills sought by students.

**Credits 2**

**Prerequisites**

Semester 8, Year 4

## Physics

### **PHU 101 : Astronomy**

This elective course is designed for the students of the College of Business to fulfil part of their science requirements. The material of the course is presented in a survey manner using only pre-calculus mathematics. The covered material includes spectroscopy, telescopes, the solar system and its

formation theories, the life cycle of stars, galaxies and the general structure of the universe, and an introduction to cosmology.

**Credits 3**

**Prerequisites**

None

**PHU 102 : Science of Energy and the Environment**

This elective course is designed for College of Business students to fulfil part of their science requirements. The material of the course is presented in an interactive manner with the students with a minimum use of mathematics. The course material covers topics ranging from basic energy concepts to fossil fuels, including oil and gas, renewable and nuclear energy sources and usage. The course also covers the environmental issues as they pertain to the Kingdom of Saudi Arabia, the Gulf region and globally.

**Credits 3**

**Prerequisites**

None

**PHU 103 : Mechanics and Waves for Engineers**

The material of this course requires knowledge of differential and integral calculus. The covered material includes the basics of vectors, kinematics, Newtonian Mechanics, energy and momentum conservation, harmonic motion, mechanical waves, and sound.

**Credits 3**

**Prerequisite or Corequisite**

[MAT 101](#)

**PHU 103 L : Mechanics and Waves for Engineers Labs**

This material constitutes the laboratory related to the course [PHU 103](#).

**Credits 1**

**Prerequisite or Corequisite**

[PHU 103](#)

**PHU 124 : Electromagnetism and Waves for Engineers**

The material of this course requires knowledge of differential and integral calculus. The covered material includes the basics of electricity and magnetism, electromagnetic radiation, and optics.

**Credits 3**

**Prerequisites**

[PHU 103](#)

**PHU 124 L : Electromagnetism and Waves for Engineers Labs**

This material constitutes the laboratory related to the course [PHU 124](#).

**Credits 1**

**Prerequisite or Corequisite**

[PHU 124](#)

**PHU 205 : Mechanics for Life Sciences**

The material of the course is Algebra based. The covered material includes the basics of vectors, kinematics, Newtonian Mechanics, solids/fluids, harmonic motion and mechanical waves.

**Credits 4**

**Lab Hours 1**

**Lecture Hours 3**

**Prerequisites**

None

**PHU 205 L : Mechanics for Life Sciences**

This constitutes the laboratory related to the course [PHU 205](#).

**Credits 1**

**Prerequisite or Corequisite**

[PHU 205](#)

**PHU 216 : Electromagnetism and Optics for Life Sciences**

The material of the course is Algebra based. The covered material includes the basics of electricity and magnetism, electromagnetic radiation, and optics.

**Credits 4**

**Lab Hours 1**

**Lecture Hours 3**

**Prerequisites**

[PHU 205](#)

**PHU 216 L : Electromagnetism and Optics for Life Sciences Labs**

This material constitutes the laboratory related to the course [PHU 216](#).

**Credits 1**

**Prerequisite or Corequisite**

[PHU 216](#)

**PPHYE 101 : Preparatory Physics for Engineering and Science I**

This course is designed to give students a solid foundation in basic physics as a preparation for undergraduate studies. The course includes a mandatory laboratory that includes a set of experiments that run parallel to the theoretical materials covered in class. Topics include Newtonian mechanics, the physical concepts of force and motion, energy, energy transformation, conservation laws.

**Credits 3**

**Corequisites**

Pre-Calculus

**PPHYE 112 : Preparatory Physics for Engineering and Science II**

This course is designed to give students a solid foundation in basic physics as a preparation for undergraduate studies. The course includes a mandatory laboratory that includes a set of experiments that run parallel to the theoretical materials covered in class. Topics include the basics of electrostatics, simple circuits, magnetism, electromagnetic waves, and the electromagnetic spectrum.

**Credits 3**

**Prerequisites**

PPC 101, PPHYE 101

**PPHYM 112 : Preparatory Physics for Medicine**

This course is designed to give students a solid foundation in basic physics, as it relates to the human body, as a preparation for undergraduate studies. The covered material will include the basics of mechanics, thermodynamics, electricity and electromagnetism, and modern physics covering basic concepts of quantum physics, atomic nucleus and radioactivity.

**Credits 3**

**Prerequisites**

PAM 101

**PPHYM 112/PHU 113 : Physics for medicine and health sciences**

This is an introductory physics course required from students applying for the medicine and life sciences pathway in the University Preparatory Program (UPP) of Alfaisal University. The covered material will include the basics of mechanics, thermodynamics, electricity and electromagnetism, optics, wave optics, and modern physics covering basic concepts of quantum physics, atomic nucleus and radioactivity.

**Credits 3**

**Prerequisites**

None

## Physiology

**PHY 234 : Physiology**

The course is designed to expand physiological concepts gained from human structure and function courses in the first year. It will teach the students basic principles of human physiology that keeps the human body functioning and in homeostasis. The principal level of focus on physiology in this course is at various levels of organization, ranging from cellular and molecular to tissue and organ system levels. The

physiology of cardiovascular, endocrine, central nervous systems, respiratory, gastrointestinal tract, and others will be covered in detail where emphasis will be placed on understanding the integrated regulation of various body processes among these major systems. Such knowledge will prepare the students to the pathophysiological basis of diseases incorporated into pharmacotherapy courses starting in the fourth year. This course will run parallel to the anatomy and histology course with regard to the sequence of the covered subjects.

**Credits 3**

**Prerequisites**

PHSF 101 112

**Corequisites**

ANT 233

## Primary Health Care & Rural Health

**COM 116 : Primary Health Care & Rural Health**

Upon completion, students will be able to define the role of community medicine in promoting healthcare in the KSA, conceptually define the meaning and purposes of primary healthcare and community medicine and relate them to the healthcare systems in the Kingdom, realize the role of the primary care physician in community health and healthcare, develop supportive attitudes towards health concerns of local communities, learn about some of the scientific perspectives and basic methods of conducting community research relevant to common health problems in local communities and understand the role of epidemiology, and biostatistics in conducting proper community-based research.

**Credits 2**

**Prerequisites**

None

**COM 358 : Family Medicine**

This course identifies clinical presentations common to the field of family medicine; understand concept of preventive medicine and importance of family medicine in implementing community based disease prevention, cancer screening and health promotion programs. Apply family medicine oriented diagnostic approach; introduce students to inter-professional multidisciplinary team approach in the management family medicine patients. Create opportunities to acquire knowledge and skills pertinent to the specialty of family medicine through self-reflection and

previously studied courses. Appreciate family physicians important roles as health advocates and resources for their practice and community and relationship in managing patients with on-going health concerns.

**Credits** 2

**Prerequisites**

COM 116

**COM 366 : Family Medicine-II (Women's H, Prenatal C, Geriatrics, Palliative and Alternative M)**

The objective of this course is to introduce undergraduate medical learners to family medicine as a clinical yet general medical course. This course covers a broad range of acute and chronic clinical presentations and involves the care of diverse patient population of both genders and across the life cycle with the notion in mind of providing holistic health care to the entire community.

**Credits** 2

**Prerequisites**

COM 116, COM 358

## Psychology

**PSY 101 : Introduction to Psychology**

The course introduces psychology and its key concepts, theories, research methods, and contributions to the understanding of human behavior. Topics include the nervous system, perception, motivation, learning and memory, social behavior, personality, developmental, and clinical psychology. The course also introduces past and current theories and contributions of eminent psychologists.

**Credits** 3

**Prerequisites**

None

## Public Policy

**GPP 453 : Public Policy and Social Issues**

This course will cover a wide range of topics, from the norms and values informing democratic policymaking to the basics of cost-benefit and other tools of policy analysis. This course will also examine a variety of issues considered to be '93social problems. The course will look into how particular issues came to be considered as '93problems'94 in the first place, while other issues do not. Though emphases will differ, all

sections will address the institutional arrangements for making public policy decisions, the role of various actors-including nonprofit and private-sector professionals-in shaping policy outcomes, and the fundamentals (and limits) of analytic approaches to public policy.

**Credits** 3

**Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**Corequisites**

NONE

**GPP 456 : Ethics and Politics of Public Service**

This course examines ethical and political questions that arise in doing public service work, whether volunteering, service learning, humanitarian endeavours overseas, or public service professions such as medicine and teaching. What motives do people have to engage in public service work? Are self-interested motives troublesome? What is the connection between service work and justice? Should the government or schools require citizens or students to perform service work? Is mandatory service an oxymoron? This course will aid you conduct a critical investigation of ethics, ideals and values commonly attributed to public service in Saudi Arabia.

**Credits** 3

**Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**Corequisites**

NONE

**GPP 459 : Advanced Topics in Public Policy: International Development**

This course introduces undergraduates to the basic theory, institutional architecture, and practice of international development. We take an applied, interdisciplinary approach to some of the '93big questions'94 in our field: What does development mean? Why are some countries persistently poorer than others? How have different stakeholders sought to address the challenges of development in the past, and how are they approaching these challenges now? Then we will look into how policy students can explore the complexities of the policy-making process from the perspective of specific policy topics. Students will learn about and discuss subject-based issues in a seminar format led by faculty and policy experts. Site visits to federal agencies, guest speakers, and round table sessions ensure that students receive a variety of real-world perspectives on their chosen policy area. This course will also examine the way that policies, politics, and the kingdom intersect and coevolve. To address

these concepts, the course will draw on theoretical and empirical literature from comparative public policy, institutionalism, public administration, governance theory, and political sociology.

**Credits 3**

**Prerequisites**

LAW 433, LAW 434, LAW 436, LAW 437, LAW 438

**Corequisites**

NONE

## Renal Block

**REN 123 : Renal Block**

This is a multidisciplinary course (block) integrating topics in basic and applied clinical anatomy, histology, embryology and physiology of renal system.

**Credits 3**

**Prerequisites**

None

**Corequisites**

CVP 121, HLS 122

**REN 364 : Renal Block**

The Renal course in Phase II is directed towards the learning and understanding the disorders of the kidney and urogenital system and their treatment. This is a multidisciplinary block integrating topics in basic and applied pathology, pharmacology, immunology, microbiology, clinical pathology, nephrology, urology, radiology, and clinical medicine.

**Credits 2**

**Prerequisites**

END 231, REP 232, POD 233, NEU 241, HNS 242

**Corequisites**

GIT 353, END 362, REP 363

## Reproductive Block

**REP 232 : Reproductive Block**

By the end of the block students should be able to know embryonic development, fetal maturation, and perinatal changes of the reproductive system, know the structure of female reproductive organs, including breast, know the functions of female reproductive system (eg, menstrual cycle, puberty, and menopause), know the structure of the male reproductive organs, Know the functions of the male reproductive system (eg, spermatogenesis, puberty) and understand the hypothalamic-pituitary-gonadal axis, sex steroids, and gestational Hormones.

**Credits 2**

**Prerequisites**

FON 111, MSK 112, GIT 113, CVP 121, HLS 122, REN 123

**Corequisites**

[END 231](#), [POD 233](#)

**REP 363 : Reproductive Block and Breast**

This course examines the functions and regulation of hormones related with the female reproductive system. It describes the epidemiology, risk factors, pathogenesis and diagnostic workup of disorders of female reproductive system and breast. It describes the epidemiology, risk factors, pathological classifications and morphology of tumors of female reproductive organs and breast.

**Credits 2**

**Prerequisites**

END 231, REP 232, POD 233, NEU 241, HNS 242

**Corequisites**

[GIT 353](#), [END 363](#), [REN 364](#)

## Research Methodology

**LSR 302 : Research Methodology**

The course aims to provide students with the basic concepts of research, types of research and the research method. The ultimate aim of this course is to equip students with skills on how to formulate a research hypothesis, review literature, design research projects, acquire & analyze data and report the research findings. The students will also be introduced to research writing and ethical issues associated with research.

**Credits 3**

**Prerequisites**

ENG 112

**LSR 421 : Life Science Research Project I**

The courses represent a two-semester-term individually guided investigation project involving laboratory work and/or computational investigation in some aspect of Biomedical Science. The background, results and conclusions of the study to be reported in the form of an oral presentation and progress report by the end of Fall semester, and a thesis and final defense at the end of the course.

**Credits 3**

**Prerequisites**

LSR 302

**LSR 422 : Life Science Research Project II**

The courses represent a two-semester-term individually guided investigation project involving laboratory work and/or computational investigation in some aspect of Biomedical Science. The background, results and conclusions of the study to be reported in the form of an oral presentation and progress report by the end of Fall semester, and a thesis and final defense at the end of the course.

**Credits** 3

**Prerequisites**

LSR 302

**LSR 423 : Integrative Life Science Research Seminar**

LSR 423 course is designed to train students to summarize results obtained during student research project courses, built up scientific hypotheses and discuss their merits in group seminars with assessment of the subsequent self-directed learning in oral presentations, coursework or undergraduate thesis writing and defence. This course develops transferable skills, associated with analysis and presentation of laboratory-based experimental research in Life Sciences in the form of poster and podium presentation.

**Credits** 3

**Prerequisites**

[BIO 357](#); [BIO 358](#)

## Respiratory Block

**RES 5X6 B : Research project**

Students will enroll themselves in a graduation research project during semester 10 of the fifth year. The aim of the course is to give the students an opportunity to perform a research project within the field of an emerging area of pharmaceutical sciences/ practice of interest under direct supervision of a faculty member from the college of pharmacy. Students will apply research knowledge and skills to design, implement, show independence, critical and creative thinking, and to execute their research projects. Students will summarize the results in a research report and present the results of the project to the academic community as a poster presentation in the '93Research week'94.

**Credits** 3

**Prerequisites**

BST 245

**Corequisites**

None

## Self-Care and Non-Prescription Drugs

**SCR 364 : Self-care and Non-Prescription Drugs**

Self-care is the independent act of preventing, diagnosing, and treating one's own health conditions without seeking medical advice. This practice includes, but is not limited to, general care measures and dispensing of nonprescription drugs. This course is designed to prepare future pharmacists to assess whether patients are candidates for self-care and to recommend appropriate self-care measures for commonly encountered self-manageable conditions. The students will learn how to assess, manage and recommend over-the-counter OTC medications or natural medicines for the following common complaints/disorders: cough, common cold, pain, allergic rhinitis, nausea, vomiting, dyspepsia, muscle injury, dermatologic disorders (acne, insect bites, and sunburn), wound care, and many others. Students will apply the concepts acquired from this course to different courses such as integrated pharmacotherapy '93case-based seminars'94 and patient care and health system management laboratory courses.

**Credits** 1

**Prerequisites**

[BPH 365](#)

**Corequisites**

None

## Sociology

**SOC 101 : Introduction to Sociology**

Introduces the basic concepts in the field, research methods, and theories. It addresses the interrelations among human societies, individuals, groups and organizations. Topics include social interaction, social institutions, social stratification, community, and social change strategies. This course elaborates on the social structure of Saudi Arabian society, its social institutions and stages of social transformation.

**Credits** 3

**Prerequisites**

None



# Statistics

## **STA 211 : Probability and Statistics**

STA 211 introduces the basics of probability and statistics as used in sciences. It covers introduction to probability, random variables, some common probability distributions, random vectors, sample statistics, regression, and applications in experimental sciences.

**Credits** 3

### **Prerequisites**

MAT 116

## **STA 212 : Probability and Statistics for Engineers**

The course is designed to teach students the basics of probability and statistics as used in engineering and the sciences. The course covers introduction to probability theory, random variables, statistics, and regression.

**Credits** 3

### **Prerequisites**

MAT 112

# Sub-Specialty Medicine

## **IMD 591 : Sub-Specialty Medicine**

At the end of this clerkship, the student should understand the relationship between the basic and clinical sciences as it applies to the fields of cardiovascular medicine, hematology/oncology. Demonstrate the ability to assess cardiology/cardiac surgery, hematology/oncology patients and differentiate the need for urgent versus non-urgent care, employ viable treatment plans within the confines of clinical data available, and within the socioeconomic capability of those patients.

**Credits** 9

### **Prerequisites**

MED 471, PED 472, SUR 481, GYN 482

### **Corequisites**

[INS 592](#), SSP 5X1, AMB 5X2

# Surgical Subspecialty

## **SSP 5X1 : Surgical Sub-Specialty**

This course consists of three rotations in Ophthalmology, Otolaryngology '96 Head and Neck Surgery (ENT) and Orthopedics. By the end of this clerkship the students will improve their skills and

techniques of head and neck examinations, understand the purpose, values and results of numerous laboratory assessments of various otolaryngologic disorders, identify eye movement systems, describe the types of the refractive error, discuss various methods of measuring visual acuity, understand how to record visual acuity, assess patients with orthopedic problems.

**Credits** 9

### **Prerequisites**

MED 471, PED 472, SUR 481, GYN 482

### **Corequisites**

[IMD 591](#), [INS 592](#), AMB 5X2





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