جامعة الفيصل
Alfaisal University

UNDERGRADUATE CATALOG

2017-2018

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Alfaisal University

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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

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 of time 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 Deanship, Admissions and Registration One of the four major divisions of the University, headed by the Dean of Student Affairs, Admission and 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.

Programs and Course Explanations

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 at http://www.alfaisal.edu/ 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. The registration system

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 Description

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

ME 421 Renewable Energy Systems
Cr Hr: 3cr Pre-requisites: ME 307
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.

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
ACC	Accounting
AMB	Ambulatory Care
ANT	Anthropology
ARB	Arabic
ARE	Architecture
BEP	Basics of Biostatistics & Epidemiology
BHS	Behavior Science
BIO	Biology
CHM	Chemistry
COM	Primary Health Care & Rural Health
CVC	Cardiovascular Block
ECO	Economics
EE	Electrical Engineering
END	Endocrine Block
ENG	English
FIN	Finance
FMT	Forensic Medicine & Toxicology
FRE	French
GEN	Genetics
GER	Germany
GIT	Gastrointestinal Block
GYN	Obstetrics & Gynecology
HEM	Hem/Onc Block
HEN	Health economics and Hospital management
HIS	History
HLS	Hematopoietic & Lymphatic System
HNS	Head & Neck And Special Senses Block
HRM	Human Resources
IE	Industrial Engineering
IMD	Sub-Specialty Medicine
INS	Integrated Neuroscience
INT	Introductory Block

ISL	Islamic Studies
LST	Life Science
MAT	Mathematics
ME	Mechanical Engineering
MED	Medicine
MGT	Management
MIF	Medical Informatics
MKT	Marketing
MOL	Molecular Medicine
MSK	Musculoskeletal Block
NEU	Neuroscience Block
NTN	Nutrition
PED	Pediatrics
PHL	Philosophy
PHU	Physics
PMT	Project Management
POD	Pathogenesis of Diseases
POL	Political Science
PRO	Communications Skills
PSY	Psychology
RAD	Radiology
REN	Renal Block
REP	Reproductive Block
RES	Respiratory Block
SCI	Immunology
SE	Software Engineering
SKN	Skin Block
SPN	Spanish
SSP	Surgical Sub-Specialty
STA	Statistics
STS	Science, Technology, and Society
SUR	Surgery
TRM	Trauma

About Alfaisal University

About Alfaisal

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 with regard to University policies involving faculty and students, academic programs and planning, and University concerns.

Undergraduate Majors in Alfaisal

College of Business

Bachelor of Business (Business Administration with following Concentrations:

Accounting

Finance

Marketing

Human Resources

Project Management

College of Engineering

Bachelor of Architectural Engineering

Bachelor of Electrical Engineering

Bachelor of Industrial Engineering

Bachelor of in Mechanical Engineering

Bachelor of Software Engineering

College of Medicine

A six year program leading to an MBBS degree (Medical Bachelor and Bachelor of Surgery)

College of Pharmacy

Bachelor of Pharmacy degree (Pharm.D.)

College of Science & General Studies

Bachelor of Science (B.Sc.) degree in Life Sciences

Academic Policies and Practices

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 at http://admissions.alfaisal.edu/en/

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
Website http://admissions.alfaisal.edu/index.html

Student Rights and Responsibilities

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 abidance with University's regulations to form/join/participate in any group of intellectual, organizational, religious, social, economic, political, or cultural purposes.

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 work places (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 or 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 massaging 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.
13. Segregation policy is applied on all the campus, male and female students are not permitted to gather in one place.

Admission Classifications

Admission General Information

Students who would like to join one of Alfaisal University academic programs can apply only through the University's online application
http://admissions.alfaisal.edu/en/apply

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

Direct Admission Criteria for Saudi Curriculum				
Certificate Type	**Entry Requirements Score**			
	Business	**Engineering**	**Science**	**Medicine**
High School	90/100	90/100	90/100	98/100
Qudurat	75/100	75/100	75/100	85/100
Tahseely	--	75/100	75/100	85/100
English Language Proficiency Test (One of)				
TOEFL IBT	61	61	61	79
OOPT	B2	B2	B2	C1
IELTS	6.0	6.0	6.0	6.5
Personal/(Technical) Interview	--			Structured Interview

*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.

Direct Admission Criteria for American Curriculum

Direct Admission Criteria for American Curriculum				
Certificate Type	**Entry Requirements Score**			
	Business	**Engineering**	**Science**	**Medicine**
High School	90/100	90/100	90/100	98/100
SAT I Test (Before 2016)	1400/2400	1400/2400	1400/2400	1600/2400
SAT I Test (After 2016)	1000/1600	1000/1600	1000/1600	1200/1600
****SAT II ((In Two Subjects Related to Selected Major)**	--			650/800
English Language Proficiency Test (One of)				
TOEFL IBT	61	61	61	79
OOPT	B2	B2	B2	C1
IELTS	6.0	6.0	6.0	6.5
Personal/(Technical) Interview	--			Pass

*Accepted SAT II Subjects Are: Biology, Chemistry, Physics, and Math II
*Home schooling is not accepted at Alfaisal University.
*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.

Direct Admission Criteria for British Curriculum

Note: If the applicant has taken the Qudurat & Tahseely, he/she can apply with them. Please review the Saudi Curriculum Criteria to see if you're applicable.

Direct Admission Criteria for British Curriculum				
Certificate Type	**Entry Requirements Score**			
	Business	**Engineering**	**Science**	**Medicine**
High School	**Applicant should obtain a 12th grade report card**			
Two Subjects in A2 Level Related to Selected Major	Not Required	Not Required	Not Required	A,A
Two Subjects in AS Level Related to Selected Major	Average of two subjects 80	Average of two subjects 80	Average of two subjects 80	A,A
Four Subjects in GCSE Level Related to Selected Major	Average of 4 subjects 80	Average of 4 subjects 80	Average of 4 subjects 80	A,A,B,B
English Language Proficiency Test (One of)				
TOEFL IBT	61	61	61	79
OOPT	B2	B2	B2	C1
IELTS	6.0	6.0	6.0	6.5
Personal/(Technical) Interview	--	--	--	Pass

*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.
*Home schooling is not accepted at Alfaisal University.

Direct Admission Criteria for International Baccalaureate Curriculum

Note: If the applicant has taken the Qudurat & Tahseely, he/she can apply with them. Please review the Saudi Curriculum Criteria to see if you're applicable.

Direct Admission Criteria for International Baccalaureate Curriculum				
Certificate Type	**Entry Requirements Score**			
	Business	**Engineering**	**Science**	**Medicine**
High School	**Applicant should obtain a 12th grade report card**			
IB High Level (HL) in Three Subjects Related to Selected Major	4-4-4	4-4-4	4-4-4	5-6-6
IB Diploma Total	26	26	26	30
English Language Proficiency Test (One of)				
TOEFL IBT	61	61	61	79
OOPT	B2	B2	B2	C1
IELTS	6.0	6.0	6.0	6.5
Personal/(Technical) Interview	--			Pass

*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.

Direct Admission Criteria for Other Curriculum

Direct Admission Criteria for other international system Curriculum				
Applicants from other international curriculums must take any of the above listed system entrance exams and submit documents that prove that they finished high school (12 years of study) in their home countries and have their high school documents' evaluation completed in the Saudi Ministry of Education. Applicants will be evaluated based on their high school performance and interviews by perspective colleges. They must also meet any of the English requirements as specified below.				
Other international systems	**Entry Requirements Score**			
	Business	**Engineering**	**Science**	**Medicine**
English Language Proficiency Test (One of)				
TOEFL IBT	61	61	61	79
OOPT	B2	B2	B2	C1
IELTS	6.0	6.0	6.0	6.5
Personal/(Technical) Interview	--			Pass

*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

UPP Admission Criteria for Saudi Curriculum					
Certificate Type	**Entry Requirements Score**				
	Business	**Engineering**	**Science**	**Medicine**	**pharmacy**
High School	85/100	85/100	85/100	90/100	85/100
Qudurat	70/100	70/100	70/100	80/100	75/100
Tahseely	--	70/100	70/100	80/100	75/100
English Language Proficiency Test (One of)					
TOEFL IBT	45	45	45	45	45
OOPT	B1	B1	B1	B1	B1
IELTS	5.0	5.0	5.0	5.0	5.0
Personal/(Technical) Interview	--			Pass	--

*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.

UPP Admission Criteria for American Curriculum

Note: If the applicant has taken the Qudurat & Tahseely, he/she can apply with them. Please review the Saudi Curriculum Criteria to see if you're applicable.

UPP Admission Criteria for American Curriculum					
Certificate Type	**Entry Requirements Score**				
	Business	**Engineering**	**Science**	**Medicine**	**pharmacy**
High School	85/100	85/100	85/100	90/100	85/100
SAT I Test (before 2016)	1200/2400	1200/2400	1200/2400	1400/2400	1300/2400
SAT I Test (After 2016)	800/1600	800/1600	800/1600	1000/1600	900/1600
****SAT II (In Two Subjects Related to Selected Major)**	--			550/800	500/800
English Language Proficiency Test (One of)					
TOEFL IBT	45	45	45	45	45
OOPT	B1	B1	B1	B1	B1
IELTS	5.0	5.0	5.0	5.0	5.0
Personal/(Technical) Interview	--			Pass	--

*Accepted SAT II Subjects Are: Biology, Chemistry, Physics, and Math II
*Home schooling is not accepted at Alfaisal University.
*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.

UPP Admission Criteria for British Curriculum

Note: If the applicant has taken the Qudurat & Tahseely, he/she can apply with them. Please review the Saudi Curriculum Criteria to see if you're applicable.

UPP Admission Criteria for British Curriculum					
Certificate Type	**Entry Requirements Score**				
	Business	**Engineering**	**Science**	**Medicine**	**pharmacy**
High School	**Applicant should obtain a 12th grade report card**				
Two Subjects in A2 Level Related to Selected Major	Not Required	Not Required	Not Required	B,B	Not Required
Two Subjects in AS Level Related to Selected Major	Average of two subjects 75	Average of two subjects 75	Average of two subjects 75	A,B	Average of two subjects 78
Four Subjects in GCSE Level Related to Selected Major	Average of 4 subjects 75	Average of 4 subjects 75	Average of 4 subjects 75	B,B,B,B	Average of 4 subjects 78
English Language Proficiency Test (One of)					
TOEFL IBT	45	45	45	45	45
OOPT	B1	B1	B1	B1	B1
IELTS	5.0	5.0	5.0	5.0	5.0
Personal/(Technical) Interview	--			Pass	--

*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.
*Home schooling is not accepted at Alfaisal University.

UPP Admission Criteria for International Baccalaureate Curriculum

Note: If the applicant has taken the Qudurat & Tahseely, he/she can apply with them. Please review the Saudi Curriculum Criteria to see if you're applicable.

UPP Admission Criteria for International Baccalaureate Curriculum					
Certificate Type	**Entry Requirements Score**				
	Business	**Engineering**	**Science**	**Medicine**	**pharmacy**
High School	**Applicant should obtain a 12th grade report card**				
IB High Level (HL) in Three Subjects Related to Selected Major	3,3,4	3,3,4	3,3,4	5,4,4	3,4,4
IB Diploma Total	24	24	24	26	24
English Language Proficiency Test (One of)					
TOEFL IBT	45	45	45	45	45
OOPT	B1	B1	B1	B1	B1
IELTS	5.0	5.0	5.0	5.0	5.0
Personal/(Technical) Interview	--			Pass	--

*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.

UPP Admission Criteria for Other Curriculum

UPP Admission Criteria for other international system Curriculum					
Applicants from other international curriculums must take any of the above listed system entrance exams and submit documents that prove that they finished high school (12 years of study) in their home countries and have their high school documents' evaluation completed in the Saudi Ministry of Education. Applicants will be evaluated based on their high school performance and interviews by perspective colleges. They must also meet any of the English requirements as specified below.					
Other international systems	**Entry Requirements Score**				
	Business	**Engineering**	**Science**	**Medicine**	**pharmacy**
English Language Proficiency Test (One of)					
TOEFL IBT	45	45	45	45	45
OOPT	B1	B1	B1	B1	B1
IELTS	5.0	5.0	5.0	5.0	5.0
Personal/(Technical) Interview	--			Pass	--

*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 in or out of the Kingdom.
- Meet the College admission criteria.
- Submit original transcript(s).
- Minimum 2.5 /4 or 3.5/5 GPA for all colleges, for College of Medicine 4.5/5 and for college of pharma D 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. The process of credit transfer will begin after acceptance to the college.
- Preparatory Year and Diploma courses will not be transferred to Alfaisal University courses.

Visiting/Non-Degree Students

There are countless reasons to come to Alfaisal University as a Visiting Student or Non-Degree Student. No matter what brings you here, you will be surrounded by the kind of opportunities, experiences, and people that can only be found in the heart of the state of art campus of Alfaisal University.

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 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.

For Students Visiting to Study at Alfaisal University

There are countless reasons to come to Alfaisal University as a Visiting Student or Non-Degree Student. No matter what brings you here, you will be surrounded by the kind of opportunities, experiences, and people that can only be found in the heart of the state of art campus of Alfaisal University.

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 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 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 Quadrat, 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 500 SR non-refundable application fee is required for all applicants. The application fee will be collected at the time of application.

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

- Verifying and issuing of official transcripts
- Certifying student enrolments
- Confirming the 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 university's students helping students through graduation process

Registration Policies

- Student is responsible for registering for the correct courses on time after receiving an approval from the academic advisor.
- 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.
- Student will not register or add individual courses retroactively.
- The University reserves the right to cancel or close a class, change instructor or time and classroom assignments and does not guarantee seats in any class.

Actual Registration

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. Registration via mail or other means is not allowed.

Late Registration

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

Changing Sections

- 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 determined by the Deanship of Student Affairs, Admissions and Registration.
- Student can change the section through NetClassroom.

Add Classes

- Student should register during registration period for each semester.
- For more information about the credit hours see **Policy and Procedure of Full-time Undergraduate Student Course Load**.

- A student may add a course as long as it's not full and does not conflict with a class or examination in his/her schedule and if he/she fulfilled its pre-requisite/s.
- Student should check the academic calendar for add period.
- Student can personally add classes online through NetClassroom.

Drop Classes

- 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

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 Vice Rector responsible for graduation requirements.

Repeating a Course

Any undergraduate student may retake a course for which he/she received a grade below a 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 colleges, for undergraduate student only). A 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 AU). Student to benefit from the retake policy his/her new grade must not be F or DN.

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 and when necessary.

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.

If a student wants to registers officially, the course may be scheduled as an audit. A student auditing a course may be required to participate fully in the class. Expectations should be clarified with the course instructor at the start of the semester.

Procedure

Student can register for a course through NetClassroom, and withdraw from a class through student support portal. If a student faces a problem, he/she can contact the registration office through student support portal.

- **Add Classes**
  - Student should register during registration period for each semester.
  - For more information about the credit hours see *Policy and Procedure of Full-time Undergraduate Student Course Load.*
  - A student may add a course as long as it’s not full and does not conflict with a class or examination in his/her schedule and if he/she fulfilled its pre-requisite/s.
  - Student should check the academic calendar for add period.
  - Student can personally add classes online through NetClassroom.

- **Drop Classes**
  - 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 but will not affect the GPA.
  - Withdrawn courses will be counted financially.
  - Student can withdraw from a class by submitting a request via the student support portal (College of Medicine students must get the approval from their college).

Impact of an Audit

1. Determining full time or part time enrolment status.
2. Calculating semester standing.
3. Determining financial assistance and scholarship standing (consult with the Office of Financial Assistance and Scholarship for further clarification). The University may make changes in policies, procedures, educational offerings, and requirements at any time. Please consult an Alfaisal University academic advisor for more detailed information.

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 before registering for a course.

Procedure

- 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 transfer 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 on the basis of 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.

Transfer Credit Evaluation

Official transfer credit evaluations are prepared only for students who:

- Have been admitted to a degree program and have paid the advance deposit fee.
- Are continuing students taking school work away while still enrolled at the University Continuing students are request to receive prior approval for school work to be taken elsewhere.

Procedure

- Transfer credit is administered by the Registrar.
- The Registrar Office works on a close and continual basis with one faculty member in each department, designated by the department head or dean of the College, who acts as liaison with the Registrar Office.

AU current student

- 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 and Directed Study (IDS)

Independent and Directed Studies allow 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.

Directed Study
Is designed to be a substitute for a traditional course that is not offered in the semester for which the student wishes to enroll. The material covered in such courses is essentially the same as that covered in the traditional course.

The purpose of the IDS 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.

The student and the supervising faculty member develop the content and format of the Directed Study course. The program of reading, assignments and method of evaluation will be dependent on the subject under study. Supervision is also on an individual basis, and while there may not be regularly scheduled class sessions, the student is expected to schedule and maintain regular meetings with the IDS faculty member.

Policy

- An IDS 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 IDS course reported. IDS 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., 3rd 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 in 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 9 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 as a result 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 in order 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.

Procedure

- If a student or faculty member wishes to request an extension on academic grounds, the instructor should submit a written request for approval to the Dean of the College for incomplete grade, explaining the circumstances in full and the student will receive an (I) as a grade in that course.
- The Instructor must submit a final grade for the course by the end of the fifth (5th) week of the following semester.

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.

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 immediate family. Immediate 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 Vice dean for Student Affairs, counselor or the dean of the student's college may provide an email for the student to take to the instructor stating that the dean has verified the student's absence as excused.
- 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) for the student.

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. Students records 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 Majors

Students are encouraged to declare a major field of study (major) by the end of the second year. All declaration of majors must be received in the Office of the University Registrar during the last four weeks of the semester to be effective for the next semester. For procedures on how to declare a major, contact the Office of the University Registrar.

Registration Time Guidelines

	Semester		
	Fall	**Spring**	**Summer**
Adding	The First 2 weeks of the semester	The First 2 weeks of the semester	The First 2 weeks Of the semester
Dropping	The First 4 weeks of the semester	The First 4 weeks of the semester	
Withdrawal	The First 5 weeks after the dropping	The First 5 weeks after the dropping	

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 (IP) 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 so 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

The student can appeal a negative decision of a faculty member; this policy is intended for students who believe that they have legitimate grounds for requesting a reassessment of their final grade on a course.

Procedure

- Present the appeal to the faculty member's College Dean who refers the appeal to a committee for hearing and decision.
- Based on committee decision, college dean will authorize a grade change, and must notify the involved individual of his action, i.e., the College Dean must notify the student, the faculty member and the registrar office of his decision.
- To appeal an attendance related grade reduction, the appeal process that is part of the Attendance Policy must be followed.
- Student who is not satisfied with his/her grade has one month after receiving the final grade to appeal for grade changing.
- The instructor must submit the Grade appeal form within a month of receiving the grade appeal form and should send the decision to the Office of Registrar.

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.

Withdrawal from the University

- Withdrawal during a Semester:

Apply the same process of withdraw from a course.

- Medical Withdrawal during a Semester:

A student who cannot complete a semester due to illness may petition for a withdrawal (W) for medical reasons. A medical withdrawal during a semester will be recorded as a "W" and medical documentation is required from certified hospital. Medical documentation will be submitted to the University Registrar for consideration and approval or denial. If the University denies the medical approval, the student may appeal to the Provost. The Provost's decision will be final. No academic work completed at another institution during that semester can be transferred to Alfaisal University. In some cases drop will be applied.

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 major form and have it signed by the dean of the college which the student wants to transfer to.

Grading System

Alfaisal University uses the 4.0 grade point average system. The following grades are approved for use in Alfaisal University and are included in the determination of the grade point average:

Grade Code	Grade Point	Percentile Range	Grade Points
A	4.0	95%-100%	Excellent
A-	3.67	90%-94%	
B+	3.33	86%-89%	Very Good
B	3.00	83%-85%	Good
B-	2.67	80%-82%	
C+	2.33	76%-79%	
C	2.00	73%-75%	Fair
C-	1.67	70%-72%	
D+	1.33	66%69%	
D	1.00	60%-65%	
F	0.00	0%59%	Fail

Other grades may be used in certain situations but are not included in the determination of the grade point average. These include **I/IC, W, AU, CR, R, CC/IP, and NC** which are explained in detail below.

I/IC-The student was doing satisfactory work but, for reasons beyond his control, he was unable to meet the full requirements of the course and as such is incomplete "I". Unless otherwise specified by the respective college, an "I" will be changed to the grade of "F" by the University Registrar. The course Instructor must submit the final grade no later than 7 weeks after the last day of final exams for the previous semester. If a student is assigned an "I", the Instructor must notify the student in writing of the requirements for removal of the "I" and of the deadline for removal of the "I" using an extension form. The student will be required to sign the extension form. A copy of the form must be submitted to the Office of the Registrar at the time the "I" is submitted.

W-The student was permitted to withdraw without penalty. Any student who withdraws on or before midterm will receive a W. Withdrawals without penalty will not be permitted after the 8th week of the semester. Students must complete the official withdrawal form provided by the Office of the Registrar.

AU-The student was given permission to audit this course. After the last day of late registration (last day of drop/add), students may not transfer from audit to

credit status. Students may change from credit to audit up to the official withdrawal date.

CR-The student was given credit for a course.

NC-Units for courses which are graded with a “P” (Pass) or “NP” (No Pass) will not be included in the student’s GPA calculation. Units for courses which are graded with a “P” will be counted toward the student’s degree requirements; those with grades “NP” will not.

R-Any undergraduate student may retake a course for which he/she received a grade below a 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 colleges, for undergraduate student only). A 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 AU). Student to benefit from the retake policy his/her new grade must not be F or DN.

CC/IP-A student who does not complete a course by the end of the semester and his/her project/work will require an extension to the next semester. The final grade will be reported to the student after he/she finishes all requirements of the course.

DN-Any undergraduate who fails in a course because of exceeding the permissible limit of absences or a disciplinary verdict. Conceder as F on GPA calculate. If he student repeat the course, the grade will not be change to the letter “R” on the transcript, it will be as a letter “DN” and the new grade will be added to the next semester GPA.

Example of Grade Point Average (GPA) Calculation
The following example illustrates the calculation of student GPA. Example:

Course	Credit Hours	Letter Grade	Grade Points	**Quality Points**
PHL 110	3	B+	3.33	10.00
PHY 105	4	A	4.00	16.00
MAT 110	4	B¬	2.67	10.67
MGT 105	2	C	2.0	4
Total			**--**	**40.67**

To calculate the semester GPA, for the student record shown above:

1. Multiply the Grade Points of the course by the credit hours for that course. The product of this multiplication will be the quality points.
2. Divide the sum of quality points of all courses by the total of credit hours for the semester.

Semester GPA = Total Graduate Points (40.67) = 3.13
Total Credit Hours (13)

The General grade Assigned to the Cumulative GPA at the Time of the Student's Graduation is based on the student's cumulative GPA and calculated as follows:

1. **Excellent**—if the cumulative GPA is no less than 3.50 out of 4.00.
2. **Very good**—if the cumulative GPA 2.75 or higher but less than 3.50 (out of 4.00).
3. **Good**—if the cumulative GPA is 1.75 or higher but less than 2.75 (out of 4.00).

4. **Pass**—if the cumulative GPA is 1.00 or higher but less than 1.75 (out of 4.00).

An annotation on the student's official transcript will indicate the achievement by semester.

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 chick 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 Provost 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 3.5 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. Forms are available in the Office of the Registrar and online. Unofficial transcripts may be obtained through NetClassroom.

Tuition, Fees & Scholarships

Tuition & Fees

Upon receiving an Acceptance letter the student must pay an amount of SAR 5,000 as part of his/her tuition fee before classes' starts to reserve his/her seat. If there is no payment made, the student's seat maybe allocated to another student or a late payment fee of SAR 1,000 will be charged after the 2nd week of classes.

The student could benefit from the flexible payment plan as explained next when he/she completes his/her enrolment requirements within the 2nd week of classes.

- 1st installment within the 4th week of classes 33.3%
- 2nd installment within the 8th week of classes 33.3 %
- 3rd installment within the 12th week of classes 33.3 %
- Installment dates/percentages may change and they are available at the Students Financial Affairs Office.
- Number of Installments and percentages may change.
- A late processing payment will be charged for any outstanding balance on each installment after the above weeks of classes. Each late payment

fee is SAR 1,000 per installment. Failure to pay within the due dates will cause any outstanding balance due immediately.

- Due dates are not extended nor are late payment fees waived for any reason
- Student is expected to meet all financial obligations to the University by the appropriate due dates. For student who fails to meet his/her financial obligations promptly, the University reserves the right to place a "HOLD" on the student's record that prevents registration for future semesters, sitting for exams and the release of transcripts, as well as access to other university services. It is each student's responsibility to be informed of all registration and fee payment dates and deadlines.

Payment

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

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

3. Settlement of fees should be made in Saudi Riyals.
4. Up-to-date schedules for registration and payment of fees are available through the Office of the Registrar.

Installments dates are communicated to students on their Alfaisal email, and their invoice is available via eLearning portal (Moodle)
Transfer of classes or exchange of courses may impact tuition level if the course credit hours are different.
Fees are subject to change.

Tuition and other fees is shown below:

Basic Fees (For undergraduate Students)	SAR
Application fee for direct entry (non-refundable) (UPP graduates are exempted)	500
Seat Reservation (Part of the Tuition fee) (non-refundable)	5000
Preparatory Program Tuition fee per semester (12-19 credit hours)	30,000
Preparatory Program Part-time students enrolled in 11 or fewer credit hours will pay per credit hour fees	2,500
Undergraduate Tuition fee per semester (12-19 credit hours)	47,000
Undergraduate Part-time students enrolled in 11 or fewer credit hours will pay per credit hour fees	3,917
Graduate Study Tuition fee per semester (9-12 credit hours)	50,000
Graduate Program Part-time students enrolled in less than 9 credit hours will pay per credit hour fee, knowing that the full program tuition fees no more and no less than	200,000
Other Fees	
Fee for late registration (Third week of classes)	500
Late tuition processing fee	1000
Unofficial transcript	Free
Student medical insurance (per academic year for expatriates)	Upon Request
Student visa (for expatriates) (Not applicable for 1st year)	Upon Request

Note: VAT is applicable

You can also submit a ticket via https://sahd.alfaisal.edu if you have any questions or concerns.

Scholarships

Alfaisal has many scholarship programs available to students that are Merit-based (excellence in academic performance) and Financial need-based. The

following outlines the scholarship opportunities available to new students applying to Alfaisal please note that scholarships are yearly based and being awarded by the beginning of each academic year.

At Alfaisal University, scholarships are an essential part of recruiting and supporting our finest students. The world's best universities recruit the world's finest students. We believe in supporting these students so they can focus and excel in their studies and research as this is vital to the success of both the students and the university.

Alfaisal has developed a comprehensive system of scholarships that will provide the opportunity for qualified students regardless of economic situation to attend the university, develop into excellent scholars and researchers, and significantly contribute to the well-being future of our kingdom and the region.

Scholarships Available at Alfaisal University:

1. Need-based Scholarships (King Faisal Foundation Scholarships "Prince Sultan Program").
2. Merit-based Scholarships (Alfaisal University Scholarships).
3. Dean's List.
4. Sibling Discount.

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.

Support Services and Student Counseling

Student Counseling

Student counseling aims to help students overcome any difficulties that may face them in their life in the University. It provides a space where students can feel comfortable and relaxed while talking with an empathic listener and where the student has the opportunity to explore as much of his or her concerns as he or she chooses to bring. For counseling assistance, we urge you to visit the office of Student Affairs Located at the ground floor of the Student center.

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.
- No mixed gender clubs of female and male.
- 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. http://www.alfaisal.edu/
- 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 activities 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.
    - Financial support for the activities.

University Preparatory Program | **UPP**

University Preparatory Program (UPP)

Program Director, Dr. Amjad Kayed Fataftah, Assistant Professor of Chemistry

Website http://cos.alfaisal.edu/upp/index

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

Welcome Message:
Welcome to Alfaisal University Preparatory Program (AUPP). This program is the beginning of a new path in your academic life, your bridge to the future, and your second 'home' for the next year. Our academic program is rigorous and challenging and your success in the program will require hard work and determination.

The AUPP is a center of excellence in teaching sciences and English. Our experienced instructors, as teachers and mentors, are here to facilitate your learning and the transition to the college of your choice. They will challenge you, and demand your best efforts, and you are advised to take advantage of their expertise and wisdom.

We believe that the AUPP will give you lessons for life and the skills that will advance your career. We are confident that your experience here will be memorable and rewarding. Please know that your suggestions and positive input are always appreciated and valued.

We invite you to visit our website for valuable information about the course offerings, faculty, academic resources, and for guidance on the policies and procedures of the AUPP.

UPP Faculty Members

Siddiq Abdullah, Instructor, University Preparatory Program, College of Science & General Studies, M.Sc., North Carolina Agricultural and Technical State University, USA

Salem Abaalhareth, Instructor, University Preparatory Program, College of Science & General Studies, M.Sc., California State University-East Bay, USA.

Mateen Ahmad Khan, Assistant Professor, University Preparatory Program, College of Science & General Studies, Ph.D., Aligarh Muslim University, India.

Zain Musa, Instructor, University Preparatory Program, College of Science & General Studies, B. Sc., University of Khartoum, Sudan.

Abdulrahman Soliman, Assistant Professor, University Preparatory Program, College of Science & General Studies, Ph.D., Virginia Commonwealth University, USA.

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Zakariya Latif, Instructor, University Preparatory Program, College of Science & General Studies, M.Ed., Framingham State University, USA.

Deborah Kay Olsen, Instructor, University Preparatory Program, College of Science & General Studies, M.A., William Carey International University, USA.

Shauna Noor Alkhatib, Instructor, University Preparatory Program, College of Science & General Studies, M.S., Hamilton College & American Intercontinental University, Los Angeles, USA.

Amber Lee Ragland, Instructor, University Preparatory Program, College of Science & General Studies, M.Ed., The University of Memphis, USA.

Elizabeth Marnell, Instructor, University Preparatory Program, College of Science & General Studies, M.A., Wright State University, USA.

Course Description

Mathematics and Science Courses

PAB101 Preparatory Algebra for Business I
Cr Hr: 3cr
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.

PAB112 Preparatory Algebra for Business II
Cr Hr: 3cr Prerequisite: PAB101
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).

PAM101 Preparatory Algebra for Medicine
Cr Hr: 3cr
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).

PPC101 Preparatory Pre-Calculus for Engineering and Science I
Cr Hr: 3cr
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).

PPC112 Preparatory Pre-Calculus for Engineering and Science II
Cr Hr: 3cr Prerequisite: PPC101
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.

PHSF101 Preparatory Human Structure and Function I
Cr Hr: 4cr
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.

PHSF112 Preparatory Human Structure and Function II
Cr Hr: 4cr Prerequisite: PHSF101
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.

PPHYM112 Preparatory Physics for Medicine
Cr Hr: 3cr Prerequisite: PAM101
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.

PPHYE101 Preparatory Physics for Engineering and Science I
Cr Hr: 3cr Co-requisite: Pre-Calculus
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.

PPHYE112 Preparatory Physics for Engineering and Science II
Cr Hr: 3cr Pre-requisites: PPC101 and PPHYE101
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, electrometric waves, and the electromagnetic spectrum.

PCHE101 Preparatory Chemistry I
Cr Hr: 3cr
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.

PCHE112 Preparatory Chemistry II
Cr Hr: 3cr Prerequisite: PCHE101

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 discusses 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.

PBIO112 Preparatory Biochemistry
Cr Hr: 3cr Prerequisite: PCHE101

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.

PBUS101 Introduction to Business
Cr Hr: 4cr

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.

PIE112 Introduction to Engineering Innovation
Cr Hr: 3cr

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.

College of Business | **CoB**

College of Business

Dean Dr. Bajis Mohammad Dodin, Ph.D., Interim Dean, College of Business

Website http://cob.alfaisal.edu/

College of Business
Alfaisal University,
P.O. Box 50927,
Takhasusi Road
Riyadh, 11533
Kingdom of Saudi Arabia
Tel: + 966 11 215 7700
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College of Business Vision
We aspire to become the leader in business research and education in the Kingdom of Saudi Arabia and the MENA region.

College of Business Mission
Our mission is to develop business leaders through quality education and research, and fostering partnerships with local and international communities.

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, 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 economic changes and promoting entrepreneurship and innovation

College of Business Values

- **Quality:** our commitment to excellence reflects our passion for high quality and for going beyond expectations.
- **Integrity:** personal integrity, holding ourselves to the high ethical standards, transparency, and taking responsibility for our actions.
- **Diversity:** we take pride in our College culture that promotes inclusiveness and through preparing young men and women alike regardless of their

background and economic status to be the next generation of business and community leaders.

- **Collegiality:** we are committed to a collegial system in which proposed policies and changes are institutionalized, principle-based, and consistent with our vision and strategic objectives.
- **Engagement:** Building strong relationships with our alumni, business and professional communities, and other stakeholders and taking leadership in issues that matter to them.

About CoB

College of Business at Alfaisal University is a young and fast growing institution. It started in the fall of 2008 with 24 freshman male and female students; and with its first cohort of male and female MBA students in the fall of 2010. It offers a vibrant undergraduate business administration degree that is grounded in liberal arts with five concentrations (Accounting, Finance, Human Resource Management, Marketing, and Operations and Project management). The college also offers an MBA program that is directed toward middle managers with three tracks: MBA- General, MBA-Finance, and MBA-Healthcare Management. The College, as part of its commitment to serving the community, also offers an active Executive Education program. 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.

At the College of Business, students learn the skills necessary to confront and manage the challenges of modern businesses. They are well trained to recognize change and growth and deal with them. In-class lectures and case analysis, executive lectures on the hands of 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 the 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

- 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.
- Help students to develop quantitative, technological, and leadership competencies.
- Encouraging student participation in service 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.
- Connect students to the business and public communities through an active Executive Lecture Series.

National and International Recognition

The College of Business (CoB) programs are approved and well recognized by the Ministry of Education (formerly MOE) in Saudi Arabia; and these programs are recognized internationally. In fact Alfaisal University (AU) is being recognized, in spite of its young age (as it opened its doors for instructions in 2008), as one of the best universities in the Kingdom of Saudi Arabia (KSA). Many of our students, including graduates of CoB, have been accepted in top international universities around the world and are currently pursuing their graduate degrees: Masters and PhD. Also, CoB is an active member of the Association to Advance Collegiate Schools of Business (AACSB) and the college is currently working toward achieving AACSB accreditation within the next few years. Only 6% of business schools worldwide hold AACSB accreditation. 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.

CoB Faculty Members

Abdel Monim Shaltoni, Assistant Professor, Department of Marketing, College of Business. Ph.D., University of Birmingham, UK.

Abdulaziz Alwathnani, Associate Professor, Department of Accounting, College of Business. Ph.D., Virginia Commonwealth University, USA.

Adnan Abo Al Haija, Associate Professor, Department of Finance, College of Business, Ph.D., University of Vienna, Austria.

Ahmed AlAnazi, Assistant Professor, Department of Finance, College of Business. Ph.D., Griffith University, Australia.

Anna Angelin, Associate Professor, Department of Management, College of Business, Ph.D., Lund University, Sweden.

Bajis Dodin, Professor and Dean, College of Business. Department of Operations and Project Management, Ph.D., North Carolina State University, USA.

Haitham Al Zoubi, Associate Professor, Department of Finance, College of Business. Ph.D., University of New Orleans, USA.

Hayat Khan, Assistant Professor, Department of Finance, College of Business. Ph.D., University of Melbourne, Australia.

Hayfaa Tlaiss, Associate Professor, Department of Management, College of Business. Ph.D., Manchester University, UK.

Jan Smolarski, Associate Professor, Department of Accounting, College of Business. Ph.D., University of North Texas, USA.

Mahmood Kazaal, Instructor of Business Communication, College of Business. MBA, Southeastern University, USA.

Mario Ferrer, Assistant Professor, Department of Operations and Project Management, College of Business. Ph.D., CQ University in Queensland, Australia.

Mohammed Kafaji, Assistant Professor, Department Operations and Project Management, College of Business. Ph.D., Sheffield University, UK.

Necati Aydin, Professor, College of Business, Ph.D., Gazi University and Florida State University, USA.

Nourah Alfayez, Assistant Professor, Department of Management, Ph.D., New Mexico State University, USA.

Rahma Lahyani, Assistant Professor, Department of Operations and Project Management, College of Business, Ph.D., École Centrale de Lille, France.

Rami Bustami, Associate Professor, Department of Management, Ph.D., Katholic University of Leuven, Belgium.

Robert Zacca, Assistant Professor, Department of Management, College of Business, Ph.D., Cracow University of Economics, Poland.

Saad Alhoqail, Assistant Professor, Department of Marketing, College of Business, Ph.D., University of Texas at Arlington, USA.

Thomas Aichner, Assistant Professor, Department of Marketing, College of Business. Ph.D., University of Padova, Italy and ESCP Europe Bus School in Berlin, Germany.

College of Business Degree Programs

CoB offers two dynamic programs: MBA program with three tracks, and a bachelor degree in business administration (BBA) with five concentrations. Following are details about the undergraduate business administration programs. For the MBA program and its track please see Alfaisal University Graduate catalogue.

The Bachelor of Business Administration (BBA) program

BBA program director: 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: The mission of the Bachelor of Business Administration is to develop the intellectual, professional and personal competencies of the students through principled business education and commitment to excellence.

The BBA program mission is translated to the following goals:

- Providing a student-centered environment that is committed to CoB core values of quality, integrity, diversity, collegiality and engagement.
- Offering modern curriculum and course delivery using innovative methods to enhance student learning experience.
- Engaging our students in extracurricular activities blended with work experience in local and international markets.
- Attracting well-qualified and research-oriented faculty from diverse backgrounds.
- Support learning activities that focus on applying business theory to real practices.

BBA program offers five concentrations for the students to choose from which are:

BBA with Concentration in Accounting
BBA with Concentration in Finance
BBA with Concentration in Human Resources Management
BBA with Concentration in Marketing
BBA with Concentration in Operations and Project Management

BBA Degree Requirements (126 hours)

To obtain a Bachelor of Business Administration degree with one concentration, the student must complete a total of **126 credit hours** that are distributed as follows:

A. **General Education Requirement (GER)** Courses adding to 44 credit hours; some of these are mandated by Ministry of Education and must be completed in the first two years of the program; normally before the student selects a concentration. It provides the student with good foundation in humanities, and in social and natural sciences.

B. **Business Common Core (BCC)** Courses adding to 43 credit hours. These provide the student with a strong foundation in quantitative and qualitative decision methods along with broad business education. These are normally completed before the end of the third year.

C. **Concentration Core Courses (CCC):** These consist of 27 credit hours including 9 for internship completed in the semester before last in the area of the concentration.

D. **Business Electives Courses (BEC)** consisting of 12 credit hours and completed within the third and fourth year. Students often complete these courses in their area of concentration.

Below are the details of the above credit hours requirements:

A. General Education Requirement Courses (GER) (44 hours)

Course Code	Course-Title	Credits	Pre-Requisite Course Code
1. Ministry of Education Required courses (14 hours)			
ARB 101	Arabic Language I	2	--
ARB 112	Arabic Language II	2	ARB 101
ISL 101	Islamic Studies I	2	--
ISL 112	Islamic Studies II	2	ISL 101
ENG 101	Freshman English I	3	--
ENG 112	Freshman English I	3	ENG 101

2. The Mathematics and Computing courses (12 credits)

MAT 100	Pre – Calculus	3	--
MAT 111	Business Calculus	3	MAT 100
OPM 211	Business Statistics	3	MAT 111,Arab 112, ISL 112, ENG 112
OPM 101	Introduction to Computing	3	--

3. The Natural Sciences courses (6 credits) selected from:

BIO 103	Introduction to Biology	3	--
CHM 107	Chemistry in the Living Environment	3	--
PHU 101	Astronomy	3	--
PHU 102	Science of Energy and Environment	3	--

4. The Social Sciences courses (6 credits) selected from:

POL 101	Introduction to Political Science	3	--
PSY 101	Introduction to Psychology	3	--
SOC 101	Introduction to Sociology	3	--
ANT 105	Introduction to Globalization Studies	3	--
HIS 101	Islamic Civilization and Medieval Europe	3	--
ANT 101	Introduction to Sociocultural Anthropology	3	--

5. The General Electives Courses (6 credits) selected from the social and/or natural science courses. These can be from any of the following courses:

- Any courses offered by the CoSGS but not taken as part of the GER (as listed above).
- Any non-business courses offered at the AU.

- Non-business courses offered by other accepted educational institutions (pre-approvals by the CoB and SA are required.

B. Business Core Courses (BCC) (43 hours)

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

B. Business Core Courses (43 hours) excluding the internship which is part of the concentration courses.

Course Code	Course-Title	Credits	Prerequisite Course Code
ECO 101	Microeconomics		
ECO 102	Macroeconomics		ECO 101
ACC 201	Introduction to Financial Accounting		ECO 102, MAT 111, ISL 112, and ENG 112
FIN 201	Principles of Finance		ACC 201
MKT 201	Principles of Marketing		ECO 102, , ISL 112, ENG 112, ARB112
ACC 202	Introduction to Management Accounting		ACC 201
OPM 230	Management Information Systems		OPM 101, ECO 102
OPM 330	Quantitative Methods for Business		OPM 211, ACC 202
OPM 340	Operations Management		OPM 330
MGT 201	Business Communications		ENG 112, ARB112, ISL 112
MGT 210	Business Ethics		ISL 112,ARB 112, ENG 112
MGT 300	Executive Lecture		ACC 202
MGT 301	Business Law		MGT 230
MGT 230	Organizational Behavior		MGT 210
MGT 490	Strategic Management (capstone)		ACC 302, FIN 350, MGT 380, MKT

		330, OPM 380
MGT 499	COOP Training Internship (the 12 credit hours will by June 2018 be replaced by 9 credit hours added to the CCC segment of the requirements as specified below and the balance of 3 credit hours will be added to the BEC).	ACC 302, FIN 350, MKT 330, OPM 380, MGT 380

C. Concentration Core Courses (CCC): 18 credit hours and 12 credit hours of Internship; however, after July 1st, 2018 these are reduced to and 9 credit hours.

Single concentration students, must complete all courses of the selected concentration which is 18 credit hours. For double concentration, see general notes below where the student must complete the 18 credit hours of the second concentration without double count for any of the courses. Details of concentration core courses are provided below in the section devoted for the individual department.

D. Business Electives Courses: Currently add to 9 hours, but after July 2018 will add to 12 hours. These are selected from the below set of courses or from the courses of the other concentrations.

Business Electives Courses (12 hours)

Course Code	Course-Title	Credits	Prerequisite Course Code
All CoB students must complete 12 credits from the following courses			
ACC 490	Financial Statement Analysis and Equity Valuation	3	ACC 302
ACC 495	Accounting Theory and Contemporary Issues in Accounting	3	ACC 302
ECO 310	International Economics	3	FIN 201
ECO 320	Islamic Economic and Finance	3	FIN 201
FIN 340	Contemporary Financial Issues	3	FIN 201
FIN 377	Fixed Income Securities	3	FIN 201
FIN 376	Entrepreneurial Finance	3	FIN 201
FIN 450	Financial Trading Strategies	3	FIN 201
MGT 373	Negotiation	3	MGT 230

MGT 374	Real Estate	3	FIN 201
MGT 375	Introduction to Entrepreneurship	3	FIN 201
MGT 376	Entrepreneurial Finance	3	FIN 201
MGT 420	Human Performance Improvement	3	MGT 230
MKT 320	International Marketing	3	MKT 201
OPM 315	E-Commerce	3	FIN 201, OPM 230

The Internship

The Internship Program is designed to provide College of Business students with practical, on-the-job experience which can contribute to their academic and career development. The internship program is mandatory for all undergraduate students. The duration of the internship program is four (4) months and students can earn twelve (12) credits towards their final degree requirements; **after June 2018 the number of credit hours devoted to the internship will be reduced to 9 and the 3 remaining credit hours are added to the business elective courses.** The internship is normally conducted in the seventh semester (one semester before graduation).

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

General Notes about College of Business Degree Requirements

- A minimum of 126 credit hours are required to graduate with one concentration.
- **Course Load per Semester:** Ministry of Education requires the student to enroll in at least 12 credit hours to be considered a full time student. It also states that the normal load for the full time student is 15-16 credit hours. However, a student with excellent cumulative GPA can be allowed to enroll **in18 credit hours per semester, which is the maximum allowed**. Furthermore, a student is not allowed to enroll in a course in another university while 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.

- Student 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 policies listed in 'CoB Academic Policies' are strictly applied to all study plans and in related management activities; e.g. concentration selection, course pre-requisite/s, double concentration, internship, etc.
- Similarly, students and faculty are required to implement CoB "Teaching Guidelines".
- All courses are 3 credits unless stated otherwise.
- GER courses must be completed during the first two years (Freshman & Sophomore) with limited spill over. The diagram below (Figure 1) presented as example for illustration purposes only.
- 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 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.
- **Double Concentration**: Double concentration was established to encourage students to excel in their studies. A business student who completed 60 credit hours with cumulative GPA of 3.2 or higher is awarded by selecting a second concentration. These students must complete the additional 18 credit hours of the second semester; hence adding the total hours to a minimum of 144 to graduate. The new 18 hours must not count toward any of the requirements of the first concentration. For more information, please see the double concentration policy.

Figure 1: Time line for completing the BBA degree

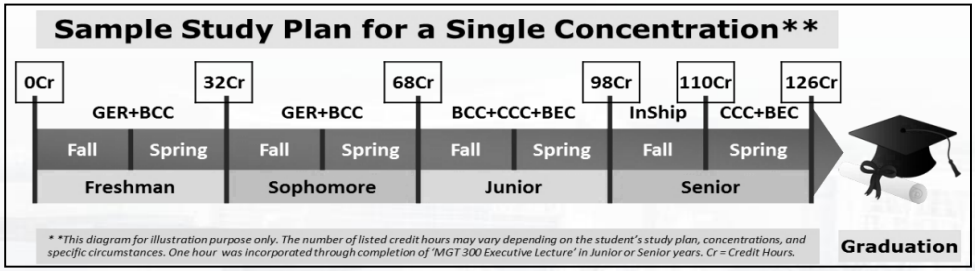

Figure 2: Schedule of courses for the freshman year

Fall			CHs	Type	Spring		CHs	Type
	ARB 101	Arabic Language I	2	GER	**ARB 112**	Arabic Language II	2	GER
	ISL 101	Islamic Studies I	2	GER	**ISL 112**	Islamic Studies II	2	GER
	ENG 101	Freshman English I	3	GER	**ENG 112**	Freshman English II	3	GER
	ECO 101	Microeconomics	3	Core	**ECO 102**	Macroeconomics	3	Core
	OPM 101	Introduction to Computing	3	Core	**MAT 11**	Business Calculus	3	GER
	MAT 100	Pre-Calculus	3	GER	**Social Science**		3	GER
			16 Credits				16 Credits	

College of Business Academic Departments

Department of Accounting
Dr. Abdulaziz M. Alwathainani, Chair
Degree Offered: Bachelor of Business Administration (BBA) with Concentration in Accounting
Web address: http://cob.alfaisal.edu/programs/accounting

General Department Information
Accounting is one of the most rewarding careers in business and the one that offers the most opportunities with the lowest risk. The American Institute of Certified Public Accountants (AICPA) describes accounting as “The One Degree with 360 Degrees of Possibilities.” Your accounting degree prepares you to become a successful certified public accountant (CPA), chief financial officer (CFO) or chief executive officer (CEO). It is also a great background if you are preparing to work in a family business.

It is interesting to note that more senior business leaders come from accounting backgrounds than any other business functions. Why? There are four main reasons that make accountants indispensable in the business world. First, accountants are known for their trustworthiness and high degrees of integrity. Second, accountants have the financial acumen necessary to diagnose the financial health of their companies and determine activities that maximize the outcome of their decisions. This is why they are known in the business circle as the business doctors. Third, the path from the CFO (the top accounting job) to the CEO position is increasingly seen as a natural transition. In recent years, the CFO position has become a training ground and stepping stone for the top job. Finally, they know companies' financial drivers; they know what creates values and what does not.

Concentration Core Courses (18 hours)

Accounting concentration must complete all the courses below. For double concentration, see general notes above.

Course Code	Course-Title	Credits	Prerequisite Course Code
ACC 301	Intermediate Financial Accounting I	3	ACC 201
ACC 302	Intermediate Financial Accounting II	3	ACC 301
ACC 320	Cost Accounting	3	ACC 202
ACC 330	Zakat and Income Taxes	3	ACC 202
ACC 410	Advanced Financial Accounting	3	ACC 302
ACC 420	Auditing and Assurance Services	3	ACC 302

Accounting Courses Description

ACC 201 Introduction to Financial Accounting
Cr Hr: 3cr Prerequisite: ECO 102, MAT 111, ARB 112, ISL 112, and ENG 112
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

ACC 202 Introduction to Management Accounting
Cr Hr: 3cr Prerequisite: ACC 201
The course introduces students to the role of accounting information in business and investment decisions. It cover 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 fixes costs, standard costing and budgeting; it also introduces the Balance Scorecard as a performance measure.

ACC 301 Intermediate Financial Accounting I
Cr Hr: 3cr Prerequisite: ACC 201
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.

ACC 302 Intermediate Financial Accounting II
Cr Hr: 3cr Prerequisite: ACC 301
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, postretirement benefits, leases, accounting changes and error correction, and statement of cash flows.

ACC 320 Cost Accounting
Cr Hr: 3cr Prerequisite: ACC 202
It provides students with a practical set of tools related to the use of accounting information in making business and investment decisions. It focuses 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.

ACC 330 Zakat and Income Taxes
Cr Hr: 3cr Prerequisite: ACC 202
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.

ACC 410 Advanced Financial Accounting
Cr Hr: 3cr Prerequisite: ACC 302
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.

ACC 420 Auditing and Assurance Services
Cr Hr: 3cr Prerequisite: ACC 302
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.

ACC 490 Financial Statement Analysis and Equity Valuation
Cr Hr: 3cr Prerequisite: ACC 302
In this course, student will learn how to use financial statement analysis to evaluate a firm's past performance, make judgment about its earnings quality, determine its current financial position, forecast its future prospect and estimate its fundamental value. The core emphasis of this course is on using financial statement analysis for equity valuation.

ACC 495 Accounting Theory and contemporary Issues
Cr Hr: 3cr Prerequisite: ACC 302
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 process are examined within the context of contemporary theoretical perspectives and socio-political behaviors of

market participants.

Department of Finance

Dr. Ahmed Sair Alanazi, Chair
Degree Offered: Bachelor of Business Administration (BBA) with Concentration in Finance
Web address: http://cob.alfaisal.edu/programs/finance

General Department Information
The future is bright for finance graduates in Saudi Arabia.

The Kingdom of Saudi Arabia has developed many ambitious plans toward achieving its 2030 Vision. Saudi Arabia is transforming the whole nation's economy from oil dependent economy into more diversified economy. In line with this, the College of Business offers a concentration in Finance, which aims to provide students with a theoretical and practical understanding of finance. In finance, students will have the opportunity to explore major finance dimensions of corporate finance, investment and banking management.

Concentration Core Courses (18 hours)

Finance concentration students must complete all the courses below:

Concentration Core Courses (18 hours)			
Course Code	**Course-Title**	**Credits**	**Prerequisite Course Code**
FIN 308	Managerial Finance	3	FIN 201
FIN 310	Financial Modelling	3	ACC 202, FIN 201
FIN 320	Corporate Finance	3	FIN 201
FIN 350	Financial Markets & Institutions	3	FIN 201
FIN 410	Investments	3	FIN 201
FIN 420	International Finance	3	FIN 308

Finance Courses Description

FIN 201 Principles of Finance

Cr Hr: 3cr Prerequisite: ACC 201

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.

FIN 308 Managerial Finance

Cr Hr: 3cr Prerequisite: FIN 201

This is a third year course for all students concentrating in Finance. The unit is concerned with the duties of the financial manager in the business firm. These duties involve the financial tasks of capital budgeting, evaluating business proposals, understanding risk and return, capital structure and raising capital.

FIN 310 Financial Modelling

Cr Hr: 3cr Prerequisite: ACC 202 and FIN 201

This is a third year core unit for the Finance concentration 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 modelling, basics skills in recording, writing and using Macros in Excel is also covered.

FIN 320 Corporate Finance

Cr Hr: 3cr Prerequisite: FIN 201

Corporate finance involves the financial management and value of business entities. In this unit, we investigate how managers make investment, financing, and dividend decisions. Investment decisions are based on discounted cash flow techniques and their extensions.

FIN 340 Contemporary Financial Issues

Cr Hr: 3cr Prerequisite: FIN 201

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.

FIN 374 Real Estate
Cr Hr: 3cr Prerequisite: FIN201
The course will provide an introduction to real estate with 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.

FIN 350 Financial Markets and Institutions
Cr Hr: 3cr Prerequisite: FIN 201
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.

FIN 376 Entrepreneurial Finance
Cr Hr: 3cr Prerequisite: FIN 201
This course is intended to empower students to be successful in developing and financing the ideas they bring to 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.

FIN 380 Corporate Governance
Cr Hr: 3cr Prerequisite: FIN 201, ACC 202, and MGT 210
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 Internet and social media, the reputational stakes are very high.

FIN 377 Fixed Income Securities
Cr Hr: 3cr Prerequisite: FIN 201
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.

FIN410 Investments
Cr Hr: 3cr Prerequisite: FIN 201
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.

FIN 420 International Finance
Cr Hr: 3cr Prerequisite: FIN 308
This course examines international financial markets, and the opportunities they present for achieving risk management and asset allocation objectives. The principle 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.

FIN 450 Financial Trading Strategies
Cr Hr: 3cr Prerequisite: FIN 201
This course aims to introduce students to the global markets including international stock markets and indices, commodities and currencies in the spot market. Student will learn the difference between fundamental and technical analysis and be able to make a trading decisions. Moreover, the course provides the students with the basic chart reading and analysis.

FIN 467 Banking Management
Cr Hr: 3cr Prerequisite: FIN 201
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.

ECO 101 Microeconomics
Cr Hr: 3cr
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 interaction between individuals, business firms and government. It analyses the impact of perfect and imperfect competition on welfare of key players in a society.

ECO 102 Macroeconomics

Cr Hr: 3cr Prerequisite: ECO101

This course introduces students to macroeconomics concepts and tools of analysis used to understand how an economy as a whole functions. 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.

ECO 310 International Economics

Prerequisite: FIN 201

This course will introduce both the micro-economic and macro-economic issues relevant to the economic relations among countries. The first half of the course explores the theoretical microeconomic foundations of international trade covering 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.

ECO 320 Islamic Economics & Finance

Cr Hr: 3cr Prerequisite: FIN 201

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 historical development of Islamic economic thought. In the second part, the course will provide relationship between Islamic economics and finance by covering the foundations of Islamic finance and its historical development.

Department of Management

Dr. Hayfaa Tlaiss, Chair

Degree Offered: Bachelor of Business Administration (BBA) with Concentration in Human Resources Management.

General Department Information

One of the major challenges facing the Kingdom of Saudi Arabia is the shortage of Saudi Human Resources (HR) managers, experts, and professionals. In addition, organizations, around the world, are increasingly realizing the importance of having quality work-force as their most critical source of competitive advantage. Therefore, now more than ever, is the time for you to major in Human Resources Management (HRM).

HRM is the study of how to acquire, train, appraise, and compensate human capital as well as attend to their labor relations, health and safety needs, and fairness concerns. The HRM concentration aims at providing students with the body of knowledge needed to support the development and practice of talent management in organizations of different sizes, in various sectors and industries in KSA, while considering international best practices. Through a combination of lectures, projects, business-cases, and presentations, students will learn the concepts and techniques needed to attend to the growing market needs for HRM experts and professionals. To add international acceptance and enhance graduates' career progression, the university is seeking international accreditation of the program.

Concentration Core Courses (18 hours)
Human Resource Management concentration must complete all the courses below. For double concentration, see general notes above.

Concentration Core Courses (18 hours)

Course Code	Course-Title	Credits	Prerequisite Course Code
MGT 350	Human Resource Management	3	MGT 230, OPM 211
MGT 360	Employee Learning & Development	3	MGT 230
MGT 370	HR Planning, Recruitment & Selection	3	MGT 350
MGT 380	Employee Relations & Engagement	3	MGT 350
MGT 390	Total Reward Management	3	MGT 350
MGT 440	Comparative HRM	3	MGT 360, MGT 390

Management Courses description

MGT 201 Business Communication
Prerequisite: ENG 112, ARB112, ISL 112
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.

MGT 210 Business Ethics

Cr Hr: 3cr Prerequisite: ISL112, ARB 112, ISL 112

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.

MGT 230 Organizational Behavior

Cr Hr: 3cr Prerequisite: MGT 210

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.

MGT 300 Executive Lecture

Cr Hr: 1cr Prerequisite: ACC 202

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.

MGT 301 Business Law

Cr Hr: 3cr Prerequisite: MGT 230

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.

MGT 373 Negotiation

Cr Hr: 3cr Prerequisite: MGT 230

This course introduces the students, using role-playing simulations, to wide range of negotiation concepts such as conflict management as a first party and as a third party, mediation, investigation, arbitration, and dispute resolution.

MGT 375 Introduction to Entrepreneurship

Cr Hr: 3cr Prerequisite: FIN 201

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 addressing the strategic considerations for creating companies. The students will be exposed to various themes including entrepreneurial perspectives, launching entrepreneurial ventures, and formulation of entrepreneurial plan.

MGT 490 Strategic Management

Cr Hr: 3cr Prerequisite: ACC 302, FIN 350, MKT 330, OPM 380, and MGT 380

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.

MGT 499 COOP Training Internship

Cr Hr: (Currently 12 credits and after July 1, 2018 it will be 9 credits)
Prerequisite: ACC 302, FIN 350, MKT 330, OPM 380, MGT 380

This course focuses on learning-by-doing through providing our students with the opportunity to gain on-the-job experiences with more than 100 local and international organizations across the various sectors and industries in KSA. The duration of the internship program is four (4) months and contributes twelve (12) credits towards total credit hours.

Human Resources Management Courses Description

MGT 350 Human Resources Management

Cr Hr: 3cr Prerequisite: MGT 230, and OPM 211

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.

MGT 360 Employee learning and development
Cr Hr: 3cr Prerequisite: MGT 230
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.

MGT 370 Human Resource Planning, Recruitment and Selection
Cr Hr: 3cr Prerequisite: MGT 350
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.

MGT 380 Employee Relations & Engagement
Cr Hr: 3cr Prerequisite: MGT 350
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 labour law, employee engagement and participation, conflict management, grievance handling, and disciplinary procedures.

MGT 390 Total Reward Management
Cr Hr: 3cr Prerequisite: MGT 350
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.

MGT 420 Human Performance Improvement
Cr Hr: 3cr Prerequisite: MGT 350
This is a senior course focuses on managing people's performance in the workplace, to contribute 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.

MGT 440 Comparative HRM
Cr Hr: 3cr Prerequisite: MGT 360 and MGT 390
This course explores the cultural relevance of HRM. The implementation of HRM theories across cultures are explored in-depth, along with various relevant topics including people management across cultures, cultural diversity, and other selected International HRM topics.

Department of Marketing

Dr. Saad Alhoqail, Chair
Degree Offered: Bachelor of Business Administration (BBA) with Concentration in Marketing
Web address http://cob.alfaisal.edu/programs/marketing

General Department Information

The marketing concentration provides students with an analytical and comprehensive understanding of marketing. Students will be able to generate, analyze, interpret, and present marketing information that firms and other organizations need to satisfy and keep customers through the development of innovative products and services, which build brand equity and provide excellent return on investment. Graduating students will be able to use a wide range of practical and up-to-date marketing tools and techniques. They will be able to utilize information, and knowledge to support innovation in a wide range of organizations including business, non-profit organizations, and government entities.

Concentration Core Courses (18 hours)

Marketing concentration must complete all the courses below. For double concentration, see general notes above.

Course Code	Course-Title	Credits	Prerequisite Course Code
MKT 301	E-Marketing	3	MKT 201
MKT 310	Consumer Behaviour	3	MKT 201
MKT 315	Services marketing	3	MKT 201

MKT 330	Marketing Research	3	MKT 201,OPM 211
MKT 410	Integrated Marketing Communications	3	MKT 310
MKT 420	Marketing Strategy	3	MKT 330

Marketing Courses Description

MKT 201 Principles of marketing
Cr Hr: 3cr Prerequisite: ECO 102, MAT 111, ARB 112, ISL 112, and ENG 112
It 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.

MKT 301 E-Marketing
Cr Hr: 3cr Prerequisite: MKT 201
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 addresses marketing mix over the Internet, online consumer behavior, online market research, mobile marketing, E-CRM, Legal/ethical issues, and social media revolution.

MKT 310 Consumer Behavior
Cr Hr: 3cr Prerequisite: MKT 201
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.

MKT 315 Services marketing
Cr Hr: 3cr Prerequisite: MKT 201
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 customer service oriented mindset. A range of assessment tools are used to facilitate learning in this course.

MKT 320 International marketing
Cr Hr: 3cr Prerequisite: MKT 201
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.

MKT 330 Marketing Research
Cr Hr: 3cr Prerequisite: MKT 201, OPM 211
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.

MKT 410 Integrated Marketing Communications
Cr Hr: 3cr Prerequisite: MKT 310
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 are used to facilitate learning.

MKT 420 Marketing Strategy
Cr Hr: 3cr Prerequisite: MKT 330
The course covers the design and implementation of marketing strategies through linking marketing concepts and theories to real life cases. It aims at understanding of the entire marketing mix in light of the strategy of the firm. Main emphasis is placed on problem and opportunity recognition, decision making, segmentation, targeting, positioning, branding, competitive dynamics and administering marketing programs.

Department of Operations & Project Management (POM)
Dr. Mario Ferrer, Chair.
Bachelor of Business Administration (BBA) with Concentration in Operations and Project Management
Web address http://cob.alfaisal.edu/programs/OPM

General Department Information
With increasingly competitive businesses environments, corporations are relying on operations and project managers to achieve strategic goals through effective management of innovative solutions. To achieve this target, many organizations adopting business-based project management approach and methodologies to manage and deliver these solutions through projects. This triggered high demand for experienced operations and project managers with knowledge in project management frameworks, lifecycles, processes, tools, and techniques.

A business degree with operations and project management concentration will develop the competence of our graduates and equip them with required skills to plan, control, execute, and manage all project management attributes for successful delivery of the scope, in a timely manner and within budget. With such skills, our graduates are qualified to work in virtually all industries both in public and private sectors.

Concentration Core Courses (18 hours)

Operations and Project Management concentration must complete all the courses below. For double concentration, see general notes above.

Concentration Core Courses (18 hours)

Course Code	Course-Title	Credits	Prerequisite Course Code
OPM 310	Introduction to Project Management and Tools	3	OPM 211
OPM 360	Principles of Supply Chain Management and Logistics	3	OPM 330
OPM 370	Quality Management	3	OPM 330
OPM 380	Advanced Project Management	3	OPM 310
OPM 450	Management of Innovation	3	OPM 330
OPM 480	Business Analytics and Risk Assessment	3	OPM 380

Operations and Project Management Courses Description

OPM 101 Introduction to Computing
Cr Hr: 3cr
This course introduces the concepts of computer applications and their roles in managing business operations. It introduces students to the understanding on computer hardware, software, essential computer and Internet based systems, and the latest MS Office applications. Substantial portion of the course will be dedicated to hands-on and Internet based exercises.

OPM 211 Business Statistics
Cr Hr: 3cr Prerequisite: Prerequisite: MAT 111, ARB 112, ISL 112, ENG 112
Provides an introduction and overview of descriptive and inferential statistical methods. Topics include measures of central tendency and dispersion, probability, estimation, hypothesis testing, OLS regression, ANOVA, and others. Emphasis is placed on understanding word problems, the appropriate use of analyses, and the interpretation of statistical output.

OPM 230 Management Information Systems
Cr Hr: 3cr Prerequisite: OPM 101, ECO 102, ARB 112, ISL 112, ENG 112
The course covers the use of information and communication technologies in managing operational challenges through integration of management information systems in the day-to-day operations. It discusses the role of management information systems in organizations, networked enterprise, technology infrastructures, security, and key systems applications for the digital age.

OPM 310 Introduction to Project Management and Tools
Cr Hr: 3cr Prerequisite: OPM 211
The course introduces the concepts and methodology of the project management and their usage by the project manager to successfully complete the projects. A key aspect of the course is to manages the projects within the business context with due consideration to balancing the scope, cost, and time constraints. The course explores and apply various tools and techniques such as Microsoft Project 2013 to effectively manage the projects.

OPM 315 e-Commerce (BE)
Cr Hr: 3cr Prerequisite: FIN 201 and OPM 230
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 incorporates 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 online storefronts, Payment Systems, Security, and Privacy.

OPM 330 Quantitative Methods for Business
Cr Hr: 3cr Prerequisite: OPM 211 and ACC 202
This course covers deterministic and stochastic models for quantitative decision making. The selected topics include linear programming (LP), networks, integer programming, decision trees, sensitivity analysis and simulation. It also covers some of the management science applications like advertising, production scheduling, and financial planning and make-or-buy decision.

OPM 340 Operations Management
Cr Hr: 3cr Prerequisite: OPM 330
The course studies the fundamental process for 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, and quality management.

OPM 360 Principles of SC Management & Logistics
Cr Hr: 3cr Prerequisite: OPM 330
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, management, communication, warehousing, packaging, materials handling, demand management, distribution, and facility location are examined as an integral part of modern business. Field trips are encouraged.

OPM 370 Quality Management
Cr Hr: 3cr Prerequisite: OPM 330
The course introduce analytical concepts and tools to accomplish business performance excellence. It exposes the students to quality knowledge improvement methods and addresses the key issues of quality standards and

quality needs. It also covers customer satisfaction and focus, tools for quality management, benchmarking, statistical process control, and recent developments in quality improvement.

OPM 380 Advanced Project Management
Cr Hr: 3cr Prerequisite: OPM 310
The course focuses on understanding and managing the business changes through adoption and implementation of effective project management approach to successfully achieve targeted project objectives. The course maintain alignment between the business strategic objectives and management of project scope, time, cost, quality, stakeholders, communications, human resources, and procurements.

OPM 450 Management of Innovation
Cr Hr: 3cr Prerequisite: OPM 330
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 learning experience.

OPM 480 Risk Management and Business Analytics
Cr Hr: 3cr Prerequisite: OPM 380
This course introduces essential analytical techniques to manage project risk management. The associated concepts and theories are discussed together with the relevant management models. The full life cycle of risk management is presented covering planning, identification, analysis (qualitative and quantitative), response strategies, monitor and control, and governance. Business cases and scenarios are used.

College of Engineering | **CoE**

College of Engineering

Dean Dr. Muhammad Anan, Acting Dean, College of Engineering

Website http://coe.alfaisal.edu/

College of Engineering
Alfaisal University, P.O. Box 50927, Takhasusi Road
Riyadh-Kingdom of Saudi Arabia
Tel: + 966 11 2157762
Email: coe@alfaisal.edu

The College of Engineering at Alfaisal University has come a long way since its existence in 2008. Today, the college is a vibrant entity where enrolment is growing, external research funding is increasing, infrastructure (labs and equipment) is improving, and the programs are receiving national and international attention. And that tremendous growth is expected to continue.

The College of Engineering has been offering a wide range of degrees and programs through a blend of rigorous and project-based curricula to educate a diverse group of students. Currently, the college offers bachelor's degrees in Architectural, Electrical, Industrial, Mechanical and Software Engineering. These programs were originally conceived by a joint MIT-Cambridge advisory committee to ensure that they meet the highest international accreditation standards such as ABET. In addition, a master's degree in Engineering & Systems Management 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).

Our graduates are innovators and professionals who serve and fuel the economic and technological development of the Kingdom of Saudi Arabia and regions beyond. We maintain dynamic relations with several reputable universities abroad where students can study or do research. The student to faculty ratio is small compared to other programs in the region. Our student-centered pedagogy ensures that students can freely access any faculty member.

As one of the fastest rising engineering programs in the nation, the College of Engineering looks to the future with a tremendous sense of optimism and anticipation to advance even further.

College of Engineering Degree Programs

Bachelor of Architectural Engineering

Bachelor of Electrical Engineering

Bachelor of Industrial Engineering

Bachelor of Mechanical Engineering

Bachelor of Software Engineering

CoE Faculty Members

Ramazan Demirboga, Professor, Department of Architectural Engineering, College of Engineering, Ph.D., Ataturk University.

Tarek Mokhtar, Assistant Professor, Department of Architectural Engineering, College of Engineering, Ph.D., Clemson University.

Fawaz Bin Sarra, Assistant Professor, Department of Architectural Engineering, College of Engineering, Ph.D., University of Liverpool.

Saad Alghamdi, Assistant Professor, Department of Architectural Engineering, College of Engineering, Ph.D., Illinois Institute of Technology.

Aliaa Elabd, Assistant Professor, Department of Architectural Engineering, College of Engineering, Ph.D., North Carolina State University.

Francisco Cobo, Lecturer, Department of Architectural Engineering, College of Engineering, M.Sc., Technical School of Architectural.

Alaa Tarabzouni, Instructor, Department of Architectural Engineering, College of Engineering, M.Sc., Pratt Institute.

Sawsan Mohamed, Instructor, Department of Architectural Engineering, College of Engineering, M.Sc., University of Nottingham.

Abdulrahman Alymani, Instructor, Department of Architectural Engineering, College of Engineering, M.Sc., Southern California Institute of Architecture.

Abd-Elhamid Taha, Assistant Professor, Department of Electrical Engineering, College of Engineering**,** Ph.D., Queen's University.

Sghaier Guizani, Associate Professor, Department of Electrical Engineering, College of Engineering**,** Ph.D., Binghamton University.

Ahmed Oteafy, Assistant Professor, Department of Electrical Engineering, College of Engineering, Ph.D., Boise State University.

Anjana Prasad, Instructor, Department of Electrical Engineering, College of Engineering**,** M.Sc., Anna University.

Mai Ali, Instructor, Department of Electrical Engineering, College of Engineering M.Sc., American University of Sharjah.

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Abdalla Alrashdan, Assistant Professor, Department of Industrial Engineering, College of Engineering, Ph.D., Wichita State University.

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Muhammad Sajjad, Instructor, Department of Industrial Engineering, College of Engineering, M.Sc., National University of Sciences & Technology.

Asfa Javeed, Instructor, Department of Industrial Engineering, College of Engineering, M.Sc., University of the Punjab.

Hassan Ahmed, Assistant Professor, Department of Mechanical Engineering, College of Engineering, Ph.D., Calgary University.

Abdel Naser Daoud, Lecturer, Department of Mechanical Engineering, College of Engineering, Ph.D., Teesside University.

Faisal Lodi, Lecturer, Department of Mechanical Engineering, College of Engineering, M.Sc., University of Melbourne.

Aliaa Maar, Instructor, Department of Mechanical Engineering, College of Engineering, M.Sc., Kent State University.

Khalid Ahmed, Principal Instructor, Department of Mechanical Engineering, College of Engineering, M.Sc., Middle East Technical University.

Athiq Ahamed, Lab Technician, Department of Mechanical Engineering, College of Engineering, B.S., Madurai Kamaraj University.

Muhammad Anan, Associate Professor, Department of Software Engineering, College of Engineering, Ph.D., University of Missouri-Kansas City.

Nidal Nasser, Professor, Department of Software Engineering, College of Engineering, Ph.D., Queen's University.

Samer Mansour, Assistant Professor, Department of Software Engineering, College of Engineering, Ph.D., Dalhousie University.

Mohamed El-Attar, Associate Professor, Department of Software Engineering, College of Engineering, Ph.D., University of Alberta.

Safia Yasmeen, Lecturer, Department of Software Engineering, College of Engineering, M.Sc., Osmania University.

Azeem Ahmed, Instructor, Department of Software Engineering, College of Engineering, M.Sc., Blikenge Institute of Technology.

Jomalyn Pancho, Principal Instructor, Department of Software Engineering, College of Engineering, M.Sc., Western Minddanao State University.

Department of Architectural Engineering

Degree Offered: Bachelor of Architectural Engineering

College of Engineering
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Dr. Fawaz Bin Sarra, Chairman & Assistant Professor of Architectural Engineering

General Department Information
Architectural Engineering combines architecture and engineering to focus more on the links between design and construction. Professionals in this discipline work with both architects and other engineers to ensure the timely, effective design and construction of buildings and other structures and systems. With the enormous amount of construction taking place in Riyadh, it is obvious that Architectural Engineering is potentially a rich field here in the Kingdom. If you are interested in building things, thinking about how things work, drawing, model making, working with your hands, and working with others, Architectural Engineering may be the job for you.

The Architectural Engineering program at Alfaisal University prepares its graduates for a wide range of career paths in the construction industry, including design co-ordination and management, and project management. Architectural Engineering often encompasses elements of other engineering disciplines as architectural engineers actively work in the design and construction of buildings while managing and constructing mechanical, electrical, fire protection and structural systems.

There is much more engineering in modern buildings than architecture purists might care to admit! Architectural Engineering can be seen as a way to try to upgrade the traditional and historic role of architects in building design and construction. Prepared to apply the increasingly new and challenging technology of building construction, the new Architectural Engineer fulfills an important role in the field of architectural production and construction.

Study of Architectural Engineering at Alfaisal University will prepare you for employment in a number of different engineering and architectural fields. Not only will you learn draftsmanship and the use of Computer Aided Drafting and

Design (CADD), but you will also study structural, mechanical and electrical design to gain knowledge of cooling/heating ventilation, air conditioning, plumbing, fire safety systems, elevators and power supply systems. To fulfill the engineering aspects of the course, you should prepare for an intensive study of mathematics, physics and other sciences as well as the standard engineering and architecture courses. Once you have completed your degree studies, many career opportunities will be open to you in the construction industry, in architectural design firms, in manufacturing and in project management. Many architectural engineers move rapidly from design positions to administration and management. Who knows, you may find that you are soon starting your own firm with a long list of prestigious clients here in the Kingdom of Saudi Arabia and abroad.

Bachelor of Architectural Engineering Study Plan

Year 1 Fall			**Year 1 Spring**		
Code	**Course Name**	**Credit**	**Code**	**Course Name**	**Credit**
ENG 101	Freshman English I	3 (3-0-0)	ENG 112	Freshman English II	3 (3-0-0)
MAT 101	Calculus I	3 (3-0-2)	MAT 112	Calculus II	3 (3-0-2)
PHU 103	Mechanics and Waves for Engineers	3 (3-0-1)	PHU 124	Electromagnetism and Optics for Engineers	3 (3-0-1)
PHU 103 L	Mechanics and Waves for Engineers Lab	1 (0-2-0)	PHU 124 L	Electromagnetism and Optics for Engineers Lab	1 (0-2-0)

SE 100	Programming for Engineers	3 (3-0-0)	ARE 110	Architectural History and Theories	3 (3-0-0)
SE 100 L	Programming for Engineers Lab	1 (0-2-0)	ARE 120	Drafting and Drawing	1 (1-0-0)
CHM 102	Introduction to Chemistry	3 (3-0-1)	ARE 120 S	Drafting and Drawing Studio	2 (0-4-0)
CHM 102 L	Introduction to Chemistry Lab	1 (0-2-0)	ME 201	Materials Science and Engineering	3 (3-0-1)
			ME 201 L	Materials Science and Engineering Lab	1 (0-2-0)
18			**20**		

Year 2 Fall			**Year 2 Spring**		
MAT 211	Calculus III	3 (3-0-0)	ARE220	Construction Drawing (CAD)	2 (2-0-0)
EE 207	Foundations of Electrical Engineering	3 (3-2-1)	ARE220 S	Construction Drawing (CAD) Studio	2 (0-4-0)

EE 207 L	Foundations of Electrical Engineering LAB	1 (0-2-0)	ME 206	Thermal Fluids Engineering I	3 (3-0-1)
ARE 201 S	Architectural Design I Studio	3 (0-6-0)	ME 206 L	Thermal Fluids Engineering I LAB	1 (0-2-0)
ME 203	Applied Mechanics: Statics and Dynamics I	3 (3-0-1)	ARE 297	Architecture and Buildings	3 (3-0-0)
MAT 213	Differential Equations	3 (3-0-0)	ARE 231	Building Materials and Construction Technology	3 (3-0-0)
MAT 212	Linear Algebra	3 (3-0-0)	ARE 202 S	Architectural Design II Studio	3 (0-6-0)
			ARB 101	Arabic Language I	2 (2-0-0)
19			**19**		

Year 3 Fall			**Year 3 Spring**		
ISL 101	Islamic Studies I	2 (2-0-0)	ARE 311	Building Acoustics	3 (3-0-0)
ARE 303	Interior Design	2 (2-0-0)	ARE 321	Structural Mechanics	3 (3-0-0)

ARE 303 S	Interior Design Studio	1 (0-2-0)	ARE 321 L	Structural Mechanics Lab	1 (0-2-0)
Technical Elective I		3 (TBD per selected elective)	ARE 313	Electrical Installations	3 (3-0-0)
ARE 341	The Built Environment	3 (3-0-0)	ARE 315	Lighting Systems and Applications	3 (3-0-0)
ME 407	Heating, Ventilation, and Air-Conditioning	3 (3-0-0)	ARE 332	Building Services Engineering	3 (3-0-0)
ARE 355	Quantity Surveying	3 (3-0-0)	ARE 332 L	Building Services Engineering Lab	1 (0-2-0)
ARE 312	Environment, Economics and Policy	3 (3-0-0)	PHL 101A	Engineering Ethics	3 (3-0-0)
20			**20**		

Year 4 Fall			**Year 4 Spring**		
ARE 409	Project Management and Economics	3 (3-0-0)	ARE 465	Management Principles in Building Engineering	3 (3-0-0)
Technical Elective II		3 (TBD per selected elective)	Technical Elective III		3 (TBD per

					selected elective)
ARE 405	Structural Analysis	3 (3-0-0)	ISL 112	Islamic Studies II	2 (2-0-0)
ARE 450	Introduction to Geotechnical Engineering	3 (3-0-0)	ARE 490 S	Architectural Engineering Capstone Project	4 (0-8-0)
ARE 450 L	Introduction to Geotechnical Engineering Lab	1 (0-2-0)	ARB 102	Arabic Language II	2 (2-0-0)
ARE 410	Contracts and Liabilities for Buildings and Construction	3 (3-0-0)	MAT 224	Numerical Methods	3 (3-0-0)
ENG 222	Technical Writing	3 (3-0-0)			
19			**17**		

Technical Electives

Course Code	Course-Title	Credit Hours (CRHs)				Pre-Requisite Course Code
		Total-CRHs	Lect	Lab	Tut	
ARE 302	Indoor air quality Engineering	3	3	0	0	ME 206

ARE 460	Waste Management in Buildings	3	3	0	0	CHM 102
ARE 470	Building Automation and Control	3	3	0	0	EE 207
ARE 475	Building Energy Management	3	3	0	0	EE 207
ARE 455	Sustainable Buildings	3	3	0	0	ARE 312
ARE 314	Architectural Design III	2	2	0	0	ARE 202
ARE 314 S	Architectural Design III Studio	1	0	2	0	ARE 202
ARE 435	Undergraduate Research in Architectural Engineering	3	0	6	0	Dept. Approval
ARE 444	Reinforced Concrete Design	2	2	0	0	ARE 231, ME 203
ARE 444 L	Reinforced Concrete Design Lab	1	0	2	0	ARE 231, ME 203

Architectural Engineering Course Descriptions
Core Courses

ARE 110 Architectural History and Theories
Cr Hr: 3cr
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.

ARE 120 Drafting and Drawing

Cr Hr: 1cr

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.

ARE 120 L Drafting and Drawing Lab

Cr Hr: 2cr Lab Hr: 4cr Co-requisites: ARE 120

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.

ARE 201 S Architectural Design I Studio

Cr Hr: 3cr Lab Hr: 6cr Pre-requisites: ARE 120

The course introduces basic design concepts, focusing on small-scale architectural projects. Introducing notions of time and transformation in conceptual, structural, organizational and spatial terms. Exploring analytical and experimental drawing techniques, including drawing plans, sections, elevations and perspectives, and model-making.

ARE 202 S Architectural Design II Studio

Cr Hr: 3cr Lab Hr: 6cr Pre-requisites: ARE 201

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.

ARE 220 Construction Drawing

Cr Hr: 2cr Pre-requisites: ARE 120

The course teaches construction drawing principles for different architectural systems, including the documentation of these systems. This will include architectural drawings, i.e., plans, sections, elevations, wall sections, and details; and blow up construction drawings, using commercially used CAD/BIM software.

ARE 220 S Construction Drawing Studio
Cr Hr: 2cr Lab Hr: 4cr Pre-requisites: ARE 120
Co-requisites: ARE 220
The course teaches construction drawing principles for different architectural systems, and includes the documentation of these systems. This will include architectural drawings, blow-up construction drawings, using commercially used CAD/BIM software.

ARE 231 Building Materials and Construction Technology
Cr Hr: 3cr Pre-requisites: ME 201 & ME 203
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.

ARE 297 Architecture and Buildings
Cr Hr: 3cr Pre-requisites: ARE 110
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.

ARE 303 Interior Design
Cr Hr: 2cr Pre-requisites: ARE 202
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.

ARE 303 S Interior Design Studio
Cr Hr: 1cr Lab Hr: 2cr Pre-requisites: ARE 202
Co-requisites: ARE 303
The student will learn to apply 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.

ARE 311 Building Acoustics
Cr Hr: 3cr Pre-requisites: ME 206
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.

ARE 312 Environment, Economics and Policy
Cr Hr: 3cr Pre-requisites: ARE 297
The objective of this course is to develop an understanding of rational analysis, as well as decision making in issues concerning environment, economics and policy. Concepts of externality of environmental impacts, market failure, social cost and benefit analysis, environmental protection and policy instruments related to energy supply and consumption, environmental pollution control and case studies are presented in this course.

ARE 313 Electrical Installations
Cr Hr: 3cr Pre-requisites: EE 207
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.

ARE 315 Lighting Systems and Applications
Cr Hr: 3cr Pre-requisites: PHU 124
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.

ARE321 Structural Mechanics
Cr Hr: 3cr Pre-requisites: ARE 231
Uniform and non-uniform torsion of structural shapes, analysis of determinate and indeterminate beams 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.

ARE321 L Structural Mechanics Lab
Cr Hr: 1cr Lab Hr: 2cr Pre-requisites: ARE 231
Co-requisites: ARE321
Uniform and non-uniform torsion of structural shapes, analysis of determinate and indeterminate beams 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.

ARE 332 Building Services Engineering
Cr Hr: 3cr Pre-requisites: ME 206
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.

ARE 332 L Building Services Engineering Lab
Cr Hr: 1cr Lab Hr: 2cr Pre-requisites: ME 206
Co-requisites: ARE 332
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.

ARE341 The Built Environment
Cr Hr: 3cr Pre-requisites: ARE 110
Through a series of modules, students will be introduced to the ideas and problems affecting the way in which the built environment has been and continues to be shaped in a variety of historical and cultural contexts. Contemporary and sustainable projects will be presented showing how designers currently approach architectural, urban and environmental problems. Local sites will serve as case-studies for possible redesign of the built environment. The class is a taught in a seminar format.

ARE 355 Quantity Surveying
Cr Hr: 3cr Pre-requisites: ARE 220
In this course, 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; 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; and many other related topics.

ARE 405 Structural Analysis
Cr Hr: 3cr Pre-requisites: ARE 321
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.

ARE 409 Project Management and Economics
Cr Hr: 3cr Pre-requisites: ARE 355
Student 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, to delineate the unique cost control methods for construction productivity, job cost, labor records, and material and equipment purchases. Construction site safety is emphasized.

ARE 410 Contracts and Liabilities for Buildings and Construction
Cr Hr: 3cr Pre-requisites: ARE 355
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 objectively identify and analyze legal liabilities, ethical dilemmas, and the expected professional standard of architects, engineers, and contractors.

ARE 450 Introduction to Geotechnical Engineering
Cr Hr: 3cr Pre-requisites: ME201 & ARE 231
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.

ARE 450 L Introduction to Geotechnical Engineering Lab
Cr Hr: 1cr Lab Hr: 2cr Pre-requisites: ME201 & ARE 231
Co-requisites: ARE 450
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.

ARE 465 Management Principles in Building Engineering
Cr Hr: 3cr Pre-requisites: ARE 409
This course presents the management principles for building engineering, which include financial management, human resources management and organization of business.

ARE 490 Studio Architectural Engineering Capstone Project
Cr Hr: 4cr Lab Hr: 8cr Pre-requisites: Dept. Approval
The Capstone project is a full year design project. The project involves an introduction to the life cycle of a project from a technical and management perspective. 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.

Elective Courses

ARE 302 Indoor Air Quality Engineering
Cr Hr: 3cr Pre-requisites: ME 206
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.

ARE 314 Architectural Design III
Cr Hr: 2cr Pre-requisites: ARE 202
Students will be introduced to the dynamic relationship and the integration between buildings, streets, and public open spaces, which can create a functional, attractive and sustainable built environment. It is an interactive course that accentuates evidence-based design. Students will complete design proposals to redevelop an urban site in Riyadh; The emphasis will be placed on

fitting architectural forms into historical and cultural contexts; enabling desirable activity patterns; conceptualizing built form.

ARE 314 S Architectural Design III Studio
Cr Hr: 1cr Lab Hr: 2cr Pre-requisites: ARE 202
Co-requisites: ARE 31
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.

ARE 435 S Undergraduate Research in Architectural Engineering Studio
Cr Hr: 3cr Lab Hr: 6cr Pre-Requisites: Dep. Approval
Co-requisites: ARE 435
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' progress is periodically assessed by the instructor and ultimately the students will produce a final report detailing their research results.

ARE444 Reinforced Concrete Design
Cr Hr: 2cr Pre-Requisites: ARE 231; ME 203
Co-Requisites: ARE 405
Design 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. Students will develop a thorough understanding of the behavior and design of reinforced concrete members and systems.

ARE 444 L Reinforced Concrete Design Lab
Cr Hr: 1cr Lab Hr: 2cr Pre-Requisites: ARE 231; ME 203
Co-Requisites: ARE 405; ARE 444
Design 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. Students

will develop a thorough understanding of the behavior and design of reinforced concrete members and systems.

ARE 455 Sustainable Buildings
Cr Hr: 3cr Pre-requisites: ARE 312
This course presents the practice of creating building structures and using processes that are environmentally responsible and resource-efficient. It addresses the full range of issues associated with sustainable buildings, including energy consumption, use of materials, building systems, users' behaviors and environment concerns. It discusses those issues through lectures, and reviewing various case studies that identify how they are integrated into the building process.

ARE 460 Waste Management in Buildings
Cr Hr: 3cr Pre-requisites: CHM 102
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.

ARE 470 Building Automation and Control
Cr Hr: 3cr Pre-requisites: EE 207
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. Application areas will include air-conditioning systems, fire detection and suppression systems, security systems, lighting systems, vertical transport systems and other essential building services.

ARE 475 Building Energy Management
Cr Hr: 3cr Pre-requisites: EE 207
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.

Department of Electrical Engineering
Degree Offered: Bachelor of Electrical Engineering

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General Department Information

Today, in Saudi Arabia and the world, there is a great demand for electrical engineers. Local companies like Aramco, SCECO, SABIC, Inara and STC, in addition to multinationals such as BAE, Boeing, Schneider, Schlumberger, Siemens and Telus – all have constant interest in electrical engineers across all branches. Here, at Alfaisal University, we have a world-class EE program that helps prepare you for the international job market, and that makes you able to take part in powering up the world.

Electricity does more than lighting the world up at night. If you look around you, night or day, you will find little that functions without electricity. Just imagine what life would be without it! Electricity is, therefore, a very serious business that a lot of people depend on in their livelihood. Because of this importance, it requires care and dedication in producing it, distributing it and using it in the many devices and machines that surround this. This care and dedication is what Electrical Engineering (EE) is all about.

As an Electrical Engineer, there are many things that you can get involved in. For example, if you are interested in learning about how electricity is generated and distributed, you would specialize in a branch of EE called Power. In the Kingdom, much of the electricity is produced using oil. Because of oil's scarcity, engineers are always trying to find better ways to utilize it, in addition to finding ways to substitute solar, wind or hydropower. Once electricity arrives at our homes and offices, there are many ways it can be used. Appliances at home, for example, such as the TV, the DVD, the gaming console, the PC, the washing machine, the fridge and many others all depend on electricity. But how do they actually work?

Very often, these appliances depend on very small components called chips that take care of their operation. Studying how these chips, which can hold more than 2.6 billion components, are designed and manufactured can found in the Electronics branch. But electronics is about more than chips. The screen on the LED TV or the eye that captures images in your camera – this is all electronics. There are two other branches in EE: Communications and Control. More than ever, communications is playing a great role in our live, starting from enabling you to make simple voice and video calls with anybody in this world, to making it possible to deliver news and to trade across very long distances. It is in communications that you learn about how the Internet works, how your cellphone connects, and how your radio and TV receive their information. As for the Control branch, this is where you get to know how many things such as robots and smart buildings and cars keep working efficiently. Robots around the world are involved in many aspects from building cars and operating storage warehouses, to helping out in difficult medical surgeries. Robots have also travelled very far (all the way to Mars), going where it can be difficult or dangerous for humans to go. Smart buildings use control, too. Using sensors, a building can automatically adjust room temperatures, monitor water and electricity usage, and warn in case of fire or smoke. Cars, too, have now more intelligence than ever, with some cars having almost 300 sensors, all being used to give you a safer and more pleasurable driving experience.

Bachelor of Electrical Engineering Study Plan

Year 1 Fall

Code	Course Name	Credit
ENG 101	Freshman English I	3 (3-0-0)
MAT 101	Calculus I	3 (3-0-2)
PHU 103	Mechanics and Waves for Engineers	3 (3-0-1)

Year 1 Spring

Code	Course Name	Credit
PHL101A	Engineering Ethics	3 (3-0-0)
ENG 112	Freshman English II	3 (3-0-0)
MAT 112	Calculus II	3 (3-0-2)

PHU 103 L	Mechanics and Waves for Engineers Lab	1(0-2-0)	PHU 124	Electromagnetism and Optics for Engineers	3 (3-0-1)
SE 100	Programming for Engineers	3 (3-0-1)	PHU 124 L	Electromagnetism and Optics for Engineers Lab	1(0-2-0)
SE 100 L	Programming for Engineers Lab	1 (0-2-0)	ME 201	Materials Science and Engineering	3 (3-0-1)
CHM 102	Introduction to Chemistry	3 (3-0-1)	ME 201 L	Materials Science and Engineering Lab	1 (0-2-0)
CHM 102 L	Introduction to Chemistry Lab	1(0-2-0)			
	Total Credits	**18**		**Total Credits**	**17**

Year 2 Fall			**Year 2 Spring**		
EE 207	Foundations of Electrical Engineering	3 (3-0-1)	EE 202	Introduction to Electronics	3 (3-0-0)
EE 207 L	Foundations of Electrical Engineering Lab	1 (0-2-0)	EE 202 L	Introduction to Electronics Lab	1 (0-2-0)
MAT 211	Calculus III	3 (3-0-0)	EE 208	Electric Circuits	3 (3-0-0)
MAT 212	Linear Algebra	3 (3-0-0)	EE 208 L	Electric Circuits Lab	1 (0-2-0)

MAT 213	Differential Equations	3 (3-0-0)	EE 210	Digital Logic Systems	3 (3-0-0)
ISL 101	Islamic Studies I	2 (2-0-0)	EE 210 L	Digital Logic Systems Lab	1 (0-2-0)
			MAT 224	Numerical Methods	3 (3-0-0)
			STA 212	Probability and Statistics	3 (3-0-0)
	Total Credits	**15**		**Total Credits**	**18**

Year 3 Fall			**Year 3 Spring**		
EE 301	Signals and Systems	3 (3-0-0)	EE 302	Communications Theory	3 (3-0-0)
EE 305	Computer Networks	3 (3-0-0)	EE 302 L	Communications Theory Lab	1(0-2-0)
EE 305 L	Computer Networks Lab	1(0-2-0)	EE 304	Microelectronics	3 (3-0-0)
EE 307	Computer Architecture	3 (3-0-0)	EE 304 L	Microelectronics Lab	1(0-2-0)
EE 307 L	Computer Architecture Lab	1(0-2-0)	EE 306	Control and Feedback System Design	3 (3-0-0)
EE 309	Applied Electromagnetics	3 (3-0-0)	EE 306 L	Control and Feedback System Design Lab	1(0-2-0)

ARB 101	Arabic Language and Literature I	2 (2-0-0)	EE 308	Electrical Energy Conversion	3 (3-0-0)
ISL 112	Islamic Studies II	2 (2-0-0)	EE 308 L	Electrical Energy Conversion Lab	1 (0-2-0)
			IE 315	Engineering Economy and Cost Analysis	3 (3-0-0)
	Total Credits	**18**		**Total Credits**	**19**
EE 390	Electrical Engineering Summer Internship				0

Year 4 Fall			**Year 4 Spring**		
EE 405	Electric Power Systems	3(3-0-0)	EE 490	Electrical Engineering Capstone Project	4 (0-8-0)
EE 413	Digital Communications	3(3-0-0)	EE 4**	Technical Elective	3 (3-0-0)
EE 413 L	Digital Communications Lab	1(0-2-0)	EE 4**	Technical Elective	3 (3-0-0)
EE 4**	Technical Elective	3 (3-0-0)	EE 4** L	Technical Elective Lab	1(0-2-0)
EE 4**	Technical Elective	3 (3-0-0)	EE 4**	Technical Elective	3 (3-0-0)
EE 4** L	Technical Elective Lab	1(0-2-0)	EE 4** L	Technical Elective Lab	1(0-2-0)

ENG 222	Technical Writing	3 (3-0-0)	ARB 112	Arabic Language II	2 (2-0-0)
	Total Credits	**17**		**Total Credits**	**17**

Technical Electives

Course Code	Course Title	Credit Hours (CRHs)				Pre-Requisite Course Code
		Total CRHs	Lect.	Lab	Tut	
EE 401	Special Topics in Electrical Engineering	3	3	0	0	100 CRHs passed
EE 401 L	Special Topics in Electrical Engineering Lab	1	0	2	0	
EE 402	Introduction to Wireless Networks	3	3	0	0	100 CRHs passed
EE 403	Wireless Communications	3	3	0	0	100 CRHs & EE413
EE 403 L	Wireless Communications Lab	1	0	2	0	
EE 404	Data Engineering in Electrical Systems	3	3	0	0	100 CRHs passed
EE 404 L	Data Engineering in Electrical Systems Lab	1	0	2	0	
EE 406	Digital Electronics	3	3	0	0	100 CRHs passed
EE 406 L	Digital Electronics Lab	1	0	2	0	
EE 408	Communication Electronics	3	3	0	0	100 CRHs passed
EE 412	Nanoelectronics	3	3	0	0	100 CRHs passed
EE 412 L	Nanoelectronics Lab	1	0	2	0	
EE 417	Digital Signal Processing	3	3	0	0	100 CRHs passed

EE 417 L	Digital Signal Processing Lab	1	0	2	0	
EE 418	Digital Image Processing	3	3	0	0	100 CRHs passed
EE 418 L	Digital Image Processing Lab	1	0	2	0	
EE 420	Power Electronics	3	3	0	0	100 CRHs passed
EE 420 L	Power Electronics Lab	1	0	2	0	
EE 422	Antennas and Wave Propagation	3	3	0	0	100 CRHs passed
EE 423	Optical Fiber Communication Systems	3	3	0	0	100 CRHs & EE422
EE 424	Optoelectronics	3	3	0	0	100 CRHs passed
EE 424 L	Optoelectronics Lab	1	0	2	0	
EE 425	Microwave Engineering	3	3	0	0	100 CRHs & EE422
EE 426	Renewable Energy	3	3	0	0	100 CRHs passed
EE 426 L	Renewable Energy Lab	1	0	2	0	
EE 427	Digital Control	3	3	0	0	100 CRHs passed
EE 428	Modern Control Theory	3	3	0	0	100 CRHs passed
EE 435	Undergraduate Research in Electrical Engineering	3	0	6	0	Department Chair approval, a min. 3.0 GPA, & a signed research contract.

Electrical Engineering Course Descriptions
Core Courses

EE 202 Introduction to Electronics
Cr Hr: 3cr Pre-requisites: EE 207 Co-requisites: EE 208
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.

EE 202 L Introduction to Electronics Lab
Cr Hr: 1cr Lab Hr: 2cr Pre-requisites: None Co-requisites:EE 208
Laboratory experiments dealing with Introduction to Electronics.

EE 207 Foundation of Electrical Engineering
Cr Hr: 3cr Pre-requisites: PHU124
Co-requisites: MAT 213
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.

EE 207 L Foundation of Electrical Engineering Lab
Cr Hr: 1cr Lab Hr: 2cr Pre-requisites: None Co-requisites: EE 207
Laboratory experiments dealing with Foundation of Electrical Engineering.

EE 208 Electric Circuits
Cr Hr: 3cr Pre-requisites: None Pre-requisites: EE 207
The course teaches the design and analysis of interconnected networks of lumped circuit elements.

EE 208 L Electric Circuits Lab
Cr Hr: 1cr Lab Hr: 2cr Pre-requisites: None Co-requisites: EE 208
Laboratory experiments dealing with Electric Circuits.

EE 210 Digital Logic Systems
Cr Hr: 3cr Pre-requisites: EE 207
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.

EE 210 L Digital Logic Systems Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 210
Laboratory experiments dealing with Digital Logic Systems.

EE 301 Signals and Systems
Cr Hr: 3cr Pre-requisites: EE 208, MAT 224
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.

EE 302 Communications Theory
Cr Hr: 3cr Pre-requisites: EE 301, STA 212
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.

EE 302 L Communications Theory Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 302
Laboratory experiments dealing with Communications Theory.

EE 304 Microelectronics
Cr Hr: 3cr Pre-requisites: EE 202
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.

EE 304 L Microelectronics Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 304
Laboratory experiments dealing with Electronics II.

EE 305 Computer Networks
Cr Hr: 3cr Pre-requisites: EE 210, SE 100, STA 212
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.

EE 305 L Computer Networks Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 305
Laboratory experiments dealing with Computer Networks.

EE 306 Control and Feedback System Design
Cr Hr: 3cr Pre-requisites: EE 301
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.

EE 306 L Control and Feedback System Design Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 306
Laboratory experiments dealing with Control and Feedback Systems.

EE 307 Computer Architecture
Cr Hr: 3cr Pre-requisites: SE 100, EE 210
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.

EE 307 L Computer Architecture Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 307
Laboratory experiments dealing with Computer Architecture.

EE 308 Electrical Energy Conversion
Cr Hr: 3cr Pre-requisites: EE 202, EE 309
The course teaches the basic concepts of electrical machines and power semiconductor converters and their application within modern power systems.

EE 308 L Electrical Energy Conversion Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 308
Laboratory experiments dealing with Electrical Energy Conversion.

EE 309 Applied Electromagnetics
Cr Hr: 3cr Pre-requisites: EE 208, MAT 211
The course teaches the application of electromagnetic principles to classical and modern devices. The concepts of work and energy and electromagnetic fields are addressed.

EE405 Electric Power Systems
Cr Hr: 3cr Pre-requisites: EE308, MAT 224
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.

EE 413 Digital Communications
Cr Hr: 3cr Pre-requisites: 100 CRHs passed, EE302
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).

EE 413 L Digital Communications Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 413
Laboratory experiments dealing with Digital Communications.

EE 490 Electrical Engineering Capstone Project
Cr Hr: 0cr Lab Hr: 4cr Pre-requisites: 100 CRHs passed
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.

Elective Courses

EE401 Special Topics in Electrical Engineering
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
This course provides instruction and experience in timely topics related to Electrical Engineering major.

EE401 Special Topics in Electrical Engineering Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 401
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.

EE 402 Introduction to Wireless Networks
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
The course surveys the various types of wireless communications. 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.

EE 403 Wireless Communications
Cr Hr: 3cr Pre-requisites: 100 CRHs passed, EE413
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.

EE 403 L Wireless Communications Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 403
Laboratory experiments dealing with Wireless Communications.

EE 404 Data Engineering in Electrical Systems
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
The course introduce 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.

EE 404 L Data Engineering in Electrical Systems Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 404
Laboratory experiments dealing with Data Engineering in Electrical Systems.

EE 406 Digital Electronics
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
This course aims to familiarize students with the basic concepts and mechanisms of operation and design of digital electronic circuits, both discrete and integrated.

EE 406 L Digital Electronics Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 406
Laboratory experiments dealing with Digital Electronics.

EE 408 Communication Electronics
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
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.

EE 412 Nanoelectronics
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
The course teaches an introduction to the electronic properties of molecules, carbon nanotubes, crystals and other nanodevices.

EE 412 L Nanoelectronics Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 412
Laboratory experiments dealing with Nanoelectronics.

EE 417 Digital Signal Processing
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
This course presents an introduction to the techniques and algorithms of digital processing for signals and information data. The 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.

EE 417 L Digital Signal Processing Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 417
Laboratory experiments dealing with Digital Signal Processing.

EE 418 Digital Image Processing
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
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.

EE 418 L Digital Image Processing Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 418
Laboratory experiments dealing with Digital Image Processing.

EE 420 Power Electronics

Cr Hr: 3cr Pre-requisites: 100 CRHs passed

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.

EE 420 L Power Electronics Lab

Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 420

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.

EE 422 Antennas and Wave Propagation

Cr Hr: 3cr Pre-requisites: 100 CRHs passed

This course introduces the characteristics of electromagnetic waves and their behavior during the propagation through different media. 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 types and their characteristics.

EE 423 Optical Fiber Communication Systems

Cr Hr: 3cr Pre-requisites: 100 CRHs passed , EE 422

The course teaches the introduction to the optical fiber communications. Topics discusses 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.

EE 424 Optoelectronics
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
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.

EE 424 L Optoelectronics Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 424
Laboratory experiments dealing with Optoelectronics.

EE 425 Microwave Engineering
Cr Hr: 3cr Pre-requisites: 100 CRHs passed, EE 422
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.

EE 426 Renewable Energy
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
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 integrated renewable energy systems.

EE 426 L Renewable Energy Lab
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: EE 426
Laboratory experiments dealing with Renewable Energy.

EE 427 Digital Control
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
The course discusses digital control designs and methodologies for dynamic systems. The topics include a review of continuous control, basic digital control, discrete systems, discrete equivalents, transform techniques, state-space approaches, and an introduction to multivariable and optimal control.

EE 428 Modern Control Theory
Cr Hr: 3cr Pre-requisites: 100 CRHs passed
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, with emphasis on the controllability and observability of the LTI system.

EE 435 Undergraduate Research in Electrical Engineering
Cr Hr: 3cr Lab Hr: 6cr Pre-requisites: Department Chair approval, a GPA of at least 3.0/4.0, and a signed research contract
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.

Department of Industrial Engineering
Degree Offered: Bachelor of Industrial Engineering

College of Engineering
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Email: coe@alfaisal.edu
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Dr. Abdallah Alrashdan, Chairman & Assistant Professor of Industrial Engineering

General Department Information

Industrial engineering is about choices. Other engineering disciplines apply skills to very specific areas. An industrial engineering education offers the best of both worlds: an education in both engineering and management.

The most distinctive aspect of industrial engineering is the flexibility it offers. Whether it's shortening a rollercoaster line in an amusement park, streamlining an operating room in a hospital, distributing products worldwide, or manufacturing superior automobiles, these challenges share the common goal of saving money and increasing efficiencies. As companies adopt management philosophies of continuous productivity and quality improvement to survive in the increasingly competitive world market, the need for industrial engineers is growing. Why? Industrial engineers are the only engineering professionals trained specifically to be productivity and quality improvement specialists. Industrial engineers figure out how to do things better. They work to eliminate waste of time, money, materials, energy and other commodities. This is why many industrial engineers end up being promoted into management positions.

Many people are misled by the term industrial engineer. It's not just about manufacturing. It also encompasses service industries, with many industrial engineers employed in entertainment industries, shipping and logistics businesses, and health care organizations. Industrial engineers make processes better in the following ways:

- More efficient and more profitable business practices.
- Better customer service and product quality.
- Improved efficiency.
- Increased ability to do more with less.
- Making work safer, faster, easier, and more rewarding.
- Helping companies produce more products quickly.
- Making the world safer through better designed products.
- Reducing costs associated with new technologies.

Bachelor of Industrial Engineering Study Plan

Year 1 Fall			Year 1 Spring		
Code	**Course Name**	**Credit**	**Code**	**Course Name**	**Credit**
ENG 101	Freshman English I	3 (3-0-0)	PHL 101 A	Engineering Ethics	3 (3-0-0)
MAT 101	Calculus I	3 (3-0-2)	ENG 112	Freshman English II	3 (3-0-0)
PHU 103	Mechanics and Waves for Engineers	3 (3-0-1)	MAT 112	Calculus II	3 (3-0-2)
PHU 103L	Mechanics and Waves for Engineers Lab.	1 (0-2-0)	PHU 124	Electromagnetism and Optics for Engineers	3 (3-2-1)
SE 100	Programming for Engineers	3 (3-0-0)	PHU 124L	Electromagnetism and Optics for Engineers Lab.	1 (0-2-0)
SE 100L	Programming for Engineers Lab	1 (0-2-0)	ME 201	Materials Science and Engineering	3 (3-2-1)
CHM 102	Introduction to Chemistry	3 (3-0-1)	ME 201L	Materials Science and Engineering Lab.	1 (0-2-0)
CHM 102L	Introduction to Chemistry Lab.	1 (0-2-0)			
18			**17**		

Year 2 Fall			Year 2 Spring		
MAT 212	Linear Algebra	3 (3-0-0)	MAT 224	Numerical Methods	3 (3-0-0)

MAT 211	Calculus III	3 (3-0-0)	STA 212	Probability and Statistics for Engineers	3 (3-0-0)
EE 207	Foundations of Electrical Engineering	3 (3-0-1)	ME 305	Manufacturing and Workshop Training	3 (3-0-0)
EE 207L	Foundations of Electrical Engineering Lab.	1 (0-2-0)	ME 305	Manufacturing and Workshop Training Lab.	1 (0-2-0)
MAT 213	Differential Equations	3 (3-0-0)	ME 208	Mechanics of Materials I	3 (3-0-1)
ME 203	Applied Mechanics: Statics and Dynamics I	3 (3-0-1)	ME 208 L	Mechanics of Materials I Lab.	1 (0-2-0)
			ME 205	Introduction to Computer Aided Design	3 (3-0-0)
			ME 206	Thermal Fluids Engineering I	3 (3-0-1)
			ME 206 L	Thermal Fluids Engineering I Lab.	1 (0-2-0)
16			**21**		

Year 3 Fall

Year 3 Spring

ISL 101	Islamic Studies I	2 (2-0-0)	ARB 101	Arabic Language I	2 (2-0-0)
IE 301	Operations Research I	3 (3-0-1)	IE 302	Operations Research II	3 (3-0-1)
ECO 110	Economic Principles	3 (3-0-0)	ME 308	Advanced Manufacturing Processes	3 (3-0-0)

IE 309	Human Factors and Ergonomics	3 (3-0-1)	ME 308 L	Advanced Manufacturing Processes Lab.	1 (0-2-0)
IE 309L	Human Factors and Ergonomics	1 (0-2-0)	IE 330	Simulation	3 (3-0-0)
IE 307	Work Systems Analysis & Design	3 (3-0-1)	IE 330L	Simulation Lab.	1 (0-2-0)
IE 307L	Work Systems Analysis & Design Lab.	1 (0-2-0)	ME 306	Instrumentation and Control Engineering	3 (3-0-0)
IE 304	Production and Service Systems Planning I	3 (3-0-1)	ME 306	Instrumentation and Control Engineering Lab.	1 (0-2-0)
			IE 305	Production and Service Systems Planning II	3 (3-0-1)
19			**20**		

IE 390	Industrial Engineering Summer Internship	0

Year 4 Fall			**Year 4 Spring**		
ISL 112	Islamic Studies II	2 (2-0-0)	ARB 112	Arabic Language II	2 (2-0-0)
ENG 222	Technical Writing	3 (3-0-0)	IE 4xx	Industrial Engineering Technical Elective	3 (3-0-0)

IE 401	Network Models and Project Management	3 (3-0-1)	IE 450	Management for Engineers	3 (3-0-0)
IE 415	Production Information Systems	3 (3-0-0)	IE 315	Engineering Economy and Cost Analysis	3 (3-0-1)
ME 405	Engineering Safety and Risk Analysis	3 (3-0-0)	IE 406	Quality Engineering	3 (3-0-1)
			IE 490	Industrial Engineering Capstone Project	4 (0-8-0)
14			**18**		

Technical Electives

Course Code	Course Name	Credit Hours (CRHs)				Pre-Requisite Course Code
		Total-CRHS	Lect	Lab	Tut	
IE 400	Special Topics in Industrial Engineering	3(3,0,0)	3	0	1	Department Approval
IE 420	Reliability and Maintenance Engineering	3 (3,0,0)	3	0	0	IE 305
IE 430	New Product Development	3 (3,0,0)	3	0	0	IE 309
IE 435	Undergraduate Research in Industrial Engineering	3 (0,6,0)	3	0	0	Department Approval

Industrial Engineering Course Descriptions
Core Courses

IE 301 Operations Research I
Cr Hr: 3cr Pre-requisites: MAT 212
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.

IE 302 Operations Research II
Cr Hr: 3cr Pre-requisites: IE 301, STA 212
This course introduces probability models used to investigate the behavior of industrial systems. It teaches decision making under uncertainty, elementary counting processes, Markov chains and Markov processes. Stochastic programming and applications. Stochastic models in queuing systems, inventories, and equipment reliability are also addressed.

IE 304 Production and Service Systems Planning I
Cr Hr: 3cr Pre-requisites: MAT 212, STA 212 Co-requisites: IE 301
The course addresses the basic issues in planning and controlling production and service systems; including aggregate production planning, master production schedule, materials requirement planning, and capacity planning. 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.

IE 305 Production and Service Systems Planning II
Cr Hr: 3cr Pre-requisites: IE 304
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.

IE 307 Work Systems Analysis and Design

Cr Hr: 3cr Pre-requisites: STA 212

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.

IE 307L Work Systems Analysis and Design Lab

Cr Hr: 1cr Lab Hr: 2cr Co-requisites: IE 307

Laboratory experiments dealing with work systems analysis and design.

IE 309 Human Factors and Ergonomics

Cr Hr: 3cr Pre-requisites: STA 212 Co-requisites: IE 307

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.

IE 309L Human Factors and Ergonomics Lab

Cr Hr: 1cr Lab Hr: 2cr Co-requisites: IE 309

Laboratory experiments dealing with human factors and ergonomics.

IE 315 Engineering Economy and Cost Analysis

Cr Hr: 3cr Pre-requisites: Department Approval

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 are addressed. Replacement analysis, depreciation, inflation and cost estimation, sensitivity and risk analysis are also considered.

IE 330 Simulation

Cr Hr: 3cr Pre-requisites: SE 100, STA 212

This course teaches simulation modelling and analysis of production and service systems, including simulation methodology, model building in a computer

environment, analyzing **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.

IE 330L Simulation Lab.
Cr Hr: 1cr Lab Hr: 2cr Co-requisites: IE 330
Laboratory experiments dealing with the implantation of discrete-event simulation models.

IE 401 Network Models and Project Management
Cr Hr: 3cr Pre-requisites: IE 301
The course teaches the terminology of graphs, 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.

IE406 Quality Engineering
Cr Hr: 3cr Pre-requisites: IE 305
The course teaches Quality in an industrial system, including an introduction to quality engineering, quality standards ISO 9000 and QS 9000, TQM, quality cost analysis, process modelling and hypothesis testing, statistical process control for long and short production runs, process capability analysis, capability indexes, Six sigma methodology, acceptance sampling and design of experiments.

IE415 Production Information Systems
Cr Hr: 3cr Pre-requisites: IE 305
The course teaches the design and analysis of production information systems. Investigation of data modelling, storage, acquisition and utilization manual and computerized methods. Design and implementation of relational databases via E-R modelling, relational schema, web-based database applications, interface design, the system development life cycle applied to data management applications, ERP software and decision support systems are addressed.

IE450 Management for Engineers

Cr Hr: 3cr Pre-requisites: Departmental Approval

The course focuses on learning and understanding 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.

IE490 Industrial Engineering Capstone Project

Cr Hr: 4cr Lab Hr: 8cr Pre-requisites: Departmental Approval

Students work in teams as professional engineering on engineering projects under a project advisor. The design process is emphasized, encompassing project definition, feasibility analysis, evaluation of alternative designs, and design computations. Student who selects a project suggested by industry has the opportunity of working with an industry sponsor in an actual engineering experience. A final written report and oral presentations are required.

Elective Courses

IE400 Special Topics in Industrial Engineering

Cr Hr: 3cr Pre-requisites: Department Approval

This course provides instruction and experience in timely topics related to Industrial Engineering major.

IE420 Reliability and Maintenance Engineering

Cr Hr: 3cr Pre-requisites: IE 305

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.

IE430 New Product Development

Cr Hr: 3cr Pre-requisites: IE 309

This course presents state-of-the-art Product Development techniques focusing on the interdisciplinary nature of the product design activities.

IE435 Undergraduate Research in Industrial Engineering

Cr Hr: 3cr Pre-requisites: Departmental Approval

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. All

academic requirements are at the discretion of the supervising faculty member. It is the student's responsibility to report progress and seek guidance when needed. Students are expected to be active in the research experience.

Department of Mechanical Engineering
Degree Offered: Bachelor of Mechanical Engineering

College of Engineering
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Dr. Hassan Zohair Ahmed, Chairman & Assistant Professor of Mechanical Engineering

General Department Information
Mechanical engineers are concerned with the design, development and manufacture of machines/mechanical parts and components. In modern times, good mechanical engineers are trained on a strong foundation of theory, practice and interdisciplinary innovation. Subjects in mechanical engineering overlap with various other engineering branches such as aerospace, architecture, biomedical, civil, chemical, computer, electrical, electronic and communication, industrial, instrumentation, materials, metallurgical, nuclear and petroleum engineering to varying amounts. But mechanical engineers do more than just work in these core engineering sectors. The field has continually evolved and in recent times mechanical engineers have been heavily involved in numerous advanced fields such as acoustics, automatic control, biomedical, chemical processing, combustion, computer-aided design, condition monitoring, environmental control, food processing, renewable and nuclear energy, mechatronics, manufacturing, maritime industry, nanotechnology, power generation, plant layout, process simulation, water desalination, quality control, consultancy and human resource management.

A mechanical engineer should have a strong interest and academic background in mathematics and physical sciences, concern about the quality of life and products, a desire to put ideas into action, curiosity about how things work and how to improve their performance, and good communication skills. Engineering

design is the backbone of Alfaisal University's mechanical engineering (ME) program which is reinforced with the fundamental physical sciences, including engineering mathematics, physics, chemistry, materials, applied mechanics, mechanics of materials, structural analysis, fluid mechanics, automatic control, thermodynamics, fluids mechanics, fundamentals of electrical and electronic engineering, manufacturing processes, mechatronics, machine design, engineering management, instrumentation, safety and risk analysis, vibration and damping, computer-aided engineering and several computational techniques. Experimental work is carried out in laboratories and through small projects work at all levels of the program. The program also includes industry and University-based summer research projects at different levels. This is not to say that your mechanical engineering education is over, the main aim of the ME program being to provide graduates with the ability and confidence to continue lifelong education within their chosen profession. Mechanical engineers have always been in good demand worldwide. In the Kingdom of Saudi Arabia and the world over, there is a great demand for mechanical engineers. National public and private sector companies like Saudi Aramco, SABIC, Saudi Railways Organization, KACST, universities in addition to multinational companies such as BAE Systems, Boeing, General Electric, Schneider, Schlumberger, Siemens, Thales International, and United Technologies, etc., all have constant interest in Mechanical Engineers across all specializations.
A degree in mechanical engineering at Alfaisal University will give you the knowledge and advanced interdisciplinary skills to work in the design, development and manufacture of products in Saudi Arabia and worldwide.

Bachelor of Mechanical Engineering Study Plan

Year 1 Fall **Year 1 Spring**

Code	Course Name	Credit	Code	Course Name	Credit
ENG 101	Freshman English I	3 (3-0-0)	PHL 101A	Engineering Ethics	3 (3-0-0)

MAT 101	Calculus I	3 (3-0-2)	ENG 112	Freshman English II	3 (3-0-0)
PHU 103	Mechanics and Waves for Engineers	3 (3-0-1)	MAT 112	Calculus II	3 (3-0-2)
PHU 103L	Mechanics and Waves for Engineers Lab	1 (0-2-0)	PHU 124	Electromagnetism and Waves for Engineers	3 (3-0-1)
SE 100	Programming for Engineers	3 (3-0-0)	PHU 124L	Electromagnetism and Waves for Engineers Lab	1 (0-2-0)
SE 100L	Programming for Engineers Lab	1 (0-2-0)			
CHM 102	Introduction to Chemistry	3 (3-0-1)	ME 201	Materials Science and Engineering	3 (3-0-1)
CHM 102L	Introduction to Chemistry Lab	1 (0-2-0)	ME 201L	Materials Science and Engineering Lab	1 (0-2-0)
18			**17**		

Year 2 Fall			**Year 2 Spring**		
MAT 212	Linear Algebra	3 (3-0-0)	STA 212	Probability and Statistics for Engineers	3 (3-0-0)
MAT 211	Calculus III	3 (3-0-0)	ME 305	Manufacturing and Workshop Training	3 (3-0-0)
			ME 305L	Manufacturing and Workshop Training Lab	1 (0-2-0)
EE 207	Foundations of Electrical Engineering	3 (3-0-1)	ME 208	Mechanics of Materials I	3 (3-0-1)
EE 207L	Foundations of Electrical Engineering Lab	1 (0-2-0)	ME 208L	Mechanics of Materials I Lab	1 (0-2-0)
MAT 213	Differential Equations	3 (3-0-0)	ME 205	Introduction to Computer Aided Design	3 (3-0-0)
ME 203	Applied Mechanics: Statics and Dynamics I	3 (3-0-1)	ME 206	Thermal Fluids Engineering I	3 (3-0-1)
			ME 206L	Thermal Fluids Engineering I Lab	1 (0-2-0)
16			**18**		

Year 3 Fall			Year 3 Spring		
ISL 101	Islamic Studies I	2 (2-0-0)	ARB 101	Arabic Language I	2 (2-0-0)
ME 311	Applied Mechanics: Statics and Dynamics II	3 (3-0-1)	ME 308	Advanced Manufacturing Processes	3 (3-0-0)
			ME 308L	Advanced Manufacturing Processes Lab	1 (0-2-0)
ME 315	Machine Design	3 (3-0-1)	ME 310	Aircraft /Machine Design with Project	3 (3-0-0)
			ME 310L	Aircraft /Machine Design with Project Lab	1 (0-2-0)
ME 312	Mechanics of Materials II /Aircraft Structures	3 (3-0-1)	ME 306	Instrumentation and Control Engineering	3 (3-0-0)
			ME 306L	Instrumentation and Control Engineering Lab	1 (0-2-0)
ME 312L	Mechanics of Materials II /Aircraft Structures Lab	1 (0-2-0)			

ME 307	Thermal Fluids Engineering II	3 (3-0-1)	MAT 224	Numerical Methods	3 (3-0-0)
ME 307L	Thermal Fluids Engineering II Lab	1 (0-2-0)			
16			**17**		
ME 390	Mechanical Engineering Summer Internship				0

Year 4 Fall			**Year 4 Spring**		
ISL 112	Islamic Studies II	2 (2-0-0)	ARB 112	Arabic Language II	2 (2-0-0)
ENG 222	Technical Writing	3 (3-0-0)			
ME 407	Heating, Ventilation, and Air-Conditioning	3 (3-0-1)	IE 315	Engineering Economy and Cost Analysis	3 (3-0-0)
ME 403	Finite Element Modelling for Dynamic and Structural Analysis (FEA Modelling)	3 (3-0-1)	ME 4** Technical Elective I		3 (3-0-0)
ME 403L	Finite Element Modelling for Dynamic and Structural Analysis (FEA Modelling)Lab	1 (0-2-0)	ME 314 Vibration and Damping		3 (3-0-1)
ME 405	Engineering Safety and Risk Analysis	3 (3-0-1)	ME 4** Technical Elective II		3 (3-0-0)
ME 490	Mechanical Engineering Capstone Project				4 (0-8-0)
15			**18**		

Technical Electives

Course Code	Course Name	Credit Hours (CRHs)				Pre-Requisite Course Code
		Total-CRHS	Lect	Lab	Tut	
ME 401	Computational Fluid Dynamics and Heat Transfer (CFD Modelling)	3	3	0	1	Department chair approval. A GPA of at least 3.0/4.0, and a signed research contract
ME 406	Mechatronics	3	3	0	0	ME 306
ME 410	Energy Conversion and Cogeneration Systems	3	3	0	0	ME 307
ME 412	Renewable Energy Systems	3	3	0	0	ME 307
ME 414	Introduction to Compressible flow Turbomachinery	3	3	0	0	ME 307
ME 416	Automotive Engineering	3	3	0	0	ME 307
ME 418	Water Desalination	3	3	0	0	ME 307
ME 435	Undergraduate Research in Mechanical Engineering	3	0	6	0	Department Approval
ME 400	Special Topics in Mechanical Engineering	3	3	0	0	Department Approval

Mechanical Engineering Course Descriptions
Core Courses

ME201 Materials Science and Engineering
Cr Hr: 3cr Pre-requisites: CHM 102
The course teaches an introduction to fundamental underlying concepts of atomic bonding, crystal structure, structure-property relationships, mechanical properties, phase diagrams, and time-temperature diagrams.

ME 201L Materials Science and Engineering Lab
Lab Hr: 2cr Pre-requisites: CHM 102 Co-requisites: ME 201
Laboratory experiments dealing with Materials Science and Engineering, crystal structure, structure-property relationships, and mechanical properties.

ME203 Applied Mechanics: Statics and Dynamics I
Cr Hr: 3cr Pre-requisites: PHU 103 & MAT 112
The course teaches the equilibrium of systems of forces in statically determinate structures, including deformation and displacement diagrams, work and potential energy and the principle of virtual work. The course reviews momentum and energy principles, covering Newtonian mechanics.

ME205 Introduction to Computer Aided Design
Cr Hr: 3cr
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.

ME206 Thermal Fluids Engineering I
Cr Hr: 3cr Pre-requisites: PHU 103
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.

ME206L Thermal Fluids Engineering I Lab

Lab Hr: 2cr Pre-requisites: PHU 103 Co-requisites: ME 206

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.

ME208 Mechanics of Materials I

Cr Hr: 3cr Pre-requisites: ME 201

The course teaches materials and structures, including analysis of beam bending, buckling and torsion, material and structural failure, structural design considerations, stress, strain, heating effects, two-dimensional plane stress and plane strain problems, torsion theory for arbitrary sections.

ME208L Mechanics of Materials I Lab

Lab Hr: 2cr Pre-requisites: ME 201 Co-requisites: ME 208

Laboratory experiments dealing with materials and structures, beam bending, buckling and torsion, material and structural failure, stress, strain, and heating effects.

ME305 Manufacturing and Workshop Training

Cr Hr: 3cr Pre-requisites: ME 201

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.

ME305L Manufacturing and Workshop Training Lab

Lab Hr: 2cr Pre-requisites: ME 201 Co-requisites: ME 305

Laboratory experiments dealing with 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.

ME306 Instrumentation and Control Engineering
Cr Hr: 3cr Pre-requisites: ME 206, EE 207
Instrumentation and Control Engineering course addresses the basic principles of modern instrumentation and control systems, including examples of the latest devices, techniques and applications. The course teaches Measurement Systems, Instrumentation System Elements, Measurement Case Studies, Control Systems, Process Controllers, Correction Elements, PLC Systems, and System Models.

ME306L Instrumentation and Control Engineering Lab
Lab Hr: 2cr Pre-requisites: Co-requisites: ME 306
In the Instrumentation part, the thermal fluid main instruments were introduced. The control part, covered programing of mechanical processes using Arduino-UNO controller. First the new commands are introduced, then the code is established according to the given process. The code is uploaded to the board and the process mechanism is checked according to the code. Modifications are applied to the code to expand the students' understanding in the how the codes is working.

ME307 Thermal Fluids Engineering II
Cr Hr: 3cr Pre-requisites: ME 207
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, and multi-mode heat transfer.

ME307L Thermal Fluids Engineering II Lab
Lab Hr: 2cr Pre-requisites: ME 207 Co-requisites: ME 307
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.

ME312 Mechanics of Materials II
Cr Hr: 3cr Pre-requisites: ME 208
The course teaches an introduction to mechanical behavior of engineering materials and the use of materials in mechanical design. The course emphasizes the fundamentals of mechanical behavior 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.

ME 312L Mechanics of Materials II Lab
Lab Hr: 2cr Pre-requisites: ME 208 Co-requisites: ME 312
Laboratory experiments dealing with 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.

ME 308 Advanced Manufacturing Processes
Cr Hr: 3cr Pre-requisites: ME 305
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. Topics include process physics and control, design for manufacturing and manufacturing systems and a team project.

ME 308L Advanced Manufacturing Processes Lab
Lab Hr: 2cr Pre-requisites: ME 305 Co-requisites: ME 308
Laboratory experiments dealing with integration of design, engineering and management disciplines and practices for analysis and design of manufacturing enterprises, 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.

ME 310 Aircraft /Machine Design with Project
Cr Hr: 3cr Pre-requisites: ME 312 & ME 311
The course teaches the creative design process via the application of 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. The students are expected to build a working model of an aircraft as part of a team.

ME 310L Aircraft /Machine Design with Project Lab
Lab Hr: 2cr Pre-requisites: ME 312 & ME 311 Co-requisites: ME 310
Laboratory experiments dealing with the creative design process via the application of physical laws and learning to complete projects on schedule, 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. The students are expected to build a working model of an aircraft as part of a team.

ME 311 Applied Mechanics: Statics and Dynamics II
Cr Hr: 3cr Pre-requisites: ME 203
The course teaches force-momentum formulation for systems of particles and rigid bodies in planar motion. Topics include work-energy concepts, linearization of equations of motion, the use of various systems of coordinates, including Cartesian, polar and intrinsic coordinate systems, a review of Newton's Laws, applications to orbit calculations and rocket equations, linear stability analysis of

mechanical systems, including introduction to natural modes, eigenvalues, damping effects and the use of Bode plots.

ME 314 Vibration and Damping
Cr Hr: 3cr Pre-requisites: ME 311
The course teaches the modelling techniques for degree of freedom systems, including the application of Newton's second law to vibrating systems, the concept of damping and the response of systems to harmonic inputs.

ME 315 Machine Design
Cr Hr: 3cr Pre-requisites: ME 208
This course teaches the function, design and performance of mechanical elements commonly used by mechanical engineers, including sets of elements, such as bearings, pumps, gears and transmissions, Students will develop skills in designing and analyzing performance capabilities of these elements as they relate to part geometry, material choice, and loading and environmental conditions, and the lifecycle for representative elements will be derived.

ME 403 Finite Element Modelling for Dynamic and Structural Analysis (FEA Modelling)
Cr Hr: 3cr Pre-requisites: ME 312 & ME 311
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.

ME 403L Finite Element Modelling for Dynamic and Structural Analysis (FEA Modelling) Lab
Lab Hr: 2cr Pre-requisites: ME 312 & ME 311 Co-requisites: ME 403
Laboratory experiments dealing with the working principles of the non-linear finite element method (FEM) and applies 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.

ME405 Engineering Safety and Risk Analysis
Cr Hr: 3cr Pre-requisites: STA 212
The course will develop the understanding of the underlying causes of engineering disasters, their consequences and modern systems and safety procedures to prevent their recurrence. The course will emphasize the role engineering ethics in modern engineering

ME 407 Heating, Ventilation, and Air-Conditioning
Cr Hr: 3cr Pre-requisites: ME 206
The course teaches refrigeration and air conditioning, thermodynamics, psychrometry, fluid flow and heat transfer, refrigeration cycles, single and multi-stage refrigeration systems, vapour compression, adsorption and desorption systems, evaporative cooling systems, solar radiation, cooling and heating load calculation, air distribution and duct design, piping, ventilation and equipment selection.

ME 490 Mechanical Engineering Capstone Project
Lab Hr: 8cr Pre-requisites: Department Approval
The Capstone project is a 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.

Elective Courses

ME 401 Computational Fluid Dynamics and Heat Transfer (CFD Modelling)
Cr Hr: 3cr Pre-requisites: ME 307
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.

ME 401L Computational Fluid Dynamics and Heat Transfer (CFD Modelling) Lab
Lab Hr: 2cr Pre-requisites: ME 307 Co-requisites: ME 401
Laboratory experiments dealing with working principles of computational fluid dynamics and heat transfer and applies these concepts using commercially available software packages used in industry, 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.

ME 406 Mechatronics
Cr Hr: 3cr Pre-requisites: ME 306
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.

ME 410 Energy Conversion
Cr Hr: 3cr Pre-requisites: ME 307
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.

ME 412 Renewable Energy Systems
Cr Hr: 3cr Pre-requisites: ME 307
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.

ME 414 Introduction to Compressible Flow Turbomachinery
Cr Hr: 3cr Pre-requisites: ME 307
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, cascades, Euler equation, centrifugal compressors , axial flow compressors and fans, radial and axial flow turbines.

ME 416 Automotive Engineering
Cr Hr: 3cr Pre-requisites: ME 307
This course teaches the fundamentals of Internal Combustion engines, its classifications and applications, as well as deign 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.

ME 418 Water Desalination
Cr Hr: 3cr Pre-requisites: ME 307
Resources and need for desalination, Fundamentals of desalination, Overview and classification of desalination techniques, Single and multiple effect evaporation, Vapor compression, Single and Multi-stage flash distillation, Reverse Osmosis, Hybrid processes, Dual Purpose Power and Desalination plants, Desalination powered by renewable energy sources, Economic analysis, Brine discharge management.

ME 435 Undergraduate Research in Mechanical Engineering
Cr Hr: 3cr Pre-requisites: Department Approval
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.

ME 400 Special Topics in Mechanical Engineering
Cr Hr: 3cr Pre-requisites: 102 CRHs
This course provides instruction and experience in timely topics related to one or more fields of mechanical engineering.

Department of Software Engineering
Degree Offered: Bachelor of Software Engineering

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General Department Information
Anywhere you look certainly you will find software taking care of business: on your computer and in your smartphone, in your dishwasher and in your car, in the bank, supermarket, or mall, on the streets or in your house. Software makes things run smarter and cheaper, generally providing a better quality of life. And since software has become a main and important part of life, it needs professionals to take care of how it is designed, implemented and installed, and to make sure that it stays working correctly after it is installed. This is what Software Engineers do.

There are many things a Software Engineer can be a part of that mainly involve developing software. A sophisticated software, like any other man-made complex system, needs to be engineered based on very well-defined laws and techniques. The development must follow well-defined software development processes. A software engineer must learn various programming and software

development techniques, and must acquire a fair understanding of different software platforms in order to be able to design software that runs on those different platforms (desktops, laptops, pads, smartphones, game consoles …) But for a software developer to know what to develop, he or she needs to know what all the requirements for the software are. These requirements may be broadly separated into what the software system must do (functional requirements), and how it is supposed to do it (non-functional requirements). Consider, for instance reliability as a non-functional requirement. In the case of software running a fighter jet or a pacemaker, both the equipment and the software running it must be absolutely reliable with no room for failure. However, lesser reliability can be tolerated in a game running on your Android. Accuracy, is another non-functional requirement. Would you consider what could go wrong if the software running your bank made a mistake in its calculations? For these and for other reasons, it is vital that a software engineer regularly interacts with the client to make sure that the developers know what the expectations from the software exactly are before it is designed and implemented. You may also know that it is important that a software is extensively tested before it is delivered to the client or made available to the public. Testing and validation is a major phase in the software engineering process. It achieves a main objective, which is making sure that the software meets the clients' requirements. And due to the complexity and the size of the software, oftentimes a software engineer is not directly involved in these different stages, but in managing how the software evolves from one stage to another. Crafting a process for developing a software is not an easy task, as sometimes many people can participate in the software, and they may not necessarily be in the same room, building or country. Engineering a software development process has hence become one of the important disciplines that a software engineer can excel at.

Today, in Saudi Arabia and the world, there is a great demand for software engineers. Local companies like Microsoft, IBM, Cisco Systems, Oracle, Aramco, SCECO, SABIC, banks, telecommunications providers and carriers such as STC, Mobily and Zain, in addition to multinationals such as Google, Apple, Microsoft, Siemens and Telus – all have constant interest in software engineers across all branches. Here, at Alfaisal University, we have a world class SE program that helps prepare you for the international job market, and that makes you able to take part in powering up the world.

Bachelor of Software Engineering Study Plan

Year 1 Fall			**Year 1 Spring**		
Code	**Course Name**	**Credit**	**Code**	**Course Name**	**Credit**
ENG 101	Freshman English	3 (3-0-0)	ENG 112	Freshman English II	3 (3-0-0)
MAT 101	Calculus I	3 (3-0-2)	MAT 112	Calculus II	3 (3-0-2)
PHU 103	Mechanics and Waves for Engineers	3 (3-0-1)	PHL 101A	Engineering Ethics	3 (3-0-0)
PHU 103 L	Mechanics and Waves for Engineers Lab	1 (0-2-0)	PHU 124	Electromagnetism and Optics for Engineers	3 (3-0-1)
SE 100	Programming for Engineers	3 (3-0-0)	PHU 124 L	Electromagnetism and Optics for Engineers Lab	1 (0-2-0)
SE 100 L	Programming for Engineers Lab	1 (0-2-0)	SE 120	Object-Oriented Programming	3 (3-2-0)
			SE 120 L	Object-Oriented Programming Lab	1 (0-2-0)
CHM 102	Introduction to Chemistry	3 (3-0-1)			
CHM 102 L	Introduction to Chemistry Lab	1 (0-2-0)			
18			**17**		

Year 2 Fall			**Year 2 spring**		
ENG 222	Technical Writing	3 (3-0-0)	MAT 224	Numerical Methods	3 (3-0-0)
MAT 212	Linear Algebra	3 (3-0-0)	STA 212	Probability and Statistics for Engineers	3 (3-0-0)
SE 201	Introduction to Software Engineering	3 (3-0-0)	SE 217	Software and Society	3 (3-0-0)
SE 201 L	Introduction to Software Engineering Lab	1 (0-2-0)	SE 221	Software Requirements and Design	3 (3-0-0)
SE 212	Discrete Structures for Software Engineers	3 (3-0-0)	SE 221 L	Software Requirements and Design Lab	1 (0-2-0)
SE 214	Algorithms and Data Structures	4 (3-2-0)	SE 223	Digital Logic Design	3 (3-0-0)
SE 214 L	Algorithms and Data Structures Lab	1 (0-2-0)	SE 223 L	Digital Logic Design Lab	1 (0-2-0)
17			**17**		

Year 3 Fall			**Year 3 Spring**		
ISL 101	Islamic Studies I	2 (2-0-0)	ARB 101	Arabic Language and Literature I	2 (2-0-0)

EE 305	Computer Networks	3 (3-0-0)	SE 323	Software Project and Process Management	3 (3-0-0)
EE 305 L	Computer Networks Lab	1 (0-2-0)	SE 324	Web Application Development	3 (3-0-0)
EE 307	Computer Architecture	3 (3-0-0)	SE 324 L	Web Application Development Lab	1 (3-0-0)
EE 307 L	Computer Architecture Lab	1 (0-2-0)	SE 327	Embedded Systems	3 (3-0-0)
SE 312	Database Management Systems	3 (3-0-0)	SE 329	Human-Computer Interface Design	3 (3-0-0)
SE 312 L	Database Management Systems Lab	1 (0-2-0)			
SE 314	Operating Systems	3 (3-0-0)			
17			**15**		

SE 390	Software Engineering Summer Internship	**0**

Year 4 Fall			**Year 4 Spring**		
ISL 112	Islamic Studies II	2 (2-0-0)	ARB 112	Arabic Language II	2 (2-0-0)
SE 410	Software Architecture	3 (3-0-0)	SE 415	Professional Practice and Software Documentation	3 (3-0-0)
SE 412	Software Testing and Quality Assurance	3 (3-0-0)	SE 421	Software Maintenance, Configuration Management and Evolution	3 (3-0-0)
SE 416	Mobile Application Development	3 (3-0-0)	SE 44*	Technical Elective	3 (3-0-0)
SE 416 L	Mobile Application Development Lab	1 (0-2-0)			
SE 44*	Technical Elective	3 (3-0-0)			
SE 490	Software Engineering Capstone Project I	2 (1-3-0)	SE 491	Software Engineering Capstone Project II	2 (1-3-0)
17			**16**		

Technical Electives

Course Code	Course Name	Credit Hours (CRHs)				Pre-Requisite Course Code
		Total-CRHS	Lect	Lab	Tut	
SE 435	Undergraduate Research in Software Engineering	3	0	6	0	Department chair approval. A GPA of at least 3.0/4.0, and a signed research contract
SE 440	Special Topics in Software Engineering	3	3	0	0	101 CRHs Passed
SE 441	Telecommunications Software Design	3	3	0	0	101 CRHs Passed
SE 442	Social Networks for Software Engineers	3	3	0	0	101 CRHs Passed
SE 443	Cloud Computing for Software Engineers	3	3	0	0	101 CRHs Passed
SE 444	Artificial Intelligence	3	3	0	0	101 CRHs Passed
SE 445	Information and Software Security	3	3	0	0	101 CRHs Passed
SE 440	Special Topics in Software Engineering	3	3	0	0	101 CRHs Passed

Software Engineering Course Descriptions
Core Courses

SE 100 Programming for Engineers
Cr Hr: 3cr Pre-requisites: None
Fundamentals of computers and computing. Introduction to a typical object-oriented programming language. Basic data types and operators. Console input/output. Logical expressions and control structures. Methods and arrays. Introduction to Classes.

SE 100 L Programming for Engineers Lab
Lab Hr: 2cr Co-requisites: SE 100
Laboratory experiments dealing with Object Oriented Programming.

SE 120 Object-Oriented Programming
Cr Hr: 3cr Pre-requisites: SE 100
Advanced object-oriented programming; inheritance; polymorphism; abstract classes and interfaces, container and collection classes, packages, object-oriented design, software modeling, event-driven programming. Design and implement simple GUI applications. Write simple multithreaded applications. Use API in writing applications.

SE 120 L Object-Oriented Programming Lab
Lab Hr: 2cr Pre-requisites: SE 100 Co-requisites: SE 120
Laboratory experiments dealing with advanced Object Oriented Programming.

SE 201 Introduction to Software Engineering
Cr Hr: 3cr Pre-requisites: SE 120
Introduction to Software Engineering through programming with particular focus on the fundamentals of computing & programming, using an exploratory problem-based approach. Building abstractions with procedures, data & objects; data modelling; designing, coding & debugging programs of increasing complexity. Introduction to life cycle models from requirements specification, design, construction, testing and deployment. Software engineering standards. Code of ethics for software engineers.

SE 201 L Introduction to Software Engineering Lab
Lab Hr: 2cr Pre-requisites: SE 120 Co-requisites: SE 201
Laboratory experiments dealing with fundamental concepts in software engineering.

SE 212 Discrete Structures for Software Engineers
Cr Hr: 3cr Pre-requisites: SE 120
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 the mathematical ideas graphically, numerically, symbolically, and in writing.

SE 214 Algorithms and Data Structures
Cr Hr: 3cr Pre-requisites: SE 120
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.

SE 214 L Algorithms and Data Structures Lab
Lab Hr: 2cr Pre-requisites: SE 120 Co-requisites: SE 214
Laboratory experiments dealing with algorithms and data structures.

SE 217 Software and Society
Cr Hr: 3cr
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 Saudi laws and regulations.

SE 221 Software Requirements and Design
Cr Hr: 3cr Pre-requisites: SE 201 & SE 214
The first part of this course introduces the software process and its phases. The second part covers the software requirements phase: elicitation, analysis, classification, management, validation, and use case modelling. The third part is be dedicated to Object Oriented Design (OOD) using UML. It covers the goals of software design, design patterns, and detailed design. High level design and some software architecture patterns are introduced. UML tools for requirements and design are introduced.

SE 221 L Software Requirements and Design Lab
Lab Hr: 2cr Pre-requisites: SE 201 & SE 214 Co-requisites: SE 221
Laboratory experiments dealing with software requirements and design.

SE 223 Digital Logic Design
Cr Hr: 3cr Pre-requisites: PHU 124
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.

SE 223 L Digital Logic Design Lab
Lab Hr: 2cr Pre-requisites: PHU 124 Co-requisites: SE 223
Laboratory experiments dealing with digital logic design.

SE 312 Database Management Systems
Cr Hr: 3cr Pre-requisites: SE 214
This course covers basic database concepts, conceptual data modelling, relational data model, relational theory and languages, database design, SQL, and introduction to query processing and optimization.

SE 312 L Database Management Systems Lab
Lab Hr: 2cr Pre-requisites: SE 214 Co-requisites: SE 312
Laboratory experiments dealing with database management systems.

SE 314 Operating Systems
Cr Hr: 3cr Pre-requisites: SE 214
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.

SE 323 Software Project and Process Management
Cr Hr: 3cr Pre-requisites: SE 221
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, it describes how these process groups interact with the different knowledge areas of project management: integration management and project planning, scope management, scheduling, budget control, risk analysis and management, project quality management, and procurement management.

SE 324 Web Application Development
Cr Hr: 3cr Pre-requisites: SE 312
The course focuses on learning the basic concepts and general principles of web applications development. It covers the most important core protocols and technologies associated with writing web applications: Internet basics, fundamentals of HTTP, client/server paradigm, basics of Web servers, dynamic vs. static web content, markup languages (e.g. HTML, XML, etc.), styling, client-side scripting (JavaScript) and server-side scripting (e.g. ASP.NET), and web applications connectivity to database management systems.

SE 324 L Web Application Development Lab
Lab Hr: 2cr Pre-requisites: SE 312 Co-requisites: SE 324
Laboratory experiments dealing with web application development.

SE 327 Embedded Systems
Cr Hr: 3cr Pre-requisites: SE 314
This course is a hands-on introduction to microcontrollers using the Arduino platform. Fundamentals of computer programming will be covered, as students will learn to program the Arduino microcontroller platform. Students will be able to create a variety of projects by using analog and digital I/O, and interfacing electronics and computers. Course experiments are designed to explore microcontroller basics and its integration with multiple types of sensors and actuators.

SE 329 Human-Computer Interface Design
Cr Hr: 3cr Pre-requisites: SE 221
This course introduces the theory and art of human computer interface (HCI) design. Students focus on theoretical research in the area of HCT and on designing interfaces and interface components. Emphasis is placed on designing and evaluating effective and usable interfaces for multimedia and hypermedia products. Design of user interface components including windows, menus, and commands. Usability engineering. Task analysis, user-centered design, and prototyping. Response time and feedback. Color, icons, and sound.

SE 390 Software Engineering Summer Internship
Lab Hr: 2cr Pre-requisites: 103 credit hours passed and department approval
An internship it is an important aspect of Software 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 Software Engineering program courses.

SE 410 Software Architecture
Cr Hr: 3cr Pre-requisites: SE 221
This course introduces students to 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 gain knowledge of some well-known architecture patterns, and be able to design, construct and evaluate architectures for software systems. In addition, the course explains different aspects that influence the choice of architecture.

SE 412 Software Testing and Quality Assurance
Cr Hr: 3cr Pre-requisites: SE 221
The course focuses on software verification and validation throughout the software life cycle, including reviews (inspections and walkthroughs), testing techniques (functional and structural – black box and white box), levels of testing (unit, integration, system, and acceptance), and testing tools (static and dynamic). Testing and quality assurance standards.

SE 415 Professional Practice and Software Documentation
Cr Hr: 3cr Pre-requisites: SE 412
This course provides students with an awareness of the professional practice they will encounter in private and public organizations. The course introduces topics of communication, professional ethics, professional judgment, and social intelligence. In addition, the course covers an overview of the methods and practices that software engineering professionals use to create software documentation. This part is concerned with questions about the suitability of documentation, its content, format, and interaction style.

SE 416 Mobile Application Development
Cr Hr: 3cr Pre-requisites: SE 221 and SE 312
This course examines the principles of mobile application design and development. Students will learn application development on the Android platform. Topics will include memory management; user interface design; user interface building; input methods; data handling; network techniques and URL loading; and, finally, specifics such as GPS and motion sensing. Students are expected to work on a project that produces a professional-quality mobile application. Projects will be deployed in real-world applications.

SE 416 L Mobile Application Development Lab
Cr Hr: 2cr Pre-requisites: SE 221 and SE 312 Co-requisites: SE 416
Laboratory experiments dealing with mobile application development.

SE421 Software Maintenance, Configuration Management and Evolution
Cr Hr: 3cr Pre-requisites: SE 412
Students enrolled in this course will be equipped with a solid understanding of the laws of software engineering, evolution and maintenance models, reengineering techniques, legacy information systems, impact analysis, refactoring, program comprehension, and reuse.

SE 490 Software Engineering Capstone Project I
Cr Hr: 1cr Lab Hr: 3cr Pre-requisites: 104 credit hours passed
This is the first part of a two-semester senior-year capstone project. Students work in teams. They employ knowledge gained from courses throughout the program such as development of requirements, design, implementation, and quality assurance to develop a software solution to a real-world problem from conception to completion. In this part students give project plan, provide software requirement specification document and develop software high-level design.

SE 491 Software Engineering Capstone Project II
Cr Hr: 1cr Lab Hr: 3cr Pre-requisites: SE 490
This is the second part of the capstone project started in SE 490 course. In this part, students provide software low-level design produced in SE 490, implement the design, test their code, and manage and evaluate their final product. Student teams must deliver the code, a final report and a do a presentation and demonstration for their implemented software.

Elective Courses

SE 435 Undergraduate Research in Software Engineering
Cr Hr: 3cr Pre-requisites: GPA of at least 3.0/4.0, signed research contract, and consent of the departmental chair
This course allows students to participate in a supervised research with a faculty member. Supervised research can be either an independent research undertaken by the student (thesis, independent study), or assistance on a faculty member's research project.

SE 440 Special Topics in Software Engineering
Cr Hr: 3cr Pre-requisites: 104 credit hours passed
This course provides instruction and experience in timely topics related to the design and development of quality-engineered software.

SE 441 Telecommunications Software Design Cr Hr: 3cr
Pre-requisites: 104 credit hours passed
Formal models for telecommunications software design and analysis. Protocol specification, design and validation. Protocol verification and testing. Conformance testing. Protocol synthesis. Protocol conversion.

SE 442 Social Networks for Software Engineers
Cr Hr: 3cr Pre-requisites: 104 credit hours passed
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.

SE 443 Cloud Computing for Software Engineers
Cr Hr: 3cr Pre-requisites: EE 305
This course will leverages the World Wide Web to fulfil 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.

SE 444 Artificial Intelligence

Cr Hr: 3cr Pre-requisites: 104 credit hours passed

This course aims to develop computer applications, which encompass perception, reasoning and learning and to provide an in-depth understanding of major techniques used to simulate intelligence.

SE 445 Information and Software Security

Cr Hr: 3cr Pre-requisites: 104 credit hours passed

The purpose of this course is to study techniques that are used to automate the detection of security vulnerabilities, such as access-control and information-flow vulnerabilities in software, due to coding malpractice or security-policy misconfigurations; to study the design and implementation of secure programming languages; and promote the correct usage of security Application Programming Interfaces (APIs).

College of Medicine | **CoM**

College of Medicine

Dean Dr. Khaled Al Kattan, Dean, College of Medicine

Website http://coe.alfaisal.edu/

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Over the last three decades, the Kingdom of Saudi Arabia has experienced a dramatic improvement in economic status. Health services have developed to an even greater extent, 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 other sectors such as education and agriculture. Expanding and changing medical education and medical practice is imperative in order to produce healthcare professionals in the needed quantities and quality, at the right times and in the right places.

The existing curricula of many medical schools in Saudi Arabia follow traditional approaches, which deliver knowledge through fragmented and non-integrated avenues. Instead of being community-oriented, they are teacher-oriented and force students into passive roles. 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 of 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 particular 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.

CoM Faculty Members

Pallab Kumar Ganguly, Professor, Department of Anatomy & Genetics, College of Medicine FACA, American College of Angiology, New York.

Akef Obeidat, Associate Professor, Department of Anatomy & Genetics, College of Medicine , Ph.D., University of Ottawa.

Aniko Etelka Szabo Hill, Assistant Professor, Department of Anatomy & Genetics, College of Medicine, PhD in Neurobiology, Weill Cornell Graduate School of Medical Sciences.

Junaid Kashir, Assistant Professor, Department of Anatomy & Genetics, College of Medicine, Ph.D., University of Oxford.

Hassan Sami Shaibah, Assistant Professor, Department of Anatomy & Genetics, College of Medicine Double major (Anatomy and Medical Education) Doctor of Philosophy, PhD and a Master of Health Professions Education (MHPE), Maastricht University, Netherlands.

Aftab Ahmed Shaikh, Senior Lecturer, Department of Anatomy & Genetics, College of Medicine, MPhil. Anatomy, Karachi University.

Muhammad Atif Mazhar, Senior Lecturer, Department of Anatomy & Genetics, College of Medicine MBBS, University of Karachi.

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Gulsan Abubakar Karbani, Senior Lecturer, Department of Anatomy & Genetics, College of Medicine Advanced Diploma in Counselling, Park Lane College, UK.

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Sadia Qazi, Lecturer, Department of Anatomy & Genetics, College of Medicine Mphil Anatomy, Dow university of health sciences.

Amna Shoaib Siddiqui, Lecturer, Department of Anatomy & Genetics, College of Medicine MBBS and PG certification in Medical Education, Baqai Medical University and Cardiff University.

Sadek Obeidat, Teaching Assistant, Department of Anatomy & Genetics, College of Medicine MBBS, Alfaisal University.

Hanaa Hajeer, Associate Professor, Department of Biochemistry & Molecular Medicine, College of Medicine Department of Biochemistry and Molecular Medicine, University of Manchester.

Jasmine Hanafy Mahmoud Holail, Senior Lecturer, Department of Biochemistry & Molecular Medicine, College of Medicine M.Sc in pharmacology, American University of Beirut.

Reem Attia Mubarak, Senior Lecturer, Department of Biochemistry & Molecular Medicine, College of Medicine Masters of Science In Medical Research, Wayne state University.

Rajaa Fakhoury, Professor, Department of Biochemistry & Molecular Medicine, College of Medicine PhD in Medical Biochemistry, Manchester University.

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Muhammad Zafar, Professor, Department of Clinical Skills , College of Medicine Ph.D., Baqai Medical University.

Baraa Alghalyini, Assistant Professor, Department of Community & Family Medicine, College of Medicine Canadian Board in Family Medicine: Postgraduate (clinical), Masters in Public Health: graduate (academic).

Mohammad Hasan Rajab, Associate Professor, Department of Epidemiology & Biostatistics, College of Medicine Ph.D., Texas A&M University.

Fouad F. Jabri, Lecturer, Department of Epidemiology & Biostatistics, College of Medicine Master, King Saud bin Abdulaziz University for Health Sciences.

Ahmed Yaqinuddin, Associate Professor, Department of Medical Education, College of Medicine Ph.D., Aga Khan University.

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Jose Rey-Ladino, Professor, Department of Microbiology & Immunology, College of Medicine Ph.D., University of British Columbia (UBC).

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Garwin Kim Sing, Associate Professor, Department of Microbiology & Immunology, College of Medicine Ph.D., University of the Witwatersrand.

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Ahlam Al Shedoukhy, Professor, Department of Pathology , College of Medicine Consultant Pathologist and Dermatopathologist, UCSF- USA.

Emadeddin M. Said Raddaoui, Professor, Department of Pathology, College of Medicine American Boards in Anatomic Pathology, Clinical Pathology and Cytopathology. Texas A&M.

Khurshid Anwar, Associate Professor, Department of Pathology, College of Medicine PhD in Pathology, Fukui University Japan.

Abderrahman Ibrahim Ouban, Associate Professor, Department of Pathology, College of Medicine Fellowship, University of Toronto.

Muhammad Abrar Barakzai, Assistant Professor, Department of Pathology, College of Medicine FCPS (Fellowship in Histopathology), College of Physicians and Surgeons of Pakistan.

Shoukat Ali, Senior Lecturer, Department of Pathology, College of Medicine Ph.D. (Pathology), Ziauddin University Karachi.

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Sabri Kemahli, Professor of Pediatrics (Ped. Hematology), Department of Pediatrics, Faculty of Medicine, Ankara University.

Giuseppe Botta, Professor, Department of Pediatrics, College of Medicine MD, University Degli Studi Di Genova.

Ayman Mohamed Awad Mohamed, Teaching Assistant, Department of Pediatrics, College of Medicine MBBS, Alfaisal University.

Dileep Kumar Rohra, Associate Professor, Department of Pharmacology, College of Medicine Ph.D., Tohoku University.

Peter Mark Basil Cahusac, Associate Professor, Department of Pharmacology, College of Medicine Ph.D., Bristol University.

Manal Mohamed Alem, Assistant Professor, Department of Pharmacology, College of Medicine Ph.D., Glasgow University-UK.

Nasir Ali Afsar, Senior Lecturer, Department of Pharmacology, College of Medicine Ph.D., Ziauddin University.

Ali Amin Khraibi, Professor, Department of Physiological Sciences, College of Medicine Ph.D., The University of Mississippi School of Medicine.

Peter Ramutis Kvietys, Professor, Department of Physiological Sciences, College of Medicine PhD, Michigan State University.

Muhammad Nasir Afzal, Professor, Department of Physiological Sciences, College of Medicine Ph.D., University of Manitoba.

Moni Nader, Assistant Professor, Department of Physiological Sciences, College of Medicine Ph.D., University of Sherbrooke.

Stefanos Ioannou, Assistant Professor, Department of Physiological Sciences, College of Medicine Ph.D. in Neuroscience, University of Parma.

Abdul Jabar Rasool, Senior Lecturer, Department of Physiological Sciences, College of Medicine MS (Physiology and Biophysics), University of Iowa.

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Rafat Mohtasib, Assistant Professor, Department of Radiology, College of Medicine Ph.D., University of Liverpool.

Khaled Manaa Alkattan, Professor, Department of Surgery, College of Medicine FRCS, Royal College of Surgeons of Edinburgh.

Naif H. Alshiblan Alotaibi, Assistant Professor, Otolaryngology –Head and neck surgery. Department of Surgery. (D.E.S) University Hospitals of Paris, University of Paris XI. MSc. University of Oxford. Fellowship; Geneva University Hospitals

Wael Manaa Al Kattan, Assistant Professor, Department of Surgery, College of Medicine Fellowship of the Royal College of Surgeons of Canada (FRCSC), University of Toronto.

College of Medicine Degree Programs

A six year program leading to an MBBS degree (Medical Bachelor and Bachelor of Surgery)

Degree Requirements for MBBS (Medical Bachelor and Bachelor of Surgery)

College of Medicine - UG Course Credit Hour Transcript Ninth Batch - Year 2016								
MAIN COURSE (MBBS)								
Phase & Semester		**S #**	**Course Code**	**Year**	**Sem**	**Course Title**	**Credit Hrs**	
Phase I - Man & The Environment	**Semester-I, Fall**	1	FON 111	1	1	Foundation Block (4-weeks)	2	(1+0+2)
		2	MSK 112	1	1	Musculo Skeletal Block (7-weeks)	4	(3+0+2)
		3	GIT 113	1	1	Gastrointestinal Block (6-weeks)	3	(2+0+2)

		4	MOL 114	1	1	Molecular Medicine I (Biochemistry & Cell Biology)	3	(1+2+0)
		5	PRO 115	1	1	Communication Skills	2	(0+4+0)
		6	COM 116	1	1	Primary Health Care , Rural Health and Prevention	2	(0+4+0)
		7	ENG 102	1	1	Freshman English I	2	(2+0+0)
			Total Credit Hours for Semester-1				**18**	
	Semester-II, Spring	1	CVP 121	1	2	Cardiopulmonary block (8 weeks)	5	(4+2+0)
		2	HLS 122	1	2	Hematopoietic & Lymphatic System Block (4weeks)	2	(1+2+0)
		3	REN 123	1	2	Renal Block (5-weeks)	3	(2+2+0)
		4	GEN 124	1	2	Genetics	2	(2+0+0)
		5	MOL 125	1	2	Molecular Medicine II (Biochemistry & Cell Biology)	3	(2+0+0)
		6	ENG 113	1	2	English-II	2	(2+0+0)
			Total Credit Hours for Semester-2				**17**	
	Semester-III, Fall	1	END 231	2	3	Endocrine Block (4-Weeks)	2	(1+2+0)
		2	REP 232	2	3	Reproductive Block (4-weeks)	2	(1+2+0)
		3	POD 233	2	3	Pathogenesis of Diseases (Basic Principles of Pharma, Micro, Patho & Immuno) 9-Weeks	5	(3+2+2)

		4	PRO 234	2	3	Professional Skills I (Introduction to clinical Skills)	2	(0+4+0)
		5	BEP 235	2	3	Basics of Biostatistics & Epidemiology	2	(1+2+0)
		6	ARB 101	2	3	Arabic Language I	2	(2+0+0)
		7	ISL 101	2	3	Islamic Studies I	2	(2+0+0)
		8	ENG 224	2	3	English for special purposes	2	(2+0+0)
			Total Credit Hours for Semester-3				**19**	
	Semester-IV, Spring	1	NEU 241	2	4	Neuroscience Block (11 weeks)	6	(4+2+2)
		2	HNS 242	2	4	Head & Neck And Special Senses Block (6-weeks)	3	(2+2+0)
		3	BHS 243	2	4	Behaviour Science	2	(2+0+0)
		4	PRO 244	2	4	Professional Skills II (Integrated with Clinical Sessions)	2	(0+2+2)
		5	RAD 245	2	4	Radiology	2	(0+4+0)
		6	ARB 112	2	4	Arabic Language II	2	(2+0+0)
		7	ISL 113	2	4	Islamic Medical Jurisprudence	2	(2+0+0)
			Total Credit Hours for Semester-4				**19**	
Phase & Semester		**S #**	**Course Code**	**Year**	**Sem**	**Course Title**	**Credit Hrs**	

Phase II - Patho-physiology of the Disease	**Semester-V, Fall**	1	CVP 351	3	5	Cardiopulmonary Block (7-weeks)	4	(3+2+0)
		2	HEM 352	3	5	Hem/Onc Block (4-weeks)	2	(2+0+0)
		3	GIT 353	3	5	Gastrointestinal Block (6-weeks)	3	(2+2+0)
		4	EBM 354	3	5	Evidence Based Medicine	2	(1+2+0)
		5	PRO 355	3	5	Professional Skills III (Integrated with Clinical Sessions)	2	(0+4+0)
		6	MIF 356	3	5	Medical Informatics & Quality and Care	2	(1+2+0)
		7	FMT 357	3	5	Forensic Medicine & Toxicology	2	(2+0+0)
		8	COM 358	2	5	Family Medicine-1 (Env. M, Sports M, Occup. M, Rehab and Patient Safety)	2	(1+2+0)
			Total Credit Hours for Semester-5				**19**	
	Semester-VI, Spring	1	MSI 361	3	6	Musculoskeletal and Integumentary block (5 week)	3	(2+2+0)
		2	END 362	3	6	Endocrine Block (4-Weeks)	2	(2+0+0)
		3	REP 363	3	6	Reproductive & Breast Block (4 Weeks)	2	(1+2+0)
		4	REN 364	3	6	Renal Block (4-weeks)	2	(2+0+0)
		5	PRO 365	3	6	Professional Skills IV (Integrated with Clinical Sessions)	2	(0+4+0)

		6	COM 366	3	6	Family Medicine-II (Women's H, Prenatal C, Geriatrics, Palliative and Alternative M)	2	(1+2+0)
		7	HEN 367	3	6	Health Economics and Health Care Management	2	(2+0+0)
		8	NTN 368	3	6	Nutrition	2	(2+0+0)
		9	PHL 369	3	6	Medical Ethics	2	(2+0+0)
			Total Credit Hours for Semester-6				**19**	
Phase III - Clerkship	**Sem-VII & VIII**	1	MED 471	4	7	Medicine (9-weeks)	9	(2+14+0)
		2	PED 472	4	7	Paediatrics (9-weeks)	9	(2+14+0)
		3	SUR 481	4	8	Surgery (9-weeks)	9	(2+14+0)
		4	GYN 482	4	8	Obstetrics & Gynaecology (9-weeks)	9	(2+14+0)
			Total Credit Hours for Year-4 (Semesters 7 & 8)				**36**	
	Sem-IX & X,	1	MSS 591	5	9	Sub-Specialty Medicine (9w: Cardio 4w, Hem/Onc 4w)	9	(2+14+0)
		2	INS 592	5	9	Integrated Neuroscience (9w: Neuro 6w, Psy 2w)	9	(2+14+0)
		3	SSS 5X1	5	10	Surgical Sub-Specialty (9w:	9	(2+14+0)

						Opth 3 w ENT 3 w & Orth 3w)		
		4	AMB 5X2	5	10	Ambulatory Care (9 weeks: ER and Anaesthesis 4w, FM 4w)	9	(2+14+0)
			Total Credit Hours for Year-5 (Semesters 9 & 10)				**36**	
			Aggregate Credit Hours for UG Course				**183**	
Internship Year			**Hospital Attachment**					

Notes:
*** (1+2+0) 1 is Didactic session, 2 is Tutorial, Practicals, Clinical or Field training session and 0 is Laboratory

CoM Grading System

Standard Grading Scale	
Grade	**Grade Points**
A	4.00
A-	3.67
B+	3.33
B	3.00
B-	2.67
C+	2.33
C	2.00
C-	1.67
F	0.00

Medical Bachelor and Bachelor of Surgery Course Descriptions
Phase-I Man and the Environment

FON 111 Foundation Block
Cr Hr: 2cr

This is a multidisciplinary course (block) integrating topics in basic and applied clinical anatomy, histology, embryology, and physiology. The aim of this course is to 1) relate normal body function and control systems b) understand normal cell structure and function, and transport mechanisms across cell membrane c) describe the general aspects of anatomy including basic terminology, body planes, movements, organization of nervous system, classification of basic tissues, and classification of bones and joints and early stages of human development.

MSK 112 Musculoskeletal Block
Cr Hr: 4cr

This is a multidisciplinary course (block) integrating topics in basic and applied clinical anatomy, histology, embryology and physiology. The aim of this course is to a) describey bones & joints of upper and lower extremities, muscles of upper and lower extremities on the basis of their attachments, innervations and actions 2) Relate functional anatomy of nerve and blood supply of muscles with their compartmental 3) Relate sensory and motor deficits with structural organization of brachial and lumbosacral plexuses 4) Describe muscle and bone physiology.

GIT 113 Gastrointestinal Block
Cr Hr: 3cr

The overall objective 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. These learning objectives will be achieved by a combination of didactic lectures, structural/functional laboratories, large group discussion sessions, and Team-Based Learning (TBL) sessions. All of these approaches will emphasize normal structure and function of the GIT and introduce students to the consequences of abnormal structure/function of the GIT. The knowledge acquired should provide a solid foundation for the understanding of GIT diseases.

MOL 114 Molecular Medicine I (Biochemistry & Cell Biology)
Cr Hr: 3cr

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.

PRO 115 Communications Skills
Cr Hr: 2cr

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.

COM 116 Primary Health Care & Rural Health
Cr Hr: 2cr

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

CVP 121 Cardiopulmonary block
Cr Hr: 5cr

This is a multidisciplinary course (block) integrating topics in basic and applied clinical anatomy, embryology, histology, physiology and biochemistry. The aim of this course is to a) to acquire the relevant knowledge relating the basic structural and developmental organization of the cardiopulmonary systems and their most common abnormalities b) students to acquire the relevant knowledge relating the basic microscopic structure and function with common clinical problems /

diseases of cardiopulmonary systems c) Enhance logical thinking and problem-solving skills through the application of the TBL and laboratory exercises.

HLS 122 Hematopoietic & Lymphatic System
Cr Hr: 2cr
This is a multidisciplinary block integrating topics in basic and applied clinical anatomy, histology, embryology, and physiology related to hemopoietic system. Main objectives of this course include a) Describe the various constituents of blood, haematopoiesis, function and maturation of red cells, white cells and platelets, blood types, transfusion, tissue and organ transplantation; the most common abnormalities and complications relating to these systems and processes b) describe endothelial function, blood coagulation and discuss the most common abnormalities and complications relating to endothelial dysfunction and failure of haemostasis c) Describe the general characteristics of leukocytes (neutrophils and macrophages) and their roles in defending the host against infection, including the monocyte-macrophage system and inflammation.

REN 123 Renal Block
Cr Hr: 3cr
This is a multidisciplinary course (block) integrating topics in basic and applied clinical anatomy, histology, embryology, physiology and biochemistry. The aim of this course is to a) discuss the normal renal development, structure & function correlation, and renal control systems. b) discuss normal renal hemodynamic and the role of renal blood flow and glomerular filtration rate in maintaining normal renal function c) learn fundamental concepts relating to the characteristics of the glomerular capillary filtration barrier and the renal processes of filtration, reabsorption, and secretion.

GEN 124 Genetics
Cr Hr: 2cr
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. The specific requirements include knowledge about 1) structure and function of genes 2) the human genome 3) structure and function of chromosomes and chromosomal abnormalities 4) patterns of inheritance 5) mutation and disease 6) preventive and population genetics 7) and genetics in medical practice.

MOL 125 Molecular Medicine II (Biochemistry & Cell Biology)
Cr Hr: 2cr
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.

END 231 Endocrine Block
Cr Hr: 2cr
This is a multidisciplinary course (block) integrating topics in basic and applied clinical anatomy, histology, embryology, physiology and biochemistry. The aim of this course is to a) discuss the normal development, structure function correlation, and control systems of endocrine glands and relevant organs and tissues b) Understand normal chemical structure, synthesis, secretion, transport, and clearance of hormones c) Feedback control of hormone secretion and mechanisms of action of hormones d) discuss the physiologic functions and regulation of growth hormone, thyroid hormones, adrenocortical hormones, insulin, and glucagon

REP 232 Reproductive Block
Cr Hr: 2cr
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.

POD 233 Pathogenesis of Diseases (Basic Principles of Pharma, Micro, Patho & Immuno)
Cr Hr: 5cr
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.

PRO 234 Introduction to Medical Skills
Cr Hr: 2cr
During this course students will conduct and record medical interview and learn to perform general physical examination.

BEP 235 Basics of Biostatistics & Epidemiology
Cr Hr: 2cr
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. At the end of this course students should be able to: 1) Perform basic biostatistical analysis and data presentation using SPSS 2) Have better understanding and begin to interpret the main results of medical and public health research articles 3) Effectively participate in medical and public health research programs and projects.

NEU 241 Neuroscience Block
Cr Hr: 6cr
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.A PBL case relevant to the theme of the week is discussed and serves to anchor the learning around that theme.

HNS 242 Head & Neck and Special Senses Block
Cr Hr: 3cr
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.

BHS 243 Behavior Science
Cr Hr: 2cr
This course examines progression through the life cycle, including birth through senescence – cognitive, language, motor skills, and social and interpersonal development - sexual development – influence of developmental stage on physician-patient interview and psychological and social factors influencing patient behavior – personality traits or coping style, including coping mechanisms – psychodynamic and behavioral factors, related past experience – family and cultural factors, including socioeconomic status, ethnicity, and gender – adaptive behavioral responses to stress and illness – maladaptive behavioral responses to stress and illness – interactions between the patient and the physician or the health care system – patient adherence (general and adolescent).

PRO 244 Professional Skills IV (Integrated with Clinical Sessions)
Cr Hr: 2cr
By the end of this course, students will be able to obtain a complete medical history 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.

RAD 245 Radiology
Cr Hr: 2cr
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.

Phase-II Pathophysiology of disease

CVP 351 Cardiopulmonary block
Cr Hr: 4cr
This course examines the aetiology, 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. The students are required to 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.

HEM 3524 Hem/Onc Block
Cr Hr: 2cr
In this course students will learn how to review haematopoiesis and red cell structure, function and metabolism, describe the pathophysiology, clinical features, diagnostic workup and management of red and white cell disorders, bleeding disorders, coagulation disorders and thrombophilia, diseases of spleen and thymus, interpret the clinical and laboratory information to understand and classify different types of anaemia. 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.

GIT 353 Gastrointestinal Block
Cr Hr: 3cr
This course examines the aetiology, epidemiology, predisposing factors, pathophysiology, and classification, of common gastrointestinal, liver, and pancreatico-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.

EBM 354 Evidence based Medicine
Cr Hr: 2cr
In this course students learn the basic principles of epidemiologic studies and evidence based medicine (EBM). The students identify and interpret some of the risk factors affecting patients and the community, interpret epidemiological findings in terms of the population and patients. They are required to identify issues with regards to medical research and research ethics, learn how to prepare a formal research proposal and prepare it for submission.

PRO 355 Professional Skills III (Integrated with Clinical Sessions)
Cr Hr: 2cr
By the end of this course, students will be able to obtain a complete medical history of disorders related to Cardiovascular, Respiratory, Gastrointestinal and Hematological systems. The students are required to perform relevant physical examination during patient encounters. The students are required to communicate respectfully and effectively with patients and their family members. They need to acquire knowledge and skills needed for successful clinical encounter and medical interview.

MIF 356 Medical Informatics
Cr Hr: 2cr
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. The students should understand the nature of medical data and the electronic medical records (EMR), knowledge of standards, coding and classifications in medical informatics. They should demonstrate best practices through quality improvement tools and techniques and educate students to be agents to facilitate patient safety culture.

FMT 367 Forensic Medicine & Toxicology
Cr Hr: 2cr
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.

COM358 Family Medicine
Cr Hr: 2cr
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. Create opportunities to acquire knowledge and skills pertinent to the specialty of family medicine through self-reflection and previously studied courses.

MSI 361 Musculoskeletal and integumentary block
Cr Hr: 3cr
This course examines the aetiology, 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 deferential 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.

END 362 Endocrine Block
Cr Hr: 2cr

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.

REP 363 Reproductive Block and Breast
Cr Hr: 2cr
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.

REN 364 Renal Block
Cr Hr: 2cr
The Renal course in Phase II is directed towards the learning and understanding the disorders of the kidney and urinary 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.

PRO 365 Professional Skills V (Integrated with Clinical Sessions)
Cr Hr: 2cr
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.

COM 366 Family Medicine-II (Women's H, Prenatal C, Geriatrics, Palliative and Alternative M)
Cr Hr: 2cr
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.

HEN 367 Health economics and Hospital management
Cr Hr: 2cr
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.

NTN 368 Nutrition
Cr Hr: 2cr
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.

Phase-III Clinical Clerkships phase

MED 471 Medicine
Cr Hr: 9cr
Medical students gain initial clinical experience under direct supervision of clinical instructors. The nine weeks period of enrolment 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.

PED 472 Pediatrics

Cr Hr: 9cr

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. This course will require development of competency in the physical examination of infants and children, clinical problem-solving skills, strategies for health promotion as well as disease and injury prevention and development of the attitudes and professional behaviours appropriate for clinical practice.

SUR 481 Surgery

Cr Hr: 9cr

In this course students will learn how to perform complete history and physical examination on surgical patients, interpret laboratory diagnostic tests and radiological imaging studies associated with common surgical diseases accurately. Describe indications for operative surgery; discuss the risks and benefits of common surgical procedures. Identify the necessary diagnostic modalities to develop a preliminary plan of management, outline a plan of action for the management of surgical infection, with either surgery or a plan for antibiotics.

GYN 482 Obstetrics & Gynecology

Cr Hr: 9cr

The specific objectives of this rotation are to cover different aspects in Obstetrics & Gynaecology which include, master history taking from both obstetrics and gynaecology 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. Discuss physiology of pregnancy, normal antenatal and postnatal care. Should be able to manage normal labour and assist in common obstetric problems. Describe the common gynaecologic neoplasms, including the presentation, diagnosis and treatment; understand the general principles of staging and principles of family planning and different contraceptive techniques.

MSS 591 Sub-Specialty Medicine

Cr Hr: 9cr

At the end of thisclerkship, 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.

INS 592 Integrated Neuroscience
Cr Hr: 9cr
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.

SSP 5X1 Surgical Sub-Specialty
Cr Hr: 9cr
This course consists of three rotations in Ophthalmology, Otolaryngology – 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.

AMB 5X2 Ambulatory Care
Cr Hr: 9cr
This course will consist of three sub clinical rotations including Emergency Medicine, Anaesthesiology, and Family Medicine. At the end of the Emergency Medicine and Anaesthesiology rotations the students will be able to order and interpret test data, including laboratory, EKG, and radiographic / imaging studies, demonstrate interpersonal communication with patients, families, physicians, EMS personnel, and ancillary staff, identify acutely ill patients and develop a plan for immediate stabilization. By the end of family Medicine rotation the students will be able to gather the relevant information, formulate differential diagnoses

and propose management plans for patients with common primary care problems, manage follow-up visits with patients having one or more common chronic diseases and engage in patient education.

College of Pharmacy | CoP

College of Pharmacy

Acting Dean: Dr Manal Alem, MBBS, KFUD, MSc., MRCP (UK), PhD.

Assistant Prof of Clinical Pharmacology

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Dean's message

College of Pharmacy

Alfaisal University

An efficient healthcare system in the world needs to establish a harmonized environment between health care professionals; among which pharmacists play an essential and a leading role. Career of pharmacy as a profession nowadays includes modern clinical services related to health care, such as; designing a management plan, reviewing medications for safety and efficacy, and providing drug information.

Alfaisal University invested in medical, science, engineering, and business education. Alfaisal followed a tradition of excellence in the education and practice in all of its well-established colleges. Now it started its investment in pharmacy education in the new College of Pharmacy. The Pharm.D. (Doctor of Pharmacy) Program provided, is a six years program that was established with strong foundation of basic sciences. Based on which different disciplines related to pharmaceutical sciences, research, and pharmacy practice integrate. The sixth year will focus on Advanced Pharmacy Practice Experience (APPE) rotations giving the graduate an excellent opportunities to explore his/her future interest.

The college of Pharmacy and its developing leaders are keen to recruit top faculty from all over the world to master pharmacy education, adopt research as a life style with faculty, staff, and students being engaged, and to establish a pharmacy students association that will excel in community service as part of

their academic/nonacademic activities. Through its international institutional affiliation and collaboration with Massachusetts College of Pharmacy & Health Sciences (MCPHS), and Strathclyde Institute of Pharmacy & Biomedical Sciences (SIPBS) in the UK, college of pharmacy will continue to develop its curriculum, design the latest educational events, and arrange students/faculty summer programs.

Future plans for the college will focus on launching workshop and educational events focusing on pharmacy career, latest advances in health sciences research, to broaden its international affiliation and collaboration, and to develop postgraduate programs that are courses- and research-based in due course.

Dr Manal M. Alem

Acting Dean College of Pharmacy

College of Pharmacy is a new college at Alfaisal University that enrolls graduates from the university preparatory program UPP into a further 5 years of didactic/ experiential courses within Pharm.D. Program. This program will offer 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.

College of Pharmacy at Alfaisal University aims to be recognized for excellence in pharmacy education, research and practice with the goal of providing professional, innovative, and evidence-based patient care and state-of the art contribution to research and pharmaceutical industry in the Middle East and the whole world.

College of Pharmacy at Alfaisal University is committed to the following standards;

• Help the graduate to develop, integrate, and apply knowledge from the basic as well as clinical sciences to evaluate scientific literature, explain drug action, and solve therapeutic problems.
• Grant the graduate with the knowledge, skills, abilities, behavior, and attitude necessary to provide patient-centered care, manage medication use systems, promote health and awareness, and describe the influence of population-based care on patient-centered care.
• Grant the graduate with the knowledge, skills, abilities, behavior, and attitude

necessary to solve problems, educate, and communicate with a broad range of patients and to collaborate and communicate with health care professionals.

CoP Faculty Members

Dr Manal Alem, Acting Dean, College of Pharmacy,
Assistant professor of Clinical Pharmacology, College of Medicine
PhD in clinical pharmacology – Glasgow University
MRCP (UK) membership of the Royal College of Physicians of Edinburgh.

Dr Mohammed Abdalmoety Fares Khanfar, Head - Department of pharmaceutical sciences,Associate professor of Medicinal chemistry, College of pharmacy, PhD in Medicinal Chemistry and drug design, College of Pharmacy, University of Louisiana at Monroe.

Dr Omar Ziad Ameer Al Adhami, Assistant Professor of Pharmacology, Department of pharmaceutical sciences, College of Pharmacy
PhD in Advanced Medicine (Majors: Physiology and Pharmacology), Australian School of Advanced Medicine, Macquarie University, Sydney, Australia.

Ms Ghadeer Hassan Al Absi, Lecturer of Clinical Pharmacy, Department of Pharmacy Practice, College of Pharmacy
Master of clinical Pharmacy, University of Jordan, Amman, Jordan

Ms Nahlah Abdullah Aldahian, Lecturer of Pharmacology, Department of pharmaceutical sciences, College of Pharmacy
Master of Pharmacology, Massachusetts college of Pharmacy and health Science University

Ms Mariyam Mohammad Alfagih, Teaching Assistant of Pharmacology, Department of pharmaceutical sciences, College of Pharmacy
Master of Genomic Medicine, Imperial College London

Ms Noura Hatim Al Abdulrahman, Lab Specialist, Department of pharmaceutical sciences, College of Pharmacy
Bachelor Degree in Pharmaceutical Since, Riyadh College, Ksa

College of Pharmacy Degree Program

Pharm.D. curriculum (Doctor of Pharmacy)

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/behavioral 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-centered/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 settings 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 settings, 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
First year	University Preparatory Program	**23**
Second –fifth year	Didactic courses Practicum/simulation laboratory Introductory practice experiences	**135**
Sixth year	Advanced clinical/experiential education, via Advanced Pharmacy Practice Experience (APPE) rotations	**40**
Total		**198**

Pharm.D. curriculum

Year 1-Phase 1 Semester 1							
Course code	**Course title**	**Credit hour**	**Theory**	**Lab**	**Tutorial /practical**	**Pre-requisite**	**Co-requisite**
PCHE 101	Chemistry I	3	2	1	-	-	**-**
PHSF 101	Human Structure and Function I	4	3	1	-	-	-
PAM 101	Algebra	3	3	-	-	-	-
PENG 005	English 005	4	UPP criteria are available for exemption from English courses.				
PENG 006	English 006	4					
Total credit hour		**10**					

Year 1-Phase 1 Semester 2							
Course code	**Course title**	**Credit hour**	**Theory**	**Lab**	**Tutorial /practical**	**Pre-requisite**	**Co-requisite**
PCHE 112	Chemistry II	3	2	1	-	PCHE101	-
PHSF 112	Human Structure and Function II	4	3	1	-	PHSF 101	-
PPHY M112	Physics for Medicine and Life Sciences	3	3	-	-	-	-
PBIO 112	Principles of biochemistry	3	3	-	-	PCHE101	-
PENG 007	English 007	3	UPP criteria are available for exemption from English courses.				
PENG 008	English 008	3					
Total credit hour		**13**					

Year-2—Phase 2 Semester 3							
Course code	**Course title**	**Credit hour**	**Theory**	**Lab**	**Tutorial /practical**	**Pre-requisite**	**Co-requisite**
ENG 231	Medical terminology	2	2	-	**-**	**All Phase I subjects**	**-**
CHM 232	Organic chemistry	4	3	1	**-**		-
ANT 233	Anatomy and histology	4	3	1	**-**		PHY 234
PHY 234	Physiology	3	3	-	**-**		ANT 233
MAT 235	Calculus	3	2	-	1 **-**		-
ARB 102	Elective; Arabic Language I	2	2	-	-	-	-
Total credit hours		**18**					

Year 2-phase 2 Semester 4							
Course code	**Course title**	**Credit hour**	**Theory**	**Lab**	**Tutorial / practical**	**Pre-requisite**	**Co-requisite**
MCH 241	Medicinal chemistry	4	3	1	**-**	CHM 232	**-**
BCH 242	Biochemistry	4	3	1	-	CHM 232	**-**
MIC 243	Microbiology	3	2	1	**-**	ENG 231	**-**
IMM 244	Immunology	2	2	-	**-**	PHY 234	**-**
BST 245	Biostatistics and basic research methods	3	2	-	1 -	MAT 235	-
ISL 102	Elective: Islamic studies I	2	2	-	-	-	-
Total credit hours		**18**					

Year 3---Phase 2 Semester 5							
Course code	**Course title**	**Credit hour**	**Theory**	**Lab**	**Tutorial/ practical**	**Pre-requisite**	**Co-requisite**
CAL 351	Pharmacy calculations	1	-	-	1 -	MAT 235	**-**

KIN 352	Pharmacokinetics	3	2		1 -	MAT 235 MCH 241	**-**
PHC 353	Pharmaceutics I: Dosage forms and stability	3	2	1	**-**	MCH 241	**-**
MIC 354	Advanced microbiology	2	1	1	**-**	MIC 243	**-**
IMM 355	Clinical immunology	1	1	-	-	IMM 244	**-**
PRC 356	Pharmacy practice and health care systems	3	3	-	**-**	ENG 231	**-**
ARB 113	Elective; Arabic language II	2	2	**-**	-	-	**-**
ESP 224 PSY 101 SOC 101	Elective	3	3	**-**	-	**-**	**-**
Total credit hours		**18**					

Electives available: English for Specific Purposes **ESP 224**, Introduction to psychology **PSY 101**, and Introduction to sociology **SOC 101**

Year 3---Phase 2 Semester 6							
Course code	**Course title**	**Credit hour**	**Theory**	**Lab**	**Tutorial/ practical**	**Pre-requisite**	**Co-requisite**
PHC 361	Pharmaceutics II: Drug delivery	2	2	-	-	PHC 353	**-**
PTH 362	Parenteral therapy	2	1	1	-	PHC 353 CAL 351	**-**

REG 363	Pharmacy regulations and health ethics	2	2	**-**	-	PRC 356	**-**
SCR 364	Self-care and non-prescription drugs	1	1	-	-	-	BPH 365
BPH 365	Basic pharmacotherapy	3	3	**-**	**-**	**-**	BPH 366
BPH 366	Basic pharmacotherapy; *case based seminars*	1	-	**-**	1 -	**-**	BPH 365
BPH 367	Pharmacotherapy of antimicrobial agents	3	3	**-**	-	MIC 354	**-**
ISL 113	Elective; Islamic studies II	2	2	**-**	-	**-**	**-**
Total credit hours		**16**					

Year 4—Phase 3 Semester 7							
Course code	**Course title**	**Credit hour**	**Theory**	**Lab**	**Tutorial/ practical**	**Pre-requisite**	**Co-requisite**
MTM 471	Medication therapy management	2	2	**-**	-	**All phase 2 subjects**	**-**
DIT 472	Drug information and evidence-based practice	3	2	1	-		**-**
IPH 473	Integrated pharmacotherapy: cardiovascular CVS and renal I	3	3	-	-		IPH 474
IPH 474	Integrated pharmacotherapy: cardiovascular CVS and renal I *"case based seminars"*	1	-	-	1 -		IPH 473
IPH 475	Integrated pharmacotherapy: musculoskeletal MSK and respiratory RES	3	3	**-**	-		IPH 476
IPH 476	Integrated pharmacotherapy: musculoskeletal MSK	1	-	-	1 -		IPH 475

	and respiratory RES *"case based seminars"*						
PCL 477	Patient care and health system management lab I	2	1	1	-		IPH 473 IPH 474 IPH 475 IPH 476
PHG 478	Elective/ selective Pharmacogenomics and personalized medicine	2	2	-	-		**-**
Total credit hours		**17**					

Year 4---Phase 3 Semester 8							
Course code	**Course title**	**Credit hour**	**Theory**	**Lab**	**Tutorial/ practical**	**Pre-requisite**	**Co-requisite**
KIN 481	Clinical pharmacokinetics	2	1	-	1	**-**	**-**
ECO 482	Pharmacoeconomics and health outcomes	3	3	-	-	**-**	**-**
IPH 483	Integrated pharmacotherapy: Endocrine and women's health	3	3	-	-	**-**	IPH 484
IPH 484	Integrated pharmacotherapy: Endocrine and women's health *"case based seminars"*	1	-	-	1 -	**-**	IPH 483
IPH 485	Integrated pharmacotherapy: central nervous system CNS and gastrointestinal GIT	3	3	-	-	**-**	IPH 486
IPH 486	Integrated pharmacotherapy: central nervous system CNS and	1	-	-	1 -	**-**	IPH 485

	gastrointestinal GIT *"case based seminars"*						
PCL 487	Patient care and health system management lab II	2	1	1	-	**-**	IPH 483 IPH 484 IPH 485 IPH 486
CAM 488	Elective/ selective Complementary and alternative medicine	2	2	-	-	**-**	
Total credit hours		**17**					

IPP 489
summer

Introductory Pharmacy Practice Experience (IPPE) I
Cr Hr: 3 cr
4 weeks training in the summer time in; Community service/ pharmacy, and pharmacies in primary health care centers.

Year 5---Phase 3 Semester 9							
Course code	**Course title**	**Credit hour**	**Theory**	**Lab**	**Tutorial/ practical**	**Pre-requisite**	**Co-requisite**
IPH 591	Integrated pharmacotherapy: cardiovascular CVS and renal II	3	3	-	**-**	IPH 473 IPH 474	IPH 592
IPH 592	Integrated pharmacotherapy: cardiovascular CVS and renal II "*case based seminars"*	1	-	-	1 -		IPH 591
IPH 593	Integrated pharmacotherapy: Infectious disease	3	3	-	**-**	BPH 367	IPH 594
IPH 594	Integrated pharmacotherapy: Infectious disease "*case based seminars"*	1	-	-	1 -		IPH 593
PCL 595	Patient care and health system management laboratory III	2	1	1	-	PCL 477 PCL 487	IPH 591 IPH 592 IPH 593 IPH 594
IPP 596	Introductory Pharmacy	2	-	-	- 2	Semester 7,8	-

	practice experience (IPPE) II (out-patient pharmacy)						
RES 5X6	Research project	0	0	0	0	-	-
PHI 597 MRT 598 MIM 599	Elective	3	3	-	-	-	-
Total credit hours		**14**					

Electives available: Pharmaceutical industry **PHI 597**, Marketing for pharmacists **MRT 598**, Medical imaging for pharmacists **MIM 599**

Year 5---Phase 3 Semester 10							
Course code	**Course title**	**Credit hour**	**Theory**	**Lab**	**Tutorial/ practical**	**Pre-requisite**	**Co-requisite**
IPH 5X1	Integrated pharmacotherapy: Hematology/ oncology and palliative care	3	3	-	**-**	**-**	IPH 5X2
IPH 5X2	Integrated pharmacotherapy: Hematology/ oncology and palliative care *"case based seminars"*	1	-	-	1 -	**-**	IPH 5X1

MSF 5X3	Medication safety and health informatics	3	2	1	-	Semester 7,8	-
PCL 5X4	Patient care and health system management laboratory IV	2	1	1	**-**	PCL 477 PCL 487	IPH 5X1 IPH 5X2
IPP 5X5	Introductory Pharmacy practice experience (IPPE) III (in-patient pharmacy)	2	-	-	- 2	Semester 7,8	-
RES 5X6	Research project	3	-	-	- 3	-	-
Total credit hours		**14**					

6th year **Advanced pharmacy practice experience rotations (APPE)**	
Core rotations	**Selective/ Elective rotations**
Ambulatory care APP 001 General internal medicine APP 002 Institutional pharmacy practice APP 003 Community pharmacy practice APP 004	General pediatrics APP 005 Infectious diseases APP 006 Cardiology APP 007 Adult critical care APP 008 Paediatric/ neonatal critical care APP 009
	Free/ Elective rotations APP 010-021
	Organ Transplant Adult hematology/Oncology Nephrology Acute care TPN Pharmacy administration and management Pharmacy automation and informatics Surgery Drug Information Investigational drug services Medication safety Pharmacy quality improvement
Total	**40 weeks**

All students after finishing phase 3, are expected to finish 10 rotations for a maximum of 40 weeks of advanced pharmacy practice experience. 4 core rotations are mandatory for all. From the elective rotations, 3 can be chosen from the selective/ elective rotations, and the remaining ones 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.

General objectives of program courses

PCHE101 Chemistry I
Cr Hr: 3cr
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 major classes of compounds, with characteristic properties, chemical bonding and how different molecules interact with each other.

PHSF 101 and PHSF 112 Human Structure and Function I& II
Cr Hr: 4cr
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.

PAM 101 Algebra
Cr Hr: 3cr
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. A graphical approach will be utilized throughout the course with an emphasis on solving application problems.

PENG 005 English 005

Cr Hr: 4cr

This course specifically aims to develop the students' four language skills: listening, speaking, reading and writing, with special emphasis on reading, writing and communications. The emphasis of the listening and speaking component centers on oral communication and the retention and analysis of information based on students' abilities to listen and comprehend. Students listen to a variety of real-life recordings and critically discuss the topics.

PENG 006 English 006

Cr Hr: 4cr

This course focuses primarily on developing reading and writing skills with specific emphasis on communication and grammar. The writing component centers on extending students' ability to express themselves in the written word, to compose clear, well-organized, and coherent multi-paragraph texts. The reading component centers on extending students' ability to interact with the written information. The listening component focuses on identifying main and supporting points in an academic style lecture.

PCHE 112 Chemistry II

Cr Hr: 3cr

This course is designed to give students a solid foundation in basic chemistry as a preparation for undergraduate studies. Topics to be covered include stoichiometry, chemistry of gases, reaction kinetics and thermodynamics, acid-base chemistry, oxidation and reduction reactions and classification and basic reactions of organic molecules.

PPHYM 112 Physics for medicine and health sciences

Cr Hr: 3cr

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.

PBIO 112 Principles of biochemistry

Cr Hr: 3cr

This course will help student to appreciate organic chemistry as an important tool in understanding biochemistry and the 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. Structures and functions of biological macromolecules will be discussed.

PENG 007 English 007

Cr Hr: 3cr

This course aims to develop the four language skills: listening, speaking, reading and writing, with special emphasis on reading, writing and communications. Listening and speaking component focuses on oral communication and the retention and analysis of information based on the ability to listen and comprehend. Students will develop their skills to read, reflect upon, analyze, synthesize, and evaluate information in a variety of texts and write clear, well-organized and coherent essays.

PENG 008 English 008

Cr Hr: 3cr

This course focuses on reading and writing, with a minor emphasis on listening and speaking. This course is designed to improve students' critical reading and thinking skills, analytical, inferential and evaluative comprehension and to expand vocabulary skills. Students' will be enabled to write clear, well-organized and coherent essays. Academic writing conventions use are promoted as students are expected to incorporate basic citations to avoid plagiarism.

General objectives of program courses

ENG 231 Medical terminology

Cr Hr: 2cr

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 cover the medical

terms related to body systems. It will assist in comprehending and utilizing medical terminology efficiently to communicate with health care professionals to maximize patients care.

CHM 232 Organic chemistry
Cr Hr: 4cr
This course covers organic nomenclature as a basic 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 understand organic compounds properties, structures and actions. The students will determine chemical structures, designate mechanisms of organic reactions and stereochemistry and an in-depth cover of physical properties of drug compounds.

ANT 233 Anatomy and histology
Cr Hr: 4cr
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 will be covered in a systemic and integrated approach to promote critical thinking of the clinical consequences of cellular disorders and tissue related diseases.

PHY 234 Physiology
Cr Hr: 3cr
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. Emphasis will be placed on understanding the integrated regulation of various body processes among these major systems. This course will run parallel to the anatomy and histology course with regard to the sequence of the covered subjects.

MAT 235 Calculus

Cr Hr: 3cr

Calculus is the mathematical study of change with two major branches, differential and integral calculus. This course will provide an introduction to calculus as applied to the study of pharmacokinetics and pharmacy practice. Topics include concepts and determination of functions, domain and range, composition and finding the inverse of a function, limits and continuity, rules of differentiation. Students will understand the integral concept and its applications.

ARB 102 Elective/ Arabic language I

Cr Hr: 2cr

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' literary appreciation and provides morphological and syntactic insights into text analysis. This course counts as a humanities course in the university's General Education requirements.

MCH 241 Medicinal chemistry

Cr Hr: 4cr

This course introduces the concepts required to understand how the biological activities of drugs are derived from their chemical structures and physicochemical properties. 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, different analytical methods used to assay pharmaceuticals classification of drugs, their mechanisms of action, structure activity relationship.

BCH 242 Biochemistry

Cr Hr: 4cr

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' knowledge about proteins, nucleic acids, carbohydrates, and lipids metabolism and enzyme mechanisms which will allow an understanding of effects of drugs on various metabolic pathways, signal transduction, and biotransformation processes.

MIC 243 Microbiology

Cr Hr: 3cr

This course will provide the students with a basic understanding of 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 and antimicrobial resistance. Using an integrated approach, the students will be able to explore how these concepts relate to the infectious disease process, laboratory diagnosis and identification of microbes and drugs targets.

IMM 244 Immunology

Cr Hr: 2cr

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.

BST 245 Biostatistics and basic research methods

Cr Hr: 3cr

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 appreciate the fundamentals of research ethics. Planning research projects, the students will learn academic writing from how to write a research proposal until the data analysis, summarizing results, and writing an inclusive discussion and an effective conclusion.

ISL 102 Elective/ Islamic studies I

Cr Hr: 2cr

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' faith in its viability and all-inclusiveness. The course counts as the social science component of the university General Education requirements.

General objectives of program courses

CAL 351 Pharmacy calculations
Cr Hr: 1cr
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. Principles taught in this course will allow the students to interpret and dispense prescriptions and medication orders.

KIN 352 Pharmacokinetics
Cr Hr: 3cr
In this course, students will be able to describe and quantify drug liberation, absorption, distribution, metabolism and excretion properties of drugs and factors influencing them. Student will learn how to develop of appropriate dosage regimens, graphical analysis of drug concentration data sets and bioequivalence. Application pharmacokinetics to clinical problems involved in optimizing and monitoring drug use in patients will be covered.

PHC 353 Pharmaceutics I: Dosage forms and stability
Cr Hr: 3cr
This course introduces the student to the technologies involved in pharmaceuticals development processes and their required pharmaceutics components or excipients.. The students will differentiate between dosage forms, their routes of administrations, and the use of bioavailability and bioequivalence for formulations' assessments. Stability and quality control studies of each dosage form will be addressed. The basic principles associated with pharmaceutical compounding will be explained.

MIC 354 Advanced microbiology
Cr Hr: 2cr
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. Students will learn about the indications, approaches, equipment and agents utilized for cleaning, sterilization

and disinfection processes in the healthcare settings, community and in industrial pharmaceutical settings.

IMM 355 Clinical immunology
Cr Hr: 1cr
This course will build on the basic concepts the students learnt in the Immunology course. The applications of these concepts in the context of normal host immune responses, immunodiagnostic approaches, immunotherapy and immunization will be addressed. Various immunological disorders as the basis for correlating basic concepts, clinical presentation, immunodiagnostic and immunotherapy approaches. This course will expose the students to emerging clinical immunotherapeutic applications.

PRC 356 Pharmacy practice and health care systems
Cr Hr: 3cr
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 introduce the student to role of the clinical pharmacist in a healthcare team. Special emphases will be on the role of pharmacist's in patient care and public health in Saudi Arabia-health care system.

ARB 113 Elective/ Arabic language II
Cr Hr: 2cr
This course 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 respective characteristics. It counts as a humanities course in the university's General Education requirements.

Elective courses -3 options

Elective 1-

ESP 224 English for Specific Purposes
Cr Hr: 3cr
This course 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. 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.

Elective 2-

PSY 101 Introduction to Psychology
Cr Hr: 3cr
This course will introduce the students to psychology as a science and to major perspectives in psychology. Major application of psychology in the assessment and treatment of mental health problems is covered along with other application in clinical circumstances and counselling and in industrial and organizational settings, as well as scientific research on a wide range of topics related to mental processes and behavior will be also covered.

Elective 3-

SOC 101 Introduction to Sociology
Cr Hr: 3cr
This course will introduce the students to the basic concepts in the field, research methods, and theories in sociology. 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.

PHC 361 Pharmaceutics II: Drug delivery

Cr Hr: 2cr

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 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.

PTH 362 Parenteral therapy

Cr Hr: 2cr

This course will introduce the students to parenteral routes of drug administration and clinical aspects of 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 contaminants. Product stability, compatibility, labelling, and storage according to the principles of good drug quality control will be emphasized.

REG 363 Pharmacy regulations and health ethics

Cr Hr: 2cr

This course will introduce the pharmacy law and the regulation of pharmaceutical products and the practice of pharmacy internationally. Students will learn the various laws and regulations that will govern their daily practice in connection with the principal authority that is SFDA, the Laws and regulation set by MOH that govern medication dispensing and control substances. This course will teach the students the ethics related to pharmacy practice and ethical consideration in research.

SCR 364 Self-care and non-prescription drugs

Cr Hr: 1cr

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.

BPH 365 Basic pharmacotherapy

Cr Hr: 3cr

Integrated pharmacotherapy courses in this program will be introduced via an introductory basic pharmacotherapy course discussing pharmacodynamic principles. It will introduce the students to the normal physiology of autonomic nervous system and the pharmacology of drugs acting on parasympathetic and sympathetic nervous system. This course also will cover drug toxicity and poisoning and the concepts of environmental, occupational, and forensic toxicology.

BPH 366 Basic Pharmacotherapy "case-based seminars"

Cr Hr: 1cr

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. The course will start with a series of lectures focusing on communication and presentation skills. Followed by the usual conduct of such course via case based seminars.This course should parallel basic pharmacotherapy course delivery over 7 week's period.

BPH 367 Pharmacotherapy of antimicrobial agents

Cr Hr: 3cr

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. 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.

ISL 113 Elective/ Islamic studies II

Cr Hr: 2cr

This course will discuss 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 general education requirements.

General objectives of program courses

MTM 471 Medication therapy management
Cr Hr: 2cr
Medication Therapy Management (MTM) is a distinct service that optimize therapeutic outcomes for patients. MTM service emphasizes on performing a comprehensive medication therapy review to identify related problems, and to create an individualized therapy plan. It will introduce the student to the concept of evaluating complicated medication regimens as a scope of therapy management career. Practical application will be done in patient care and health system management laboratory courses I-IV.

DIT 472 Drug information and evidence-based practice
Cr Hr: 3cr
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. The student will learn that evidence-based practice requires screening, evaluating and implementing evidence from the rapidly evolving medical literature.

IPH 473 Integrated pharmacotherapy: Cardiovascular CVS and renal I
Cr Hr: 3cr
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 belonging to the system covered in the course, followed by corresponding pharmacology lectures. Current practice guidelines for the management for such diseases will follow. 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 “case based seminar” course that run in parallel to it in 7 weeks period.

IPH 474 Integrated pharmacotherapy: Cardiovascular CVS and renal I "case-based seminars"

Cr Hr: 1cr

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. Case based seminars applies "case-based collaborative learning" which integrate problem-based learning (PBL), with team-based learning (TBL). Seminar presentation aims to develop their presentation and communication skills.

This course should parallel integrated pharmacotherapy: cardiovascular and renal I course that will be delivered over 7 week's period.

IPH 475 Integrated pharmacotherapy: Musculoskeletal MSK and Respiratory RES

Cr Hr: 3cr

This integrated pharmacotherapy course 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, tendinitis, gouty and 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 "case based seminar" course that run in parallel to it in 7 weeks period.

IPH 476 Integrated pharmacotherapy: Musculoskeletal MSK and Respiratory RES "case-based seminars"

Cr Hr: 1cr

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. Case based seminars applies "case-based collaborative learning" which integrate problem-based learning (PBL), with team-

based learning (TBL). Seminar presentation aims to develop their presentation and communication skills.

This course should parallel integrated pharmacotherapy: cardiovascular and renal I course that will be delivered over 7 week's period.

PCL 477 and 487 Patient care and health system management laboratory I-II
Cr Hr: 2cr
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.

Selective/ Elective courses

PHG 478 Pharmacogenomics and personalized medicine
Cr Hr: 2cr
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 can contribute to variability in drug disposition and action. Accordingly the genetic makeup of an individual will lead to major changes in clinical outcomes.

KIN 481 Clinical Pharmacokinetics
Cr Hr: 2cr
This course involves clinical applications of pharmacokinetic principles including identification of actual and theoretical factors that contribute to variabilities in pharmacokinetic parameters and associated pharmacological responses. Design of optimized dosing regiments for patient care utilizing drug monitoring techniques will be also covered in this course. The student will apply the principles for pharmacokinetics and therapeutic drug monitoring in decision-making and improvement of patient care.

ECO 482 Pharmacoeconomics and health outcomes
Cr Hr: 3cr
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. This course will also teach the student to the basic features, strengths, and weaknesses of pharmacoepidemiological study designs.

IPH 483 Integrated pharmacotherapy: Endocrine and women's health
Cr Hr: 3cr
This integrated pharmacotherapy course 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 "case based seminar" course that run in parallel to it in 7 weeks period.

IPH 484 Integrated pharmacotherapy: Endocrine and women's health "case-based seminars"
Cr Hr: 1cr
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's health pharmacotherapy course. Case based seminars applies "case-based collaborative learning" which integrate problem-based learning (PBL), with team-based learning (TBL). Seminar presentation aims to develop their presentation and communication skills.

This course should parallel to integrated pharmacotherapy: endocrine and women's health course that will be delivered over 7 week's period.

IPH 485 Integrated pharmacotherapy: Central nervous system CNS and gastrointestinal GIT
Cr Hr: 3cr
This integrated pharmacotherapy course will teach the student pathophysiology of central nervous system and gastrointestinal system disorders.

Application of the knowledge acquired in this course will be applied in the “case based seminar” course that run in parallel to it in 7 weeks period.

IPH 486 Integrated pharmacotherapy: Central nervous system CNS and gastrointestinal GIT “case-based seminars”
Cr Hr: 1cr
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 and gastrointestinal pharmacotherapy course. Case based seminars applies “case-based collaborative learning” which integrate problem-based learning (PBL), with team-based learning (TBL). Seminar presentation aims to develop their presentation and communication skills.

This course should parallel to integrated pharmacotherapy: CNS and GIT course that will be delivered over 7 week’s period.

Selective/ Elective courses

CAM 488 Complementary and Alternative Medicine
Cr Hr: 2cr
The course gives an overview of the most commonly used complementary and alternative medicine modalities centered on the five domains of complementary, integrative and alternative medicine. 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.

IPP 489 Introductory pharmacy practice experience I
Cr Hr: 3cr
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 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 an opportunity to apply basic practice and communication skills and to interface with patients and healthcare providers.

General objectives of program courses

IPH 591 Integrated pharmacotherapy: Cardiovascular CVS and renal II
Cr Hr: 3cr
This integrated pharmacotherapy course 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 "case based seminar" course that run in parallel to it in 7 weeks period.

IPH 592 Integrated pharmacotherapy: Cardiovascular CVS and renal II *"case-based seminars"*
Cr Hr: 1cr
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. Case based seminars applies "case-based collaborative learning" which integrate problem-based learning (PBL), with team-based learning (TBL). Seminar presentation aims to develop their presentation and communication skills.

This course should parallel to integrated pharmacotherapy: endocrine and women's health course that will be delivered over 7 week's period.

IPH 593 Integrated pharmacotherapy: Infectious diseases
Cr Hr: 3cr
This Integrated pharmacotherapy course 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 “case based seminar” course that run in parallel to it in 7 weeks period.

IPH 594 Integrated pharmacotherapy: Infectious diseases *“case-based seminars”*
Cr Hr: 1cr
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. Case based seminars applies “case-based collaborative learning” which integrate problem-based learning (PBL), with team-based learning (TBL). Seminar presentation aims to develop their presentation and communication skills.

This course should parallel to integrated pharmacotherapy: infectious disease course that will be delivered over 7 week’s period.

PCL 595 and 5X4 Patient care and health system management laboratory III-IV
Cr Hr: 2cr
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.

IPP 596 and 5X5 Introductory Pharmacy Practice Experience II-III
Cr Hr: 2cr
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 in providing pharmaceutical services for patients and providers.

Introductory pharmacy practice experience II: (Institutional outpatient pharmacy services)

Introductory pharmacy practice experience III: (Institutional inpatient pharmacy services)

Elective courses -3 options

Elective 1-

PHI 597 Pharmaceutical industry
Cr Hr: 2cr
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. It involves visits to local pharmaceutical companies to follow the manufacturing processes.

Elective 2-

MRT 598 Marketing for pharmacists
Cr Hr: 2cr
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 non-profit environment as well as the practical marketing strategies that can be used in day to day pharmacy management. This course will be of value to pharmacy students seeking careers in pharmaceuticals companies, management, and industrial pharmacy.

Elective 3-

MIM 599 Medical imaging for pharmacists
Cr Hr: 2cr
This course will discuss the principles and applications of medical imaging in patient care. Great emphasis will be on radiopharmaceuticals and nuclear

medicine imaging (PET, SPECT) and other imaging technologies will be discussed briefly. 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.

IPH 5X1 Integrated pharmacotherapy: Haematology/ Oncology and palliative care
Cr Hr: 3cr
This integrated pharmacotherapy course will introduce the student to common haematological, and neoplastic disorders, and conclude the last pharmacotherapy course with the concept of palliative care.

Application of the knowledge acquired in this course will be applied in the "case based seminar" course that run in parallel to it in 7 weeks period.

IPH 5X2 Integrated pharmacotherapy: Haematology/ Oncology and palliative care *"case-based seminars"*
Cr Hr: 1cr
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 Case based seminars applies "case-based collaborative learning" which integrate problem-based learning (PBL), with team-based learning (TBL). Seminar presentation aims to develop their presentation and communication skills.

This course should parallel integrated pharmacotherapy: haematology, oncology and palliative care course that will be delivered over 7 week's period.

MSF 5X3 Medication safety and health informatics
Cr Hr: 3cr
Medication safety deals with the identification and prevention of medication errors. Students will learn about types of medication errors, factors that contribute to their occurrence, their severity, and their prevention. This course will also teach the concepts and tools required to understand informatics in pharmacy practice. The field of health informatics includes the development and use of hardware and software technologies to enhance patient care including improvements in efficiency and safety.

RES 5X6 Research project
Cr Hr: 3cr
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 summarize the results in a research report and present the results of the project to the academic community as a poster presentation in the “Research week”.

General objectives of program courses

APP 001-021 Advanced pharmacy practice experience rotations
Cr Hr: 4cr
After completion of the previous courses successfully, students will participate in a series of advanced clinical rotations in which they communicate with patients, professionals to identify and assess clinical problems; further develop their skills in 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 (40 weeks) will be required during a full academic year (2,000 hours) of clinically-oriented rotations offered primarily at off-campus sites.

There will be 4 core rotations that are mandatory for all (ambulatory care, general internal medicine, institutional pharmacy practice, and community pharmacy practice). Another 3 rotations can be chosen from the selective/ elective options (general paediatrics, infectious disease, cardiology, adult critical care, and paediatric/ neonatal critical care). The remaining 3 rotations are electively chosen from the free elective list that comprises (organ transplant, adult haematology/ oncology, nephrology, acute care, TPN, pharmacy administration and management, 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.

College of Science
and General Studies

CoS&GS

College of Science and General Studies

Dean Dr. Mattheus Goosen, Acting Dean of College of Science and General Studies

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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.

I am truly delighted to be part of this diverse, competent and vibrant academic community operating within an enlightened vision, the corollary dedicated to offering quality science education; ground-breaking scientific research; outstanding service to the local community and beyond; and running in parallel to a prosperous university preparatory program.

As a performance indicator, Alfaisal University was placed # 251/300 in the world for *Life Sciences subject ranking* by *The 2018 Times Higher Education World University Subject Rankings.* Only three programs at universities in the Kingdom, including Alfaisal Life Sciences, were listed in the top 500 globally. The university ranked second in Life Sciences in the Arab Region.

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, chemistry, physics, mathematics, nanoscience and nanotechnology, in addition to humanities and social sciences.

In this complementary and one-of-a-kind environment, our students receive a novel, 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. In particular, our promising students of life sciences and of nanoscience and nanotechnology are directly engaged in pioneering research projects in their respective areas of study and interests, and they constantly receive immense support and guidance from our renowned scientists.

Our programs are extremely beneficial and they thus 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

CoS Faculty Members

Abdulrahman Ibrahim Soliman, Assistant Professor, Department of Chemistry, College of Science & General Studies Ph.D., Virginia Commonwealth University, USA.

Amjad Kayid Fataftah, Assistant Professor, Department of Chemistry, College of Science & General Studies Ph.D., Northeastern University, USA.

Edreese Alsharaeh, Associate Professor, Department of Chemistry, College of Science & General Studies Ph.D., Virginia Commonwealth University.

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College of Science and General Studies Degree Programs

Bachelor of Science (B.Sc.) degree in Life Sciences

Department of Chemistry

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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 educate and prepares 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 in the fields of chemical and biochemical sciences, and by engaging in community services.

Chemistry Course Descriptions

CHM 101 General Chemistry I
Cr Hr: 3cr 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: 1cr 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 cr 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: 1cr 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: 3cr
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.

CHM 112 General Chemistry II
Cr Hr: 3cr Prerequisite: CHM 101 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: 1cr Prerequisite: CHM 101 L Co-requisite: CHM 112 L
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.

CHM 211 Organic Chemistry I
Cr Hr: 3cr 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: 1cr 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: 3cr Prerequisite: CHM 211 Co-requisite: CHM 212 L
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

CHM 212 L Organic Chemistry II lab
Cr Hr: 1cr 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 Quantitative Analysis
Cr Hr: 3cr Prerequisite: CHM 112 Co-requisite: CHM 213 L
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 213 L Quantitative Analysis lab
Cr Hr: 1cr Prerequisite: CHM 112 L Co-requisite: CHM 213
Quantitative Analysis Lab provides an introduction to the fundamental theory and laboratory techniques in analytical chemistry. This includes experimental errors and statistics, data methods. Chemical equilibria, titrations, spectrophotometry, and analytical separation methods.

CHM 232 Organic Chemistry
Cr Hr: 3cr
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.

CHM 232 L Organic Chemistry lab
Cr Hr: 1cr 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: 3cr 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: 1cr 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 equipments relevant to the materials of CHM 310 course.

CHM 331 Medicinal Chemistry
Cr Hr: 3cr Prerequisite: CHM 212
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.

CHM 332 Environmental Chemistry
Cr Hr: 3cr 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 reflects 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.

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General Department Information
The Department of Humanities and Social Sciences is the backbone of the different university colleges in offering both General Educational Requirements, including Arabic, English, and Islamic Studies, and a wide range of free elective courses in the domains of anthropology, philosophy, psychology, history, literature and foreign languages. The department contributes research in the domains of the humanities and social sciences, and supports the college and university's mission in serving the community.

Humanities and Social Sciences Course Descriptions

ISL 101 Islamic Studies I
Cr Hr: 2cr Prerequisite: None
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' faith in viability of Sharia Law and its all-inclusiveness. The course counts as the social science component of the university's General Education Requirements.

ISL 112 Islamic Studies II

Cr Hr: 2cr Prerequisite: ISL 101

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's General Education Requirements.

ISL 113 Islamic Studies II

Cr Hr: 2cr Prerequisite: ISL 101

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's General Education Requirements.

ARB 101 Arabic Language I

Cr Hr: 2cr Prerequisite: None

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' literary appreciation and provides morphological and syntactic insight into text analysis. This course counts as a humanities course in the university's General Education Requirements.

ARB 112 Arabic Language II

Cr Hr: 2cr 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 respective characteristics. It counts as a humanities course in the university's General Education Requirements.

ENG101 Freshman English 1
Cr Hr: 3cr

ENG102 Freshman English 1
Cr Hr: 2cr
Prerequisite: admission to AU colleges
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.

ENG 112 Freshman English II
Cr Hr: 3cr Prerequisite: ENG 101

ENG 113 Freshman English II
Cr Hr: 2cr Prerequisite: ENG 102
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.

ENG 222 Technical Writing
Cr Hr: 3cr Prerequisite: ENG 112 or ENG 113
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.

ENG 223 Literature
Cr Hr: 3cr Prerequisite: ENG 112 or ENG 113
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.

ENG 224 English for Medical Students
Cr Hr: 2cr Prerequisite: ENG 112 or ENG 113
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.

ENG 231 Medical Terminology
Cr Hr: 2cr Prerequisite: ENG 113 or 112
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

ANT 101 Introduction to Sociocultural Anthropology
Cr Hr: 3cr 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: 3cr 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.

FRE 101 French I
Cr Hr: 3cr 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: 3cr 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: 3cr 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.

GER 112 German II
Cr Hr: 3cr 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.

HIS 101 Islamic Civilization and Mediaeval Europe
Cr Hr: 3cr 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.

PHL 101 A Engineering Ethics
Cr Hr: 3cr Prerequisite: None
It examines the ethical dimensions of engineering practice by appealing to relevant concepts and principles in applied ethics; professional ethics; the philosophy of technology; and science, technology, and society studies. The importance of these principles for good decision making is highlighted through analysis of the role of engineers in socially and morally complex case study scenarios illustrating practical issues.

PHL 101 B Biomedical Ethics
Cr Hr: 2cr Prerequisite: None
The course presents the basic moral principles that govern medical and scientific research. It also provides insight into the application of these principles through case studies pertinent to ethical issues in international health research as well as in clinical ethics.

PSY 101 Introduction to Psychology
Cr Hr: 3cr 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.

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General Department Information
The mission of the program is to disseminate knowledge in the area of life sciences and to nurture the next generation of research scientists, biotechnological entrepreneurs, educators, and biomedical professionals to be active members of their communities in developing a knowledge-based economy in KSA. The program aims to provide high quality, internationally competitive,

student-centered education by offering innovative courses and involving students in interdisciplinary world-class research programs.

The Life Sciences program will promote understanding of the fundamental biological processes with an emphasis on the genetic and molecular mechanisms, particularly in relation to human health and environment, as well as cross-disciplinary studies that integrate bioinformatics, computational biology, medicinal chemistry and nanotechnology.

Department of Life Sciences Degree Programs

Bachelor of Sciences (B.Sc.) degree in Life Sciences

Bachelor of Science (B.Sc.) in Life Sciences Suggested Study Plan

The Life Sciences Program requires for graduation a total of 135 credit hours that include 89 credit hours of compulsory courses; 26 credit hours of elective courses; and 20 credit hours of research courses. The compulsory course credits include 14 credit hours of the General Education Requirement courses (ISL, ARA and ENG) and 75 credit hours of the Core Science Courses (MAT, STA, CSC, CHM, PHU, BIO) specified by the Program curriculum. The elective course credits include minimum 2 credit hours of elective courses in Humanity (HUM), 12 credit hours of Advanced Courses in Molecular Biosciences (SCI) and science electives and 12 credit hours of Special Topics in Life Sciences (LST). Choice of elective courses is specified by the Program curriculum.

Students may select one advanced science course from other programs provided that it satisfies the Life Sciences Program goals and mission. A written approval by the Program Director should be obtained prior to registering for courses in other programs. If the course is taken in other College/University, the minimal grade for the course should be at least B-.

CR #	Course-Title	Credit Hours as Hours		Pre-Requisite CR #	Co-Requisite
		Total CRHs	Contact Hours		
General Education Requirement courses 14 CR					
ARB	**Arabic Language**	2	2	**none**	
ARB	**Arabic Language**	2	2	**ARB**	
ISL 101	**Islamic Studies I**	2	2	**none**	
ISL 112	**Islamic Studies II**	2	2	**ISL**	
ENG	**Freshman**	3	3	**none**	
ENG	**Freshman**	3	3	**ENG**	
Core science courses 75 CR					
MAT 105	**Calculus for Biomedical Sciences I**	3	3 - -	**none**	
MAT 116	**Calculus for Biomedical Sciences II**	3	3 - -	**MAT 105**	
STA	**Probability and**	3	3	**MAT**	
BIO 101	**General**	3	3	**none**	
BIO	**General**	1	3	**none**	BIO
BIO 112	**General**	3	3	**BIO**	
BIO	**General**	1	3	**BIO10**	**BIO**
BIO 223	**Microbiology**	3	3	**BIO 101 CHM 112**	
BIO 223	**Microbiology**	1	3		BIO
BIO224	**Human Anatomy**	3	3	**BIO 112**	
BIO224	**Human**	1	3		BIO2
BIO 345	**Molecular Biology I**	3	3	**BIO 112 CHM 112**	

				BIO 223 **CHM 211**	
BIO 345	**Molecular**	1	3		BIO
BIO 357	**Molecular**	3	3	**BIO**	
BIO357	**Molecular**	1	3		BIO
CHM	**General**	3	3	**none**	
CHM	**General**	1	3		CHM
CHM	**General**	3	3	**CHM**	
CHM 112 L	**General Chemistry II Lab**	1	3 -		CHM 112
CHM	**Organic**	3	3	**CHM**	
CHM 211 L	**Organic Chemistry I Lab**	1	3 3		CHM 211
CHM	**Organic**	3	3	**CHM**	
CHM	**Organic**	1	3		CHM
CHM 310	**Introduction to Instrumental Analysis**	3	3	**CHM 212**	
CHM 310 L	**Introduction to Instrumental Analysis Lab**	**1**	**3**		CHM 310
BIO 346	**Biochemistry I**	**3**	**3**	**BIO 112** **BIO 223** **CHM 211**	
BIO 346 L	**Biochemistry I Lab**	**1**	**3**		BIO 346
BIO 358	**Biochemistry II**	**3**	**3**	**BIO 346**	
BIO 358 L	**Biochemistry II L**	**1**	**3**		BIO 358
PHU 205	**Mechanics & Waves for Life Sciences**	3	3		
PHU 205 L	**Mechanics & Waves for**	1	2	**none**	PHU 205

	Life Sciences Lab				
PHU 216	**Electromagnetism & Optics for Life Sciences**	3	3	**PHU**	
PHU 216 L	**Electromagnetism & Optics for Life Sciences Lab**	1	2		PHU 216
CSC 101	**Introduction to Computer Science**	3	3	**none**	**MAT**
CSC	**Programming**	3	3	**CSC**	
Advanced Courses in Molecular Biosciences and Science Electives 12CR					
CHM214	**Quantitative Analytical Chemistry**	3	3 - -	**CHM 112**	
CHM214 L	**Quantitative Analytical Chemistry Lab**	1	3 3 -		CHM214
CHM331	**Medicinal Chemistry**	3	3	**CHM 212**	
CHM332	**Environmental Chemistry**	3	3	**CHM 112**	
SCI 321	**Immunology**	3	3	**BIO 223 BIO 224**	
SCI 322	**Cancer Biology**	3	3	**BIO1 BIO 224**	
SCI 323	**Signal transduction**	3	3	**BIO BIO 112**	
SCI 324	**Human Genetics**	3	3	**BIO 112**	

SCI 325	**Bioinformatics**	3	3	**BIO112; STA211**	
Special Topics in Life Sciences 12 CR					
LST 421	**Life Sciences Special Topics I Epigenetics**	4	4	**BIO 357 BIO 358**	
LST 422	**Life Sciences Topics II Nanomaterials**	4	4	**BIO 357 BIO 358**	
LST 423	**Life Sciences Topics III Biotechnology**	4	4	**BIO BIO 358**	

Research 20 CR							
LSR 421&422	**Life Science Research Project (Distributed in two semesters)**	16	16			**BIO 357 BIO 358**	
LSR 423	**Integrative Life Science Research Seminar**	4	4			**BIO 357 BIO 358**	
Humanity	Electives 2 CR						
PHL101B	Biomedical Ethics	2	2				
ANT103	Medical	3	3				
FRE101	French	3	3				
HIS101	Islamic Civilization	3	3				
PSY101	Introduction to Psychology	3	3				
SOC101	Introduction to	3	3				

Life Sciences Course Descriptions

BIO 101 General Biology I
Cr Hr: 3cr +1cr Lab Prerequisite: None
Course covers major fields and fundamental principles of the modern biology and provides a foundation to 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 the 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: 3cr 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: 3cr +1cr 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: 3cr +1cr Lab Prerequisite: BIO 101, 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 on the development of observational, practical and analytical skills through supervised laboratory work and demonstrations.

BIO 224 Human Physiology and Anatomy
Cr Hr: 3cr +1cr 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: 3cr +1cr Lab Prerequisite: BIO 112, BIO223, CHM112, CHM 211
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: 3cr +1cr 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 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.

BIO 346 Biochemistry I
Cr Hr: 3cr +1cr Lab Prerequisite: BIO 112, CHM 211, BIO 223
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: 3cr +1cr 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.

SCI 321 Immunology
Cr Hr: 3cr Prerequisite: BIO 223; 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: 3cr Prerequisite: BIO 112, 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: 3cr Prerequisite: BIO 112, 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 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.

SCI 324 Human Genetics
Prerequisite: BIO112
SCI 324 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
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 421~423 Life Science Special Topics I~III
Cr Hr: 4cr Prerequisite: BIO 357; BIO 358
Each of these three individual courses introduces special topics relevant to the fields of Biomedical Science, Biotechnology or Nanochemistry. 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 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.

LST 422 Nanomaterials and their Applications in Life Sciences
This course focuses on the fundamentals of Nanoscience and Nanotechnology such as the basic properties of nanoparticles, structural control of nanoparticles and Environmental and safety issues with nanoparticles. In addition, this course will introduce the students to the synthesis and characterization of nanomaterial

and focuses on the current and future nanotechnology applications in engineering, materials, physics, chemistry, biology, electronics, and energy.

LST 423 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.

LSR 421~422 Life Science Research Project I&II
Cr Hr: 16cr Prerequisite: BIO 357, BIO 358

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 in reading week of the second semester of the year and a thesis, submitted at the end of the course.

LSR 423 Integrative Life Science Research Seminar
Cr Hr: 4cr Prerequisite: BIO 357; BIO 358

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 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.

Department of Mathematics and Computer Sciences

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General Department Information

Mathematics are critical to well understand 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 strong academic and technical backgrounds. To achieve this challenging objective, the department if offering world-class education for our students and maintain a 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 for 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 are playing an ever-increasing role in many emerging fields of study, most notably in Engineering, Life Science and Physical Sciences. As the Kingdom is moving towards knowledge-based industries, applied mathematics and computer science are considered as strategic fields of national importance. As a support for the emergence and the rapid growth of the cited fields, the department is offering 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: 3cr Prerequisite: None
Co-requisite: MAT 101 or MAT 105

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.

CSC 112 Programming I
Cr Hr: 3cr Prerequisite: CSC 101
This course offers an overview of computer hardware and software, programming in C with emphasis on modular and structured programming technique, problem solving and algorithm development, simple engineering and scientific problems, basic data types and operators, basic object-oriented concepts, wrapper classes, console input/output, logical expressions and control structures, classes, arrays, and strings.

MAT 100 Pre-calculus
Cr Hr: 3cr 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: 3cr 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 102 Mathematics for Medical Students
Cr Hr: 2cr Prerequisite: None
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.

MAT 105 Calculus for Biomedical Sciences I
Cr Hr: 3cr
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.
Prerequisite: UPP College Algebra or Equivalent.

MAT 111 Business Calculus
Cr Hr: 3cr 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: 3cr 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: 3cr 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: 3cr 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: 3cr 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: 3cr 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: 3cr Prerequisite: MAT 212, CSC112 or equivalent

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.

MAT 235 Calculus for Pharmacy

Cr Hr: 3cr Prerequisite: None

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.

STA 101 Basic Statistics

Cr Hr: 3cr Prerequisite: None

This course is an introductory course of probability and statistics designed for business and humanities majors. The emphasis of the course is on applying and computing rather than deriving. The student learns how to compute probabilities and descriptive measures of data sets. Topics covered include the concepts of probability and its properties, descriptive statistics, discrete and continuous random variables, expected values, distribution functions, the central limit theorem, random sampling and sampling distributions.

STA 211 Probability and Statistics

Cr Hr: 3cr 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: 3cr 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.

Department of Physics

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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 Kingdom of Saudi Arabia and worldwide, such as Energy (Alternative Energies), Nanotechnology and Health (Medical physics). 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: 3cr Prerequisite: None

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.

PHU 102 Science of Energy and the Environment
Cr Hr: 3cr 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 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.

PHU 103 Mechanics and Waves for Engineers
Cr Hr: 3cr Prerequisite or Co-requisite: MAT 101 (Calculus I)
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.

PHU 103 L Mechanics and Waves for Engineers Labs
Cr Hr: 1cr Prerequisite or Co-requisite: PHU 103
This material constitutes the laboratory related to the course PHU 103.

PHU 124 Electromagnetism and Waves for Engineers
Cr Hr: 3cr Prerequisite: PHU 103
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: 1cr Prerequisite or Co-requisite: PHU 124
This material constitutes the laboratory related to the course PHU 124.

PHU 205 Mechanics for Life Sciences
Cr Hr: 3cr Prerequisite: None
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.

PHU 205 L Mechanics for Life Sciences
Cr Hr: 1cr Prerequisite or Co-requisite: PHU 205
This constitutes the laboratory related to the course PHU 205.

PHU 216 Electromagnetism and Optics for Life Sciences
Cr Hr: 3cr 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: 1cr Prerequisite or Co-requisite: PHU 216
This material constitutes the laboratory related to the course PHU 2

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