The

Petroleum Institute

Abu Dhabi

Undergraduate Catalog 2007 - 2008

The Petroleum Institute

Undergraduate Catalog

2007 – 2008

Policy Regarding On-line and Print Versions of the
Petroleum Institute's Catalogs, Manuals and Handbooks

Every effort has been made to provide the most accurate, up-to-date information possible in PIs catalogs, manuals, and handbooks. Each document is revised yearly and limited numbers printed once every two years. There may be times when substantive changes are required during the academic year and between the times the documents are printed. The catalogs, manuals, and handbooks are posted to the Institute's Web site at www.pi.ac.ae. *Faculty, staff, and students should consult the PI website periodically for updates on catalogs, manuals, and handbooks.*

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Academic Calendar 2007 – 2008

Fall 2007		
New Student Orientation	Tuesday	August 21
Classes Begin	Sunday	August 26
Eid Al Fitr Holiday	Sunday – Saturday	October 14 – 20
National Day Holiday	Sunday – Monday	December 2 – 3
Classes End	Monday	December 17
Eid Al Adha Holiday	Tuesday - Saturday	December 18 - 22
Final Exams	Sunday – Sunday	December 23 – 30
Study Day	Tuesday	December 25
New Year's Holiday	Tuesday	January 1
Commencement	Saturday	January 5
Spring 2008		
Islamic New Year Holiday	Thursday	January 10
Spring Semester Classes Begin	Sunday	January 27
Spring Break Begins	Sunday	March 23
Spring Break Ends, Classes Resume	Sunday	March 30
Classes End	Monday	May 19
Study Day	Tuesday	May 20
Final Exams Begin	Wednesday	May 21
Final Exams End	Wednesday	May 28
Summer 2008		
Classes / Internships Begin	Monday	June 2
Classes / Internships End	Sunday	July 20
Study Day	Monday	July 21
Final Exams	Tuesday	July 22

Telephone and E-mail Directory

UAE code: 971, Abu Dhabi code: 02

Department	Telephone	Fax	E-mail
Petroleum Institute Information	607 5100 607 5100	607 5200	enquiries@pi.ac.ae
Academic Affairs / Provost	607 5713	607 5210	academicaffairs@pi.ac.ae
Admissions	607 5923	607 5136	admissions@pi.ac.ae
ADNOC Clinic at PI	607 2804		healthclinic@pi.ac.ae
Arzanah College	607 5600	607 5682	arzanahcollege@pi.ac.ae
Chemical Engineering Program	607 5276	607 5200	chemicalengineering@pi.ac.ae
Arts & Sciences Program	607 5380	607 5200	artsandsciences@pi.ac.ae
Electrical Engineering Program	607 5375	607 5200	electricalengineering@pi.ac.ae
President	607 5704	607 5220	president@pi.ac.ae
Finance	607 5723	607 5200	finance@pi.ac.ae
Foundation Program	607 5157	607 5200	foundation@pi.ac.ae
Graduates Studies	607 5880	607 5136	graduatestudies@pi.ac.ae
Human Resources	607 5743	607 5240	humanresources@pi.ac.ae
Independent Learning Center	607 5279	607 5200	independentlearning@pi.ac.ae
Information Technology	607 5793	607 5200	informationtechnology@pi.ac.ae
Institutional Research and Analysis	607 5733	607 5220	institutionalresearch@pi.ac.ae
Internship and Counselling	607 5943	607 5136	internshipandcounselling@pi.ac.ae
Library	607 5961	607 5200	library@pi.ac.ae
Mechanical Engineering Program	607 5362	607 5200	mechanicalengineering@pi.ac.ae
Petroleum Engineering Program	607 5363	607 5200	petroleumengineering@pi.ac.ae_
Petroleum Geosciences Engineering Program	607 5271	607 5200	geosciences@pi.ac.ae
Public Relations	607 5613	607 5240	publicrelations@pi.ac.ae
Recreation	607 5979	607 5136	recreation@pi.ac.ae
Registrar	607 5833	607 5136	registrar@pi.ac.ae
Housing	607 5900	607 5136	housing@pi.ac.ae
Student Affairs	607 5873	607 5136	studentaffairs@pi.ac.ae
Civil Maintenance	050 5918654	607 8613	
A/C Maintenance	050 4451963	607 2563	
Electrical Maintenance	050 6994059	607 8253	
Medical Hotline (El Wathig Omer)	02 6023265 050 6629664		
Security	050 6726052	607 5200	

Overview of the Petroleum Institute

The Petroleum Institute (PI) was founded by Emiri decree in 2000 under the direction of His Highness Sheikh Khalifa bin Zayed Al-Nahyan. It admitted its first class in fall 2001.

The Petroleum Institute is financed and governed by Abu Dhabi National Oil Company (ADNOC) and its international partners (Shell, British Petroleum, Total, and Japan Oil Development Company). The objective in founding the PI was to provide the UAE and its oil and gas industry with engineers educated and trained to the highest standards.

The campus is situated in the Sas al Nakhl area of Abu Dhabi. It consists of five buildings devoted to academic and administrative affairs, with additional buildings providing recreation and dining facilities, and student accommodation. The teaching facilities contain state-of-the-art equipment.. A separate facility for women (Arzanah College) has been constructed nearby and the first group of female students enrolled in fall 2006.

Currently there are about 1000 male and female undergraduate students studying at The Petroleum Institute, divided between the Foundation Program and the engineering programs. June 2006 was a major milestone, with PI's first 44 graduates emerging from the engineering programs and going on to start their careers within the ADNOC group of companies.

The 2007-2008 academic year sees the launch of the first graduate programs. The Petroleum Institute plans to offer a complete suite of Master of Science, Master of Engineering, and Doctor of Philosophy (PhD) degrees in the near future. As the graduate program grows, so does the research program with the commitment to excellence in undergraduate education supplemented by a strong commitment to excellence in research and technology development. Research is being leveraged by close cooperation with industry through the ADNOC-group operating companies, the international partners, and with participation from selected foreign universities.

Accreditation and Licensure

The Petroleum Institute was granted initial licensure by the Ministry of Higher Education, and Scientific Research Commission for Academic Accreditation, UAE. All undergraduate and graduate programs have been granted initial accreditation by the same accrediting body. In addition, the Foundation English program has received conditional accreditation from Commission for English Language Program Accreditation (CEA).

Institutional Mission Statement

The Petroleum Institute provides a world-class education in engineering and applied sciences in order to support and advance the petroleum and energy industries. The Institute is committed to academic excellence, and to fostering an intellectual environment that leads to the development of our graduates as whole persons and as the future leaders in their respective fields of expertise in the United Arab Emirates and beyond.

Institutional Goals

To achieve its Mission the Petroleum Institute will:

1. Offer programs of instruction leading to baccalaureate degrees to produce graduates that have the skills, knowledge, and competencies that meet the needs of ADNOC and our other sponsors;

2. Practice and infuse in our students the highest standards of health, safety, and environmental awareness;

3. Manage the content, quality, design and continuous innovation of its academic programs in a manner that creates and sustains a reputation for institutional excellence and earns local, regional and international accreditation;

4. Provide programs of study leading to relevant graduate degrees and foster the creation and dissemination of knowledge that is pertinent to the needs of industry and enriches the academic programs of the PI;

5. Provide professional outreach and continuing education programs that serve the on-going needs of practicing professionals;

6. Operate as a center of excellence for education, research, and professional service that interconnects globally with regional and international industrial constituents, and with international partners in education and professional societies;

7. Foster technological innovation and entrepreneurship leading to development of advanced processes and products that provides for economic expansion and promotes business development opportunities.

Profile of the Petroleum Institute Graduate

Recognizing that the most immediate and dominant product of the Petroleum Institute will be baccalaureate graduates, the institutional educational goals for baccalaureate degrees are captured in the following attributes that reflect "the whole person development" of the graduating student:

- The graduating student will exhibit applied and theoretical competence in a field of technical specialization, and will be oriented in engineering practices germane to the oil, gas and petrochemical industries. The student will have the resourcefulness and capability to apply scientific and engineering principles in solving a wide variety of technical problems.

- The graduating student will appreciate the critical role played by verbal, written and graphical communications in engineering practice and project management, and will have the corresponding skills to communicate with a range of audiences, and the skills to employ information technologies where appropriate.

- The graduating student should acknowledge that technologies, economies and societies are in a continuous

state of evolution, and should therefore have the flexibility to manage a career path that changes over time, and that is supported by life-long learning, critical thinking, teamwork, leadership and the ability to span several disciplines.

- The graduating student should understand the global nature of modern engineering and business, and in order to succeed in this international arena, the student should have an awareness of customary practices in different countries and the influence of diverse cultures.

- The graduating student should have the professional integrity and maturity to serve humanity and its highest values, and should always make ethical decisions as they relate to society, corporate operations, technology, and the environment.

Student Services

Counseling Program

Student Affairs maintains an extensive student counseling service. The student counseling office assists faculty in maintaining a positive learning environment in the classroom, deals with disciplinary and academic dishonesty issues, and actively works with students who are experiencing academic or personal problems. Primary responsibilities of the Counseling Office include:

- Counseling, advising, and providing crisis management services for students with academic or personal concerns;
- Communicating with students' guardians regarding these concerns;
- Assisting students as they plan their work placements and internships;
- Working with the student advisors to assist the students on academic issues such as course scheduling and career counseling.

Career Services Program

The PI does not have a career services department per se, as all students are guaranteed positions within the ADNOC group of companies upon graduation. Assistance to students in choosing a career path is provided by the summer orientation program after the Foundation year and in the Engineering Success Seminar (ENGR 103).

Health Services

The ADNOC Clinic on the PI campus provides primary health care to PI students, faculty, and staff members and their dependents. The Clinic is open Sunday – Thursday 7:00 a.m. to 11:00 p.m. and provides 24-hour accident and emergency care as well. Depending on the nature of the illness, patients may be referred to the main ADNOC Clinic or other hospitals or clinics for further treatment. Students desiring to use the Clinic must bring a Medical Services Report form available from the Reception. A dedicated clinic for female students is available in Arzanah

Housing

Male Students who do not live within commuting distance of the PI are guaranteed space in one of the seven dormitories on campus. In some cases, commuting students are also allowed to stay in the hostels depending on availability. Most of the hostels have been refurbished and are configured as double furnished rooms. The Umm Al Nar Club, located in building 32, has a fitness room with free weights, Nautalus machines, and aerobic machines, and a computer lab with wireless access. This Club is available for students, faculty and staff.

Dining Services

Satah Building, a new dining facility that has a capacity for 750, opened in fall 2006. It serves three meals a day for the PI community. In addition, cafes open during the day for breakfast, lunch and snacks are located in Zarkuh, Bu Hasa, Habshan, and Arzanah buildings. In addition, snack machines are located in Bu Hasa and in most of the dormitories.

Mail Service

The PI provides mail service on campus. Mail is distributed daily to all Institute offices by staff from General Services. The Reception handles all outgoing mail including courier services. All mail intended for Institute offices and for those residing on campus should be addressed to:

The Petroleum Institute
P. O. Box 2533
Abu Dhabi, U.A.E.

Public Relations Office

The Public Relations Office ensures a good working relationship between the Institute and the local public and private sectors. It handles all official government documents and transactions for students, faculty, and staff, including the processing of visas and residence permits, driving licenses, car registration, traffic violations and accident reporting, and medical insurance and claims processing. It also provides official letters that might be required by various government and/or private organizations.

Information Technology

The Information Technology (IT) Department serves the computer-related administrative, instructional, technical, and research needs of students, faculty, and staff. It also provides PI's gateway to the internet for academic purposes. Services provided include e-mail accounts and passwords, and wireless and local area networks. The Institute uses fiber-optic cables that interconnect the entire campus.

Library

The library is dedicated to providing information services to support academic programs and research activities. It also houses the archives for the PI. The print collection focuses on scientific, engineering, and humanities titles but also has general interest reading books, as well as maps and videos.

The library occupies part of the ground floor and first floor of one wing of Habshan Building including stacks, an information commons area, quiet reading areas, group study rooms, and staff offices. Seating is available for over 320 users with a shelving capacity of more than 100,000 volumes. Library holdings are available through an online catalog system. Using the library catalog, users can access book titles, full-text journals, and electronic databases. An inter-library loan service is available for the PI community where materials can be obtained from commercial document delivery centers. The library maintains ample operating hours daily and has recently expanded to nights and weekends. A separate library for female students is located on the second floor of Arzanah building.

Independent Learning Center

The Independent Learning Center (ILC) provides English language learning and content subject learning materials for students in the Foundation Program to support their coursework, project work and research. It assists Foundation students over the course of their academic studies at the PI to develop as independent learners with the ability to identify their own learning needs.

In order to support learning, the ILC:

- Provides users with collections of learning materials and guidance for their use so as to promote excellence in the Foundation study programs;
- Incorporates the use of technology and related educational software, facilitating each stage of learning within the program;
- Provides language support through carefully identified materials;
- Provides reference materials as well as educational guidance;
- Provides users with a functional, well-resourced environment that is conducive to study, learning and research.

There are two ILC locations on campus – one on the second floor of Bu Hasa building and the second inside Arzanah Library.

Student Records

A permanent record reflecting the academic achievements of each student who enrols at the PI is maintained by the Registrar's Office. Comprehensive student records contain information related to admission, transfer credit assessment, registration, disciplinary actions, academic assessment, progress towards degree, grade point average, and graduation.

Privacy Rights of Students

Students have the right to:

- Inspect and review information contained in their educational records;
- Request changes or updates to their personal data;
- Consent to disclosure, with the extent of UAE federal and local laws, personally identifiable information from education records.

Transcripts and Other Records

All transcripts and documents submitted from other institutions become the property of the Petroleum Institute, and, as such, come under control of the Registrar's Office. The PI is not required to provide copies of these documents. Transcripts submitted to the PI for review of transfer credit also become the property of the PI and cannot be returned to the student or forwarded to other institutions.

Release of Transcripts and Student Information

Students may obtain transcripts of their academic records at the PI from the Registrar's Office. Transcripts will only be released after receipt of a signed Request for Transcript of Record Form from the student concerned. The PI will issue only complete transcripts, not parts of a student record. The PI will not make copies of transcripts on file from other schools. Information in a student's file or about a student may be released to another party only with the written consent of the student or in order to comply with the order of a court or any other body with the authority to require the release of such information.

Admissions

The Petroleum Institute is highly selective, granting admission only to applicants who have demonstrated in their academic performance in secondary or post-secondary school, that they are able to do the classroom and laboratory work required, and are motivated to complete and profit from the programs offered. Criteria considered in evaluating students include (1) courses taken in secondary or post-secondary school or college, (2) grades earned in those courses, and (3) English language proficiency. The requirements set out below are the minimum for admission and are subject to change. The Governing Board reserves the right to deviate from published admission requirements. In such cases, changes in policy will be widely publicized. Admission to the Petroleum Institute is primarily reserved for UAE Nationals; however, highly qualified non-nationals may apply and are admitted on a case-by-case basis.

Admission Process

Advertisements will be published in the local press each June stating the specific requirements for admission and inviting applications from suitably qualified individuals. In order to be considered, an applicant must submit all the required forms and meet the minimum requirements.

On admission, the student will be notified, instructed to take a physical examination and requested to report to the Petroleum Institute for orientation prior to the start of classes.

Admission Requirements

The general admission requirements for students who have not previously attended another college or university are as follows:

- Diploma from an accredited secondary school or high school.
- Completion of English, mathematics and science in grades 10 through 12 with C average (70 percent) over all three years in each subject.
- Minimum grades of C (70 percent) and above in grade 12 in the following:
    - Biology
    - Chemistry
    - English
    - Geology
    - Mathematics
    - Physics
- Demonstrate good physical fitness.
- Have a record of good behaviour and conduct in secondary school.

Transfer Students

The minimum admission requirements for all students who have attended another college or university are as follows:

- Applicants must have completed the same secondary school course work requirements as students entering the PI following secondary school. An official transcript or an officially certified copy of the applicant's secondary school record is required.
- Applicants must submit official college or university transcripts or officially certified copies showing an overall 2.50 (C+) cumulative grade point average or better. Applicants presenting a lower CGPA will be considered on a case-by-case basis.

- Applicants who have attended another college or university must disclose their full academic records. If the applicant has attended more than one college or university, the application must include an official transcript from each college or university attended.
- Applicants who are ineligible to enrol at the institution from which they wish to transfer because of their scholastic record or for any other reason will not be considered for admission.

Transfer credits may be awarded for previously completed college or university courses if the original grade earned was not lower than a C (or its equivalent) and if the content of the course (or courses) corresponds to the content of a degree course offered at the Petroleum Institute. Up to 50 percent of the credit hours for any undergraduate degree program may be derived from transfer credits.

Submittal Requirements

Applicants should provide the following:

- Completed application form available from PI Admissions Office
- Official transcripts from any previously attended universities
- Official secondary school certificate certified by the appropriate authorities
- Official transcript for grades 10, 11, and 12 (in English)
- Photocopy of applicant's passport
- Photocopy of UAE Nationality Record (Kholasit Al Qaid)
- Behaviour certificate
- Twelve recent passport-size photographs with red background

Placement Tests

Before students can enrol in classes at the Petroleum Institute, they must take the Test of English as a Foreign Language (TOEFL) for English placement. International Baccalaureate (IB) and Advanced Placement (AP) scores do not fulfill this requirement. Program directors and academic advisors use placement test results to help students enrol at appropriate course levels.

The majority of new students will be placed in the Foundation Program. This program is designed to help students make the transition from their secondary school courses to the rigorous academic programs at the Petroleum Institute - all of which are taught in English.

Readmitted Students

A former student who has been voluntarily absent for at least one semester, or who withdrew voluntarily from a semester may seek re-admission by completing a "Request to Resume Studies" form available from the Registrar's Office. When completed, the form should be submitted to the Registrar's Office.

Former students who were suspended or dismissed should refer to section Return after a missed semester, FULL withdrawal from a semester, suspension or dismissal.

Non-Degree Students

A non-degree student is a student who does not wish to pursue a degree program at the PI but wishes to take courses for other purposes. Examples could be visiting students from other universities, taking courses to qualify for admission to a graduate program or professional development. Such students may take any course for which they have the pre-requisites or have the permission of the instructor. Official transcripts or officially certified copies of transcripts or other evidence of the prerequisites are required. An applicant for admission as a degree student who does not meet admission requirements may not fulfil deficiencies through this means. Non-degree students who subsequently become degree students at the PI may receive credit for a maximum of 12 credit hours for courses completed as a non-degree student.

Declaration of a Major

Students are asked to indicate the engineering program in which they intend to major at the time of entry into the Foundation program. Students may change this preliminary choice of engineering program at any time without penalty during the Foundation program. There are, however, significant differences in the requirements for the engineering degree programs beginning the second semester of the freshman year. Accordingly, to avoid an unnecessary delay in graduation all students should decide on their major by the end of the first semester of the freshman year.

The five majors are Chemical Engineering, Electrical Engineering, Mechanical Engineering, Petroleum Engineering and Petroleum Geosciences Engineering.

Grades and Grade Point Averages

Evaluation of Students and Grading

When a student registers in a course, one of the following grades will appear on his/her academic record. The assignment of the grade symbol is based on the level of performance. It represents the extent of the student's demonstrated mastery of the material listed in the course syllabus and achievement of the stated course objectives.

Grade	Description
A	Excellent
B	Good
C	Satisfactory
D	Poor (lowest pass for degree courses)
F	Failed
XF	Failed Due to Academic Dishonesty
W	Voluntarily Withdrawn or Failure Forgiveness
WA	Withdrawn Administratively
WI	Withdrawn Involuntarily - Dismissed
WF	Withdrawn after Deadline
INC	Incomplete
NC	Not for Credit
Z	Grade Not Submitted

Resolution of INC (Incomplete)

If a student, because of illness or other reasonable excuse, fails to complete a course, a grade of 'INC' (Incomplete) is given. The grade 'INC' is temporary and indicates that some work is missing. A grade of 'INC' must be changed by the instructor no later than the end of the first week of the first regular semester following the semester in which it was received. If the 'INC' is not changed by the instructor within the first week, the 'INC' will be changed to an 'F' (Failed). Grade changes submitted after the first week must be signed by the instructor's Program Director and the Provost.

"F" Grade Forgiveness for 100-Level Degree Courses

If a student completes any 100-level course for the first time and receives an 'F' in the course, and if the student subsequently takes the course again by the first following semester it is offered and receives a 'D' or higher, the 'F' received for the first completion will be changed to a W.

Quality Hours and Quality Points

In order to graduate a student must successfully complete a certain number of required credit hours and must maintain grades at a satisfactory level. The system for expressing the quality of a student's work is based on quality hours and quality points. The grade 'A' represents four quality points, 'B' three, 'C' two, 'D' one, 'F' none. For purposes of quality point calculation, a grade of 'XF' or 'WF' is equivalent to a grade of 'F'. The number of quality points earned in any course is the number of credit hours assigned to that course multiplied by the numerical value of the grade received. The quality hours earned are the number of credit hours in which grades of 'A', 'B', 'C', 'D', or 'F' are awarded. To compute a grade-point average, the number of cumulative quality points is divided by the cumulative quality hours earned. Grades of 'W', 'WI', 'INC', 'NC' or 'Z' are not counted in determining quality hours.

Transfer Credit Excluded in GPA Calculation

Transfer credit earned at another institution will be recorded on the student's permanent record. Calculation of the grade point averages for transfer students will be based only on grades earned in degree courses completed at the Petroleum Institute.

Credit Hours

The number of times a class meets during a week (for lecture or laboratory) usually determines the number of credit hours assigned to that course. For a small number of courses additional hours of instruction have been added to the lecture part of the course in order to improve students' understanding of the material. As a result, some courses with four or five lecture contact hours will carry only three or four credit hours for the lecture portion of the course. Lecture sessions are normally 50 minutes long and typically represent one hour of credit for each 50 minutes the class meets in a week. Two to four hours of laboratory work per week are typically equivalent to one hour of credit. In order to make satisfactory progress towards graduation in 4 years (excluding Foundation), undergraduate students should enrol in 15 – 18 credit hours each semester. Students wishing to enrol in 19 or more credit hours in a given semester must obtain written approval from their faculty advisor.

On average, each hour of lecture requires at least two hours of preparation outside of class.

Grade-Point Averages

Grade point averages are calculated to two places following the decimal point.

Honor List

A degree-seeking student will be placed on the semester Honor List if he/she satisfies the following requirements for a particular semester:

- The student has entered a degree program;
- The student has earned at least 15 hours in that semester;
- The student has a semester GPA of 3.50 or higher; and
- The student has no grades of incomplete (INC) for that semester.

Graduation Requirements

Catalog of Record

For purposes of academic standing and verification that all graduation requirements have been met, the Catalog of Record is either that of the academic year the student entered the Major or the academic year the student graduates. The Petroleum Institute reserves the right to make changes in academic regulations, policies and offerings as circumstance may require.

Time Limit on Study

A student must satisfy all graduation requirements within eight years of the first enrolment at the Petroleum Institute as a degree student.

Graduation

Graduation is accomplished when all degree requirements have been met. To receive a Bachelor of Science degree from the Petroleum Institute, all candidates must satisfy the following requirements:

1. A minimum cumulative grade-point average of 2.00 for all academic work completed in residence (excluding Foundation Program courses) and a minimum of 50 percent of the academic credit applied toward graduation must have been earned from courses taken at the Petroleum Institute.
2. A minimum cumulative grade point average of 2.00 for all courses in the candidate's major program.
3. A minimum of 30 credit hours in 300 and 400 level engineering courses in residence, at least 15 of which are to be taken with senior standing.
4. Completion of all required courses as specified by the degree program and course listings in the student's Catalog of Record.
5. The recommendation of their degree-granting program to the faculty.
6. The certification by the Registrar that all required academic work is satisfactorily completed.
7. Recommendation by the faculty and approval of the Governing Board.

Seniors must submit an Application to Graduate Form two semesters prior to the anticipated date of graduation and Online Applications are available in the Registrar's Office. The Registrar's Office performs preliminary degree audits. It is the ultimate responsibility of students to monitor the progress of their degrees. It is also the student's responsibility to contact the Registrar's Office when there appears to be a discrepancy between the degree audit and the student's records.

The Petroleum Institute graduates students in May, August, and January and a single commencement ceremony is held in January of each year. Only those students that have completed all degree requirements and have been certified by the Registrar's Office may participate in the commencement ceremony. Diplomas are awarded during the January commencement..

All graduating students must complete a Graduation Checklist Form, available in the Registrar's Office, at least one week before graduation.. Candidates for graduation that do not return a completed form will not be allowed to participate in commencement or receive their diplomas.

No student will receive a diploma until she/he has complied with all the rules and regulations and has settled all accounts with the PI. Transcripts of grades and other records will not be provided for any student or graduate who has an unsettled obligation to the Institute.

Diploma and Degree Attestation

Upon graduation, diplomas and transcripts will be submitted to the Educational Programs and Certificate Equivalency Department (EPCE) of the Ministry of Higher Education and Scientific Research for attestation processing. After receipt from EPCE, the documents will be made available to the graduates.

Definition of Student Class Level	
Foundation Student	enrolled in any foundation course
Degree Student	enrolled only in degree courses
Freshman	0-29 earned credit hours
Sophomore	30 - 59 earned credit hours
Junior	60 - 89 earned credit hours
Senior	≥90 earned credit hours
Non-Degree Student	enrolled in a degree course but not proceeding towards a degree

Full Time Enrolment

Students are expected to register for at least 12 credits (12 credits is defined as full-time) each fall and spring semester unless they receive special permission from their Program Director. Full-time registration in fall and spring semesters is necessary to maintain progress towards graduation.

Academic Standing

At the end of each semester and summer session, a degree student's academic standing will be assessed based on the accumulated total quality hours, cumulative grade point average, and semester grade point average. A minimum CGPA is required to maintain satisfactory progress toward graduation detailed below.

Definitions of Academic Standing	
Good Standing	maintain a CGPA of at least 2.0
Probation	CGPA falls below 2.0
Suspension	further enrolment is not permitted until period of suspension is over due to failure to remove probation
Dismissal	student may no longer enrol in courses due to continued failure to remove probation

At the end of each semester or summer session and based on the student's Total Earned Hours:

1. If the CGPA of a degree student is equal to or greater than the figure in Minimum Cumulative GPA, the student is in good standing.
2. If the CGPA is less than the figure in Minimum Cumulative GPA, the student will be placed on probation.

If a student is on academic probation, he/she is allowed to register for no more than 15 credits in a fall or spring semester and no more than 4 credits in a summer session.

At the end of each semester or summer session during which a student is on probation:

1. If the CGPA is equal to or greater than the Minimum Cumulative GPA, the student shall be in good standing.
2. If the CGPA is less than the Minimum and CGPA is equal to or greater than the Minimum Semester GPA, the student shall continue on probation.
3. If the CGPA and SGPA are both less than the Minimums, the student shall be suspended for one regular semester (fall or spring). However, this sanction will not be applied at the end of a summer session.

If a student returns to the Petroleum Institute after a period of suspension, he/she will be on probation.

A student, having been suspended and readmitted twice, who is suspended again, will be dismissed and ineligible to enrol in further courses.

Suspension and dismissal may be appealed to the Academic Appeals Committee. Probation may not be appealed.

Period of Suspension

Suspension lasts for one regular semester (fall or spring). A suspended student may not take courses in the summer session. Unless specified by the Academic Appeals Committee, courses taken during suspension at other institutions cannot be transferred to The Petroleum Institute

Suspension for Repeated Failure

A student who fails the same course twice counting towards a degree will automatically be placed on suspension regardless of the student's cumulative or semester GPA.

Withdrawal from a Course

Students may withdraw from a degree course during the official add/drop period without any record of enrolment in the course appearing on their transcript. Students may withdraw from any degree course after the official add/drop period with a grade of W. After the twelfth week, a withdrawal will reflect on the student's transcript with a WF.

Students may not withdraw from individual Foundation Program courses except in the case of withdrawal from all courses. Students may withdraw from all Foundation courses during the official add/drop period without any record of enrolment in the courses appearing on their transcript. Students may withdraw from all Foundation courses after the official add/drop period for any reason with a grade of "W" in each course. After the twelfth week, a withdrawal will reflect on the student's transcript with a WF.

Students considering withdrawing from any course should discuss the decision with their instructor or program advisor or with a counselor. Students should be aware that withdrawing from a course may have an impact on their reward.

Course Add/Drop forms are available from the Registrar's Office.

Return after a Missed Semester, Full Withdrawal from a Semester, Suspension or Dismissal

Students who have missed a regular semester, voluntarily withdrawn for a semester or have been suspended do not have an automatic right to return to the Petroleum Institute. All requests for re-admission following a missed fall or spring semester, voluntary withdrawal from all courses, a period of suspension, or an appeal of a dismissal must be submitted to the Registrar's Office on a Request to Resume Studies form. These are available from the Registrar's Office.

A student who has been dismissed must also submit a letter which states clearly the reason(s) why he/she should be readmitted. Appeals for readmission after dismissal will be considered by the Academic Appeals Committee on a case-by-case basis. Factors which may be taken into consideration include the student's previous PI academic record, attendance record, disciplinary issues, relevant medical information, evidence of ability to succeed, the duration of the student's absence, and any other information which the student or the committee feels is relevant. It is the student's responsibility to demonstrate to the satisfaction of the Academic Appeals Committee that he/she has both the motivation and the ability to succeed at the Petroleum Institute.

Final Examination Policy

A final examination will be held at the end of most courses according to the published examination schedule. Faculty cannot arbitrarily delete the final exam period for their course schedules for convenience or expediency. Any such cancellation of final exams because of personal emergency, etc., must be approved in advance by the Provost. Any change in final exam time from the published schedule requires the approval of the Program Director. Any student who would be disadvantaged by such a change should report this in advance to his/her instructor, who will ensure that satisfactory alternate arrangements will be made. Any unresolved test schedule conflicts may be appealed to the Program Director.

A student who is absent from a final examination without a valid excuse will normally receive and "F" for the course. If a valid excuse is accepted by the instructor, the policies on incompletes or change of grade will apply.

Rules of Conduct

Academic Integrity

The faculty, administration, and students of the Petroleum Institute have a responsibility for establishing, maintaining, and fostering an understanding for and an appreciation of the principles of academic integrity. Instructors in all classes will clearly define where independent work is required and situations where group work is acceptable.

In many cases, learning situations in and outside of class where students help each other are acceptable and in fact will be encouraged. However, in cases where the instructor defines that individual work is required, it is a violation of academic integrity to offer help to or accept help from others or to use the work of others and claim the work as one's own. In any set of circumstances where the student is unsure of this policy, it is the student's responsibility to resolve this issue before the work is turned in or the examination is taken.

Attendance

Class attendance is an important component of the learning process. Accordingly, unexcused absences from class will not be tolerated. Work missed due to unexcused absences, including homework, projects, quizzes, and exams, cannot easily be made up and may be assigned a score of zero.

Excused absences from class may be allowed under special circumstances such as, for medical reasons, or for personal or family emergencies. In the case of absence due to a medical condition, the student is required to submit a physician's report to a counselor in order to obtain permission to make up any assignments that have been missed.

Classroom Deportment

In order to maintain a positive learning environment, rude, disruptive, and inconsiderate behavior by students in class will not be tolerated. Students are required to be present and ready to begin class promptly on the hour, and should plan other activities and transit time between classes accordingly. Students who are chronically late to class or disruptive in other ways are subject to removal from class following one warning by the instructor. Any work missed because of a student's removal from class cannot be made up and will be assigned a score of zero. Students who repeatedly disrupt are subject to permanent removal from the course following consultation with the Provost.

Electronic Devices

Electronic devices including mobile phones should be turned off when entering the PI academic facilities. They are not to be used during class.

Student Complaints

The PI is committed to providing fair and equitable treatment for all students. In the event that a student develops concerns regarding his/her treatment at the PI, they are encouraged to go directly to the Student Affairs Director where they will be referred to a student counselor for assistance. The counselor will recommend appropriate steps to deal with the issue. Some complaints are best handled with the student counsellor acting as an advocate for the student and attempting to resolve the matter with the appropriate person or body. On other occasions, students may be advised to talk with a given faculty member or a program director. Some issues where there is no immediate resolution may require the student to implement a formal appeals process.

Academic Appeals Committee (AAC)

Students who feel that a rule or regulation was applied unfairly may submit an appeal in writing. Appeals will be considered by the Academic Appeals Committee. The appeal should be accompanied by relevant evidence, such as a letter from a medical doctor or official documentation. When considering an appeal, the Academic Appeals Committee may take into consideration the student's total academic record, attendance record or any other information on file which will assist them in reaching a fair decision. Probation may not be appealed.

The Academic Appeals Committee consists of five members drawn from the teaching and student affairs staff. Members, appointed by President beginning of each academic year, serve for one year. A member is eligible to serve for more than one term. A minimum of three members is sufficient to consider any appeal.

Decisions of the Academic Appeals Committee are final.

Results of the appeal will be given to the student in writing and a copy of all documents will be placed in the student's file.

Academic Integrity Policy

Introduction

The Petroleum Institute is an academic community whose purpose is the pursuit of knowledge and the development of its graduates as leading experts in their academic disciplines. In light of this purpose, it is essential that all members of this community be committed to the principles of truth and academic honesty. To maintain the highest standards of academic integrity, this policy defines the standards to which the Institute expects its students to adhere.

Definitions

Academic dishonesty includes the following acts committed knowingly or intentionally by the student:

Cheating	Using or attempting to use unauthorized materials and assistance, such as notes, study aids, electronic communication devices of any sort, or any other forms of unauthorized information or consulting any unauthorized sources, in any academic assignment, exercise, or examination.
Fabrication	Falsifying or inventing research, citations, or any information on any academic assignment, exercise, or examination.
Plagiarism	Representing another's words or ideas as one's own or failing to give proper credit to outside sources of information in any academic assignment, exercise, or examination.

Facilitating academic dishonesty: Aiding or assisting another in any of the above three acts.

Responsibility to Deter Academic Dishonesty

Academic dishonesty jeopardizes the quality of education that the Institute is committed to provide its students, the reputation of the Institute, and the principles it has pledged to uphold. Passive acceptance or consent to acts of academic dishonesty can foster deceptive practices that once firmly established will quickly develop into an environment of dishonesty. It is therefore the responsibility of all members of this academic community – students, faculty, and staff alike – to deter actively all instances of academic dishonesty in order to safeguard the high academic standards of the Institute.

Academic Integrity Statement

It is vital that the Academic Integrity Policy be fully understood by the entire academic community. The Policy represents a code of honor that will be upheld by the Petroleum Institute. The full text of this Policy can be found in Student Handbook, and a synopsis can be found online at **www.pi.ac.ae/PI_STU/RO/ACAINTE6.PHP**. When it appears that the Policy has been violated, the measures outlined in this document will be followed.

Honor Pledge

The Honor Pledge is a reminder to the students that the Institute is committed to academic integrity. The Honor Pledge is a short statement attesting that each submission is the student's own work. The faculty use the pledge as a symbol of the Institute's commitment to these values. The pledge should be typed or handwritten and signed on each major assignment submitted in the form of a hard copy; it should be included on electronically submitted assignments as well, where its inclusion will count as a signature. The pledge is as follows:

"I pledge that I have neither given nor received any unauthorized assistance on this academic assignment, exercise, or examination."

_____

Student Signature

Academic Honor Council (AHC)

1. The AHC is formed at the beginning of any academic year and is appointed by the Provost. Members of AHC will serve for at least 12 months, with no special limits on the length of service.
2. The AHC will consist of five (5) members:
    i. the Director of Student Affairs or his designee and
    ii. three faculty and one staff member appointed by the Provost
3. The AHC will elect its own Chair from among these five members.
4. The AHC will be charged with maintaining the highest level of academic integrity at the Institute.
5. The Investigating Officer (IO) will be appointed each year by the Director of Student Affairs and will not be a member of the AHC.

Procedure to Report Academic Dishonesty

Informal Resolution

1. If an instructor suspects that a student has committed an academic offence in a particular course or academic activity, he/she should meet with the student to discuss the allegation.
2. If the instructor determines that no academic offence has occurred, the matter is dropped.
3. If the student admits to committing the offence, the instructor, after consulting with the Student Counseling office to review the student's history, may impose any or all of sanctions and punishments stated later,
4. Or s/he may refer the case to the AHC. If the instructor imposes a sanction, s/he is required to submit a report to the Student Counseling Office, with a copy to the Academic Unit Director.
5. If the student disputes the charge or if the instructor chooses to send the case to the AHC, then the case is referred to the IO.
6. Upon receiving the case, the IO will interview the student and instructor and review the facts.
7. If the IO determines there is not sufficient evidence to proceed, the matter is dropped.
8. If the IO determines there is sufficient evidence to proceed and/or if the student admits the offence at this stage, the case is then referred to the AHC.

Procedure to Report Academic Dishonesty

The Investigation

1. A student charged with or under investigation for an allegation of an academic offence may not withdraw from the course in question.
2. A student may not graduate as long as any allegation of an academic offence remains unresolved.
3. If a student fails to attend any meeting called in connection with an allegation of an academic offence, the procedure may continue without the student.
4. Students may seek advice about the Policy and the associated procedures from the Counseling Office.

Procedure to Resolve Cases Reported to the AHC

1. The IO will present the Charge of Academic Dishonesty to the AHC in writing.
2. The student will be presented with the Charge and must respond to it in writing to the IO within seven days.
3. The AHC will hold a meeting with the IO and the student for the purpose of examining the evidence and questioning any witnesses or relevant parties. Based on the evidence, if the AHC decides that the student has committed the academic offence, it will meet separately to determine an appropriate sanction. Decisions of the AHC are reached by majority vote.

The Chair votes only when it is necessary to break a tied vote.

Sanctions and Punishments

When considering possible sanctions, the AHC can take into account the student's records, any history of academic offences, and other relevant circumstances. Possible sanctions include the following:

1. A written warning
2. A reduction in grade for the assignment
3. A zero grade for the assignment
4. A reduction of grade for the course, including an "F" grade for the course
5. An XF grade for the course
    a) On the student's transcript an "XF" will be recorded with the notation "failure due to academic dishonesty." An "XF" shall be calculated as an "F" in grade point average calculations, and will have the same repercussions as an "F" in terms of determination of academic standing.
    b) Students with an "XF" on their transcripts may not run for or hold office in any student organization that is allowed to use Institute funds or Institute facilities.
    c) The student may file a written petition to the AHC to have the grade of "XF" removed from his/her transcript and replaced permanently with an "F", subject to the conditions listed below. In such cases, the following "failure forgiveness" policy will apply.

    i. A majority of the entire AHC will determine whether the "XF" should be replaced with a "F", assuming the following requirements have been met:

        a) At the time the petition is received, at least twelve months have passed since the grade was imposed; and
        b) The student has not been found responsible for any other acts of academic dishonesty or other disciplinary offences.

    ii. Generally, a grade of "XF" should not be removed if imposed for an act of academic dishonesty that required significant premeditation. Decisions of the AHC regarding the removal of an "XF" grade may be appealed to the Provost. If the Provost removes the grade of "XF," he/she shall provide written reasons to the AHC.

6. Suspension from the Institute for one or more semesters

    a) A student found guilty of Academic Dishonesty may be suspended for one or more semesters. The AHC will determine the length of suspension.
    b) Once imposed, the AHC will recommend the effective date for suspension, which could be immediate.
    c) If suspended during an academic semester, the student will receive "WI" (involuntary withdrawal) for all courses. If the suspension is imposed at the end of an academic semester, the student will receive a grade of "F" in the course(s) in which the academic dishonesty occurred.
    d) The Institute will report the case to the sponsor(s) of the student's scholarship if applicable.

7. Expulsion from the Institute

    a) A student found guilty of Academic Dishonesty may be expelled from the Institute. This sanction is only to be used in extreme cases.
    b) The Provost will recommend the expulsion to the President who shall in turn review the entire case before the student is expelled. He/she may impose a lesser sanction in lieu of expulsion, including suspension.
    c) An expelled student may not petition to be reinstated to the Institute.

Appeals

1. All appeals must be in writing and must establish grounds for an appeal.
2. All appeals must be submitted within 15 business days from the decision date of the AHC.
3. All appeals must be submitted to the Provost.

Records of Sanctions

1. All records of sanction for all cases will be kept in the Counseling Office.
2. A record of any sanction requiring action of the Registrar will be placed in the student's file at the Registrar's Office.
3. In every case, the Institute will provide a record of the sanction to the student's guardian.
4. The AHC may also choose to provide a record of the sanction to the student's scholarship sponsor.

Committee Annual Report

The AHC will report a summary of its activities to the Provost at the end of every academic year. The report will include the number of investigations conducted during the previous twelve months and a brief summary of the nature of the cases and the disposition of the cases. Its report may include recommendations for changes in its policies as needed.

Academic Programs and Curricula

Academic Environment

The academic environment at the Petroleum Institute is exciting because of the interaction of students with experienced professors and instructors, many of whom have worked in the petroleum industry, and because students are learning in state-of-the-art facilities. Students also meet other students who will become lifelong professional friends. The academic environment is challenging, as expected at a first-class engineering institution, and different from that which most UAE students have experienced in secondary schools.

All classes are conducted in English, and students entering with adequate English skills immediately find themselves studying pre-calculus, physical science, and computing while improving their English in engineering-oriented English language classes. Those students needing stronger English skills to understand the technical courses receive approximately 24 hours a week of instruction in English before taking pre-calculus and physical science.

Students in the engineering programs learn the fundamentals of engineering and science in large part by solving practical engineering problems and in petroleum-related projects, working either individually or in groups. Subjects are interrelated and students integrate knowledge gained in one course with that gained in others. Students average 5 or more contact hours a day with faculty in the classroom and are expected to devote 3-4 hours each day on homework including weekends. Grades are based on mid-term and final examinations, periodic in-class tests, homework, individual and group projects, laboratory exercises, class participation, and attendance. Refer to the syllabus for specific course requirements.

Summer Internships

Two summer internship experiences are required for all undergraduate students at the Petroleum Institute. The purpose of these internships is to introduce our students to the petroleum industry, and to interweave theory and practice in an actual workplace setting. Two summer experiences are required:

Internship after the Freshman Year (2 weeks)
Students at the PI should select their disciplinary option by the end of the first semester of the Freshman year. Significant effort is expended in the Freshman Engineering Success Seminar (ENGR 103) to give students information that is helpful in making this decision, but it is recognized that students still have significant difficulty making decisions regarding their career paths. To provide additional help in this regard, a 2-week Orientation to Engineering in the Petroleum Industry session is required for all students after completion of the Freshman year. This orientation program consists of a series of field trips to several of the major industrial components of ADNOC and its OPCo's.

Internship after the Junior Year (8 weeks)
The objective of the internship after the Junior year is to provide students with a significant work experience in their selected engineering discipline – Summer Intern Program (3 credit hours) or Field Petroleum Geology (4 credit hours). Students are placed under the direct supervision of a mentor in the ADNOC group of companies, or with one of the international stakeholders. The student intern is given a significant individual engineering project in a discipline-specific environment. The nature of the work assignment is tailored to the student's intellectual development level, and involves actual engineering project work including, where possible, collection and synthesis of data, analysis, and reporting. Students work one-on-one with a mentor; no mentor is required to have more than one PI student. The intern also has a PI faculty sponsor, who is required to interface with the student and the mentor periodically to assess progress and respond to questions. An engineering report is required at the completion of the internship; this report will become part of the student's permanent record at the PI and will be used for ABET assessment. A formal evaluation of the student will be carried out by the mentor at the conclusion of the internship; this information will also be used as part of the Academic Assessment Program.

Independent Study Policy
Independent studies shall be allowed under specified circumstances. Independent Study may be used to meet the academic needs of students who are unable to schedule classes which are needed to fulfill their program requirements for graduation. Independent Study is used as a last resort to assist students in meeting program requirements. Independent Study is not designed to encourage student to avoid scheduled classes. The limits on credits earned through independent study: 9 credits for a baccalaureate.

Foundation Program

Initial Placement

The majority of entering students will be placed in the Foundation Program. This program is designed to help students make the transition from their secondary school courses to the rigorous academic programs at the PI - all of which are taught in English. The Foundation Program may last two to four semesters depending on a student's level of English at the point of admission. Students will be placed in the Foundation Program course sequence based on their score on one or more standardized tests, including the Test of English as a Foreign Language (TOEFL). Those scoring below 400 on the TOEFL will enter either a three- or four-semester program; those scoring 400 or more will enter a two-semester program.

Students scoring 500 or higher on the TOEFL prior to the beginning of the program will be exempted from the Foundation English course sequence and will enrol directly in the communication course sequence (COMM 101/COMM151).

New students who have completed A levels, the International Baccalaureate (IB), or Advanced Placement (AP) exams with satisfactory grades may be exempted from the Foundation Program and placed directly in the degree program. Cases will be assessed on an individual basis, by the Academic Evaluation Committee.

New students who have studied at other postsecondary institutions may be placed in degree studies and may not be required to enter the Foundation Program.

Foundation Program Curriculum

The mission of the Foundation Program is to provide an educational culture of personal development, academic excellence and practical competence in English, mathematics, science and computing to enable students to successfully pursue their Freshman studies at the Petroleum Institute. The Program forms a bridge between the teaching and learning styles, course content and language of instruction of the UAE secondary school system and the four year undergraduate degree programs offered at the PI.

To achieve its mission, the Foundation Program provides English courses as well as English-medium science, mathematics and computing courses. Embedded within its educational framework are academic literacy, independent learning and the behavioral competencies required to become successful students as well as future engineers. Whenever possible, relevant course materials are incorporated to enhance students' general understanding of the oil and gas industry.

English

Because of the PI's emphasis on measurable achievements and the practical application of scientific knowledge, the framework of the Foundation English curriculum is based on outcomes. After completing the curriculum, students have sufficient English skills to manage authentic, academic and industry-related language at approximately an FK 12 level to:

- Listen to and take notes on texts of up to 20 minutes.
- Speak clearly in class seminars and team presentations for up to 15 minutes each and field questions appropriately, using notes, relevant graphics and handouts.
- Read and extract general concepts and specific facts, stated or inferred, from texts of approximately 1600 words.
- Write a variety of texts (prose, bulleted and graphic) of up to 500 words using notes, reference material and their own background knowledge/experience.

Physical Science

The Physical Science Program gives students an introduction to the scientific method, and in addition to the basic physics and chemistry content of the course, introduces them to the fundamentals of geology and earth science with examples taken from the Gulf region. The program emphasizes practical laboratory work including the management, presentation of data and proper health and safety practices. It also contains practical projects and field trips.

Mathematics

The Mathematics course is a pre-calculus course with an emphasis on modeling and problem solving using linear and non-linear functions. The course strongly encourages the acquisition of personal competencies and critical thinking skills. The graphing calculator is used as a teaching and learning tool to facilitate understanding and as an aid to modeling and problem solving.

Computing

The Computing Program teaches students desktop application packages which will be essential for further studies at the Petroleum Institute as well as in their professional lives. The applications taught include Microsoft Word, Excel, PowerPoint, and FrontPage. Students are also taught keyboarding skills.

Independent Learning

Learner autonomy is a major focus of the Foundation Program. Students are introduced to the idea of independent learning through a guided approach to enable them to develop practices for effective learning. Through this guided approach, students develop the habit of working independently without the direct support of the classroom environment or the intervention of a lecturer. The PI's own Independent Learning Center (ILC) offers students a functional well-resourced study environment and open access to a range of materials that can help them with their coursework, assignments and research, assisting them to identify and fulfil their own learning needs. Within this context, the ILC provides a firm foundation for life-long learning as well as access to a knowledge base that will enhance the ability of its users to operate optimally within the petroleum industry.

Progress within the Foundation Program

A student whose TOEFL score on admission is less than 400 must achieve a "C" in ENGL 003 within two regular semesters. A student who fails to meet this condition will not be allowed to continue at the PI.

A student enrolled in ENGL 053, MATH 011 or PSCI 034 must achieve a grade of "D" or higher in each course in order to advance to the next course in the sequence – ENGL 073, MATH 061 or PSCI 035. A student who does not meet the "D" grade requirement will be allowed to retake these courses once.

In order to complete the Foundation Program, a student must pass COMP 082, ENGL 073, MATH 061 and PSCI 035 with a minimum grade of "C" in each course and have an institutional TOEFL score of 500 or greater. A student who does not meet the "C" grade requirement will be allowed to retake these courses once, provided that doing so does not result in a fifth semester for the student.

A student who receives a "C" in ENGL 073 but who does not meet the 500 TOEFL requirement will be allowed to enrol in a non-credit TOEFL preparation course prior to retaking the TOEFL exam. Students wishing to enrol in a summer session preparation course following the fourth semester may do so without special permission.

A Foundation student may enrol in a 100 level degree course if he/she has met the specific prerequisites and seats are available. See the Course Description section of this catalog for individual course prerequisites.

A student who fails to make satisfactory progress within the Foundation Program for any reason will be required to repeat certain courses or will be refused further registration.

All Foundation Program requirements must be satisfied within four regular semesters of admission. Any request for an extension beyond four semesters must be made in writing to the Academic Appeals Committee.

Progressing from the Foundation Program to Degree Studies

Students who satisfy all the exit criteria of the Foundation Program will proceed automatically into one of the degree programs.

Bypassing the Foundation Program

Students who wish to enter the Petroleum Institute degree program directly will be required to submit official secondary school transcripts, or officially certified copies of transcripts and certified copies of recent SAT or ACT and TOEFL exam scores. Requests for admission directly to the Petroleum Institute degree programs (bypassing the Foundation Program) will be considered by the Academic Evaluation Committee on a case-by-case basis, after an evaluation of the student's academic record and standardized exam scores.

Arts & Sciences Program

The Arts and Sciences Program provides the general education component of students' studies much of which is taken in the Freshman and Sophomore years, and Humanities and Social Sciences elective courses that are available to students in the five engineering degree programs. During the first year and a half of the degree program, students enrol in a course of study that is largely common across the programs and is directed by the Arts & Sciences Program. Students are expected to identify their major by the end of their first semester of study. By the middle of the second year, students direct more time to their major fields of study.

During their first semester, students take an Engineering Success Seminar designed to develop and enhance their skills for academic and future professional success. The common curriculum continues which includes two semesters each of chemistry (EE and ME students only take CHEM 131), physics, and four semesters of math: Calculus I, II, and III, and Differential Equations (PGE students only take Calculus I, II, and III). Students are also required to take two communications courses, economics, and Islamic studies. Finally, Arts & Sciences requires two STEPS (Strategies for Team Based Engineering Problem Solving) courses. These courses are project based and require that student teams integrate their scientific knowledge and English communications skills to successfully design and build an engineering system or device.

The following courses are included in the Arts & Sciences Program:

Course code	Course title	
Arts & Sciences Program		
CHEM 131	General Chemistry I	
CHEM 181	General Chemistry II	
CHEM 201	Organic Chemistry I	
CHEM 241	Organic Chemistry II	
CHEM 301	Physical Chemistry I	
COMM 101	Communication I (Formerly ENGL101)	
COMM 151	Communication II (Formerly ENGL151)	
ENGR 103	Engineering Success Seminar (Formerly FRSS 101 / ENGR 104)	
ENGR 201	Statics	
ENGR 401	Engineering Economics	
ENGR 469	Technology Development Ventures and Entrepreneurship	
HFIT101	Personal Health and Fitness I	
HFIT102	Personal Health and Fitness II	
H&SS 111	Islamic Studies	
H&SS 121	German Language I	
H&SS 161	Topics in Islamic Studies	
H&SS 171	German Language II	
H&SS 201	The West in the Middle East	
H&SS 221	Introduction to Political Science	
H&SS 222	The UAE Before and Since the Discovery of Oil	
H&SS 251	Principles of Economics	
H&SS 271	Special Topics in the Humanities	
H&SS 272	Special Topics in the Social Sciences	
H&SS 301	The Origins of the Two World Wars	
H&SS 311	Leadership	
H&SS 321	The Political, Economic And Technological Development of Japan	
H&SS 351	World Petroleum Markets	
H&SS 372	Topics in International Economics (Formerly H&SS371)	

H&SS 373	Personal Financial Management
H&SS 375	The Economics of Money, Banking and Financial Markets
MATH 111	Calculus I
MATH 161	Calculus II
MATH 212	Calculus III (Formerly MATH 211)
MATH 241	Probability and Statistics for Engineers
MATH 261	Differential Equations
MATH 361	Engineering Mathematics
MATH 461	Linear Algebra
PHYS 191	Physics I - Mechanics
PHYS 241	Physics II – Electromagnetism and Optics
PHYS 341	Modern Physics with Applications
STPS 201	Engineering Practices I
STPS 251	Engineering Practices II

General Education Requirements

The general education component is part of the Arts & Sciences Program and serves to broaden the curriculum by exposing students to topics in humanities and social sciences. The goal is to better understand the many non-technical disciplines and develop an appreciation of economic factors, history, aesthetics, ethics, and societal and global impact of engineering practice. Along with their discipline study, the general education component helps students develop essential leadership and communication skills, improve writing skills and computer literacy skills, and enhance their ability to think critically. It also provides the foundation in math and science upon which the engineering programs can be built.

The following courses, required by all students, comprise the general education component of the Arts & Sciences Program:

Course Code	Course Title	Credit Hours
CHEM 131	General Chemistry I	**4**
COMM 101	Communication I	**4**
COMM 151	Communication II	**4**
HFIT101	Personal Health and Fitness I	**0.5**
HFIT102	Personal Health and Fitness II	**0.5**
H&SS 111	Islamic Studies	**3**
H&SS 251	Principles of Economics	**3**
MATH 111	Calculus I	**4**
MATH 161	Calculus II	**4**
MATH 212	Calculus III	**3**
PEEG 151	Overview of the Petroleum Industry	**3**
PHYS 191	Physics I - Mechanics	**4**
PHYS 241	Physics II – Electromagnetism and Optics	**4**
One additional H&SS Elective		**3**
Total Credit Hours		**44**

Chemical Engineering Program

Bachelor of Science in Chemical Engineering

Program Mission and Description

The mission of the chemical engineering program at the Petroleum Institute is to provide a world-class education in chemical engineering science and practice, and to produce graduates and future leaders who are capable of meeting or exceeding the needs and expectations of ADNOC, other allied sponsors, and the petroleum and hydrocarbon industry.

The field of chemical engineering deals with the science and engineering of chemical reactions and chemical separations. Accordingly, the degree program begins with basic studies in chemistry, including organic and physical chemistry, and the thermodynamic properties of fluids. The program continues with courses in basic chemical engineering calculations and advanced courses in fluid mechanics, mass and heat transfer, and transport phenomena. Studies in reactor design, and petroleum refining and gas processing are important components of the program as is the use of computer-aided process design and economic analysis of engineering projects. A key factor in the program is students' access to state-of-the-art laboratories in unit operations, reaction engineering, and control systems engineering, where small scale versions of common industrial equipment and instrumentation are presented in a pilot-plant setting.

Program Educational Objectives

Within the first few years after graduation, the career and professional accomplishments of the Chemical Engineering Program graduates are:

- Design new processes or optimizing existing processes;
- Provide optimal solutions to plant operating problems;
- Provide optimal solutions to product improvement or new product development problems;
- Continue personal and professional growth through self education;
- Meet or exceed expectations of the ADNOC group and corporate sponsors and employers in attaining technical, professional, and personal competencies.

Program Objectives

On completion of the Chemical Engineering Program, graduates will be able to:

- Apply knowledge of the basic sciences (math, chemistry, and physics) to the identification, formulation, and solution of chemical engineering problems [ABET Criterion 3 a, e];
- Apply knowledge of chemical engineering science fundamentals to the identification, formulation, and solution of chemical engineering problems [ABET Criterion 3 a, e];
- Use the computational tools necessary for chemical engineering practice [ABET Criterion 3 k];
- Design and conduct experiments and process tests and analyze and interpret experimental data from these tests [ABET Criterion 3 b];
- Solve open-ended problems that involve design and economic analysis of a process or system to meet specified requirements [ABET Criterion 3 c, h];
- Function effectively in inter- and intra-disciplinary teams [ABET Criterion 3 d];
- Demonstrate an awareness of professional and ethical responsibility and the impact of contemporary issues with relevance to global and regional issues [ABET Criterion 3 h, c, f, j];
- Communicate effectively in English in both oral and written formats [ABET Criterion 3 g];
- Engage in life-long learning and self-education [ABET Criterion 3 i].

Degree Requirements

The Chemical Engineering Program at the Petroleum Institute is designed to give students a rigorous education in the fundamentals of chemical engineering science, and specific training in applications of chemical engineering in the oil and gas industries. The program incorporates extensive laboratory work and computer process simulation in order to reinforce the principles and concepts used in the classroom. The program features one summer internship in industry where students will gain significant exposure to the petroleum processing industries in the Middle East or elsewhere in the world. The Chemical Engineering Program requires 135 credits to graduate.

Program of Study for Chemical Engineering

Term	Course Code	Course Title	Credit
		Freshman Year	
Fall	CHEM 131	General Chemistry I	4
	COMM 101	Communication I	4
	MATH 111	Calculus I	4
	PEEG 151	Overview of the Petroleum Industry	3
	ENGR 103	Engineering Success Seminar	1
	HFIT 101	Personal Health & Fitness I	0.5
	TOTAL		**16.5**
Spring	CHEM 181	General Chemistry II	4
	COMM 151	Communication II	4
	MATH 161	Calculus II	4
	PHYS 191	Physics I - Mechanics	4
	HFIT 102	Personal Health & Fitness II	0.5
	TOTAL		**16.5**
		Sophomore Year	
Fall	CHEM 201	Organic Chemistry I	4
	MATH 212	Calculus III	3
	PHYS 241	Physics II – Electromagnetism and Optics	4
	STPS 201	Engineering Practices I	3
	H&SS 251	Principles of Economics	3
	TOTAL		**17**
Spring	CHEM 241	Organic Chemistry II	4
	CHEG 201	Principles of Chemical Engineering	4
	CHEG 220	Computational Methods in Chemical Engineering	3
	MATH 261	Differential Equations	3
	STPS 251	Engineering Practices II	3
	TOTAL		**17**
		Junior Year	
Fall	CHEG 301	Fluid Mechanics for Chemical Engineers	3
	CHEG 311	Unit Operations Laboratory I	3
	CHEG 322	Chemical Engineering Thermodynamics	3
	CHEG 323	Chemical Engineering Thermodynamics Lab	1
	CHEG 331	Designed Experimentation	4

	H&SS 111	Islamic Studies	3
	MATH 241	Probability and Statistics	3
	TOTAL		**16**
Spring	CHEM 301	Physical Chemistry	4
	CHEG 351	Chemical Engineering Mass Transfer	3
	CHEG 361	Chemical Engineering Heat Transfer	3
	CHEG 371	Unit Operations Laboratory II	3
	TBA	Technical Elective	3
	TOTAL		**16**
Summer	CHEG 399	Chemical Engineering Summer Intern Program	**3**
		Senior Year	
Fall	CHEG 401	Engineering Economics	3
	CHEG 411	Reaction Engineering	4
	CHEG 421	Petroleum Refining and Processing	3
	CHEG 431	Chemical Engineering Design I	3
	TBA	Technical Elective	3
	TOTAL		**16**
Spring	CHEG 451	Chemical Engineering Design II	3
	CHEG 461	Process Dynamics and Control	4
	CHEG 481	Gas Processing Engineering	3
	TBA	Technical Elective	3
	H&SS	H&SS Elective	3
	TOTAL		**16**
		Total Credit Hours	**135**
		Chemical Engineering Technical Electives	
Spring	CHEG/MEEG 380	Introduction to Polymer Science & Engineering	3
	CHEG 381	Polymer Chemistry	3
	CHEG 382	Polymer Chemistry Laboratory	1
	CHEG 415	Combustion and Air Pollution Control	3
	CHEG 416	Corrosion Engineering	3
	CHEG 472	Water Treatment and Membrane Processes	3
	CHEG 488	Polymer Properties	3
	CHEG 488L	Polymer Properties Laboratory	1
	CHEG 491	Polymer Processing	3
	CHEG 491L	Polymer Processing Laboratory	1
		Out of Program Technical Electives	
Spring	ENGR 201	Statics	3
	ELEG 205	Electric Circuits I	4
	ELEG 206	Introduction to C++ Programming	3
	MEEG 324	Engineering Dynamics	3
	MEEG 334	Materials Science	3
	MEEG 344	Mechanics of Materials	3
	MEEG 454	Refrigeration/air conditioning and cryogenics	3

	MEEG 459	Turbo Machinery	3
	MATH 361	Engineering Mathematics	3
	MATH 461	Linear Algebra	3
	PEEG 252	Statics and Strength of Materials	~~3~~3
	PEEG 339	Overview of Petroleum Reservoir Engineering	~~3~~4
	PEEG 342	Production Facilities	~~3~~3
	PHYS 341	Modern Physics	~~3~~4
Humanities and Social Science (H&SS) Electives			
	H&SS 121	German Language I	3
	H&SS 171	German Language II	3
	H&SS 201	The West in the Middle East	3
	H&SS 221	Introduction to Political Science	3
	H&SS 251	Principles of Economics	3
	H&SS 272	Special Topics in the Social Sciences	3
	H&SS 301	The Origins of the Two World Wars	3
	H&SS 311	Leadership	3
	H&SS 321	The political, economic and technological development of Japan	3
	H&SS 372	Topics in International Economics	3
	H&SS 373	Personal Financial Management	3

**Other technical elective courses could be taken with the permission of student advisor and program director.*

Electrical Engineering Program

Bachelor of Science in Electrical Engineering

Program Mission and Description

The mission of the Electrical Engineering Program is to provide a world-class education in electrical engineering with emphasis on power and control systems, and instrumentation engineering that prepares graduates for successful professional careers in ADNOC, other allied sponsors, and the regional gas and oil industry. In addition, graduates will engage in life-long learning that will enable them to continue their education throughout their career.

The Electrical Engineering Program at the Petroleum Institute is designed to give students a sound education that covers the major subjects of electrical engineering and draws applications from the oil and gas industries. In their senior year, the electrical engineering students take a variety of courses in power engineering, which comprises power generation, transmission, and distribution systems, and in instrumentation and control, which involves modern control and digital control theory, computer control techniques, real-time programming, and industrial automation.

The electrical engineering curriculum combines strength in electrical engineering fundamentals with extensive laboratory experience to reinforce the principles and concepts used in classroom, design experiences to apply learned knowledge to solve representatives of real-world problems and an environment that stresses leadership and teamwork. In addition, the curriculum emphasizes the development of computer and oral and written communication skills of electrical engineering students.

The Electrical Engineering laboratories are equipped with state-of-the-art instrumentation components, development systems tools for teaching and research.

Program Educational Objectives

Consistent with the institutional vision and mission and those of the Electrical Engineering Program, with input from program constituencies, the faculty has adopted a number of educational objectives. The overall goal is to provide students with an outstanding learning environment and the necessary education so they will have the tools and resources to compete successfully in the global workplace or to pursue advanced studies. The program will strive to use novel technologies and methodologies for teaching. Within the first few years of graduation, the career and professional accomplishments of our Electrical Engineering Program graduates will be to:

- Communicate effectively in English and function well on teams;
- Demonstrate understanding of and practice professional attitudes and ethics within a global and societal context; and engage in lifelong learning;
- Succeed in pursuing a career or advanced studies in electrical engineering using appropriate theoretical and experimental, problem-solving, and design skills;
- Design new or improve power and/or control systems and develop solutions to engineering problems utilizing knowledge from a variety of sources;
- Function well and succeed in the future work environment with ADNOC and progress in the ADNOC career development scheme.

Program Outcomes

On completion of the Electrical Engineering Program, graduates will be able to:

- Apply knowledge of the basic sciences (math, chemistry, and physics) and electrical engineering to identify, formulate, analyze/design, and solve electrical engineering problems [ABET Criterion 3 a, e];
- Design and conduct experiments and process tests and analyze and interpret experimental data [ABET Criterion 3 b];

- Use techniques, skills, and modern engineering tools [ABET Criterion 3 k];
- Design a system, component, or process to meet certain needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability [ABET Criterion 3 c, h];
- Function effectively on intra and inter disciplinary teams [ABET Criterion 3 d];
- Demonstrate an awareness of professional and ethical responsibility and of contemporary issues with relevance to global and regional issues [ABET Criteria 3 h, c, f, j];
- Communicate effectively in English in oral, written, and graphical formats [ABET Criterion 3 g];
- Demonstrate awareness of, and engage in, life-long learning and self-education [ABET Criterion 3 i];
- Demonstrate knowledge of probability and statistics, and advanced mathematics, typically including differential equations, and linear algebra [ABET Criterion 3 l].

Degree Requirements

The Electrical Engineering Program begins with basic studies in engineering science coupled with fundamental studies in electrical engineering. The program continues with advanced courses in power, and controls and instrumentations engineering. To reinforce the principles and concepts introduced in the classroom, the program incorporates extensive hands-on laboratory work, design experiences to apply learned knowledge to solve representatives of real-world problems, and an environment that stresses teamwork and leadership. In addition, the program emphasizes the development of computer, and oral and written communication skills. The Electrical Engineering Program features two summer internships in industry where students will gain significant exposure to the petroleum processing industries in the Middle East and elsewhere in the world. The Electrical Engineering Program requires 138 credits to graduate.

Program of Study for Electrical Engineering

Term	Course Code	Course Title	Credit
		Freshman Year	
Fall	CHEM 131	General Chemistry I	4
	COMM 101	Communication I	4
	ENGR 103	Engineering Success Seminar	1
	MATH 111	Calculus I	4
	PEEG 151	Overview of Petroleum Industry	3
	HFIT 101	Personal Health & Fitness I	0.5
	TOTAL		**16.5**
Spring	H&SS	H&SS Elective	3
	COMM 151	Communication II	4
	MATH 161	Calculus II	4
	PHYS 191	Physics I – Mechanics	4
	HFIT 102	Personal Health & Fitness II	0.5
	TOTAL		**15.5**
		Sophomore Year	
Fall	ELEG 205	Electric Circuits I	4
	ELEG 206	Introduction to C++ Programming	3
	MATH 212	Calculus III	3
	PHYS 241	Physics II – Electromagnetism and Optics	4
	STPS 201	Engineering Practices I	3
	TOTAL		**17**
Spring	ELEG 305	Electric Circuits II	4

	ELEG 325	Electronic Devices and Circuits	4
	H&SS 251	Principles of Economics	3
	MATH 261	Differential Equations	3
	STPS 251	Engineering Practices II	3
	TOTAL		**17**
Junior Year			
Fall	ELEG 315	Signals and Systems	3
	ELEG 330	Fundamentals of Electric Machines	4
	ELEG 380	Logic and Digital Design	4
	H&SS 111	Islamic Studies	3
	MATH 241	Probability and Statistics for Engineers	3
	TOTAL		**17**
Spring	ELEG 350	Power Systems Analysis	3
	ELEG 360	Feedback Control Systems	4
	ELEG 385	Microprocessors and Microcontrolers	4
	ELEG 410	Fundamentals of Power Electronics	3
	ELEG 430	Electric Machines	4
	TOTAL		**18**
Summer	ELEG 399	Electrical Engineering Summer Intern Program	**3**
Senior Year			
Fall	ELEG 405	Design I	1
	ELEG 440	Instrumentation and Measurement	4
	ELEG 4XX	ELEG Elective	3
	ELEG 4XX	ELEG Elective	3
	H&SS	Elective	3
	TBA	Technical Elective	3
	TOTAL		**17**
Spring	ELEG 455	Design II	4
	ELEG 465	Industrial Automation	4
	ELEG 4XX	ELEG Elective	3
	ELEG 4XX	ELEG Elective	3
	TBA	Technical Elective	3
	TOTAL		**17**
		Total Credit Hours	**138**
ELEG Electives			
	ELEG 420	Modern Control Systems	3
	ELEG 450	Electric Power Distribution Systems	3
	ELEG 460	Digital Signal Processing	3
	ELEG 470	Advanced Power Electronics	3
	ELEG 480	Digital Control Systems	3
	ELEG 490	Power Systems Protection and Relays	3
Electrical Engineering Technical Electives *			
	ENGR 201	Statics	3

	MATH 361	Engineering Mathematics	3
	MATH 461	Linear Algebra	3
	MEEG 311	Engineering Thermodynamics	3
	MEEG 324	Engineering Dynamics	3
	MEEG 354	Fluid Mechanics	3
	PHYS 341	Modern Physics with Applications	3
H&SS Electives			
	H&SS 121	German Language I	3
	H&SS 171	German Language II	3
	H&SS 201	The West in the Middle East	3
	H&SS 221	Introduction to Political Science	3
	H&SS 251	Principles of Economics	3
	H&SS 271	Special Topics in the Humanities	3
	H&SS 272	Special Topics in the Social Sciences	3
	H&SS 301	The Origins of the Two World Wars	3
	H&SS 311	Leadership	3
	H&SS 351	World Petroleum Markets	3
	H&SS 372	Topics in International Economics	3
	H&SS 373	Personal Financial Management	3

***** *Courses not on the list require approval from the Electrical Engineering Program Director.*

Mechanical Engineering Program

Bachelor of Science in Mechanical Engineering

Program Mission and Description

The mission of the Mechanical Engineering Program at the Petroleum Institute is as follows:

Mechanical engineering is an essential discipline in the production and processing of petroleum and natural gas, and the broader energy sector at large. The Mechanical Engineering Program will meet or exceed the international standards of excellence in mechanical engineering education, research, and life-long learning. We are dedicated to invest time and resources in educating students with the expectation that they will develop as leading experts in their respective fields of expertise and long-term contributors to the industrial sponsors, the UAE, and beyond.

The Mechanical Engineering Program at the Petroleum Institute is designed to give students a rigorous education in the fundamentals of the science of engineering mechanics, and specific training in applications of mechanical engineering in the oil and gas industries. The program incorporates extensive laboratory work which is used to reinforce the principles and concepts explored in the classroom.

Program Educational Objectives

The Mechanical Engineering Program educational objectives, deriving from the program and Institutional Vision statements and informed by the program constituencies, are as follows:

- Provide an integrated experience to develop skills for responsible teamwork, effective communication skills, and life-long learning to prepare graduates for successful careers in mechanical engineering with a particular focus on applications in the petroleum and energy industries;
- Provide a broad education, well grounded in the fundamental principles of science and engineering, which enables students to solve successfully mechanical engineering problems and progress rapidly towards the satisfactory attainment of sponsor's competency targets;
- Educate conscientious mechanical engineers of diverse backgrounds capable of becoming leaders in their respective field of expertise who understand their ethical and professional responsibilities and the impact of engineering solutions on society and the environment;
- Provide students with practical design, internship, and research experiences through partnership with PI's sponsoring industry and/or through collaboration with international institutions.

Program Outcomes

On completion of the Mechanical Engineering Program, graduates will be able to:

- Apply fundamentals of mathematics, science, and engineering to identify, formulate, and solve mechanical engineering problems [ABET Criterion 3 a, e];
- Utilize state-of-the-art engineering software, computers, and instrumentation as tools to solve and effectively communicate engineering problems. [ABET Criterion 3 k, e];
- Work in teams effectively to address practical engineering problems. [ABET Criterion 3 d];
- Use the product development process to design a product that meets client needs and addresses contemporary issues, such as technology innovation and entrepreneurship, energy sustainability, and global environmental protection. [ABET Criterion 3 j, c, h];
- Communicate effectively in oral presentations and in writing. [ABET Criterion 3 g];
- Design and conduct experiments and interpret and generalize from the results. [ABET Criterion 3 b];
- Identify and critically analyze ethical issues encountered during their career and to maintain and respond according to ethical and professional standards. [ABET Criterion 3 f];

- Use their broad educational background necessary for awareness of the impact of engineering solutions on the safety, health, and well-being of society and the environment. [ABET Criterion 3 h];
- Acquire new knowledge independently and to engage in life-long learning through workshops, short courses, professional societies, and other specialized training programs. [ABET Criterion 3 i];
- Assume responsibility at the entry level in the specialty areas of significance to the sponsors and the broader energy industry. [ABET Criterion 3 c].

Degree Requirements

The field of Mechanical Engineering deals with the science and engineering of mechanical devices and processes. Accordingly, the degree program begins with basic studies in engineering science including statics, dynamics, fluid mechanics, thermodynamics, and mechanics of materials. The program continues with advanced courses in mechanical design, fluid mechanics and heat transfer, and signal processing and control theory. A two-semester capstone mechanical design sequence is required of all students. The program emphasizes computer-aided system and component design strategies.

The program features two summer internships in the industry where students will gain significant exposure to the petroleum processing industries in the Middle East or elsewhere in the world. The Mechanical Engineering Program requires 135 credits to graduate.

Program of Study for Mechanical Engineering

Term	Course Code	Course Title	Credit
		Freshman Year	
Fall	PEEG 151	Overview of Petroleum Industry	3
	CHEM 131	General Chemistry I	4
	COMM 101	Communication I	4
	ENGR 103	Engineering Success Seminar	1
	MATH 111	Calculus I	4
	HFIT 101	Personal Health & Fitness I	0.5
	TOTAL		**16.5**
Spring	PHYS 191	Physics I - Mechanics	4
	COMM 151	Communication II	4
	H&SS 111	Islamic Studies	3
	MATH 161	Calculus II	4
	HFIT 102	Personal Health & Fitness II	0.5
	TOTAL		**15.5**
		Sophomore Year	
Fall	ENGR 201	Statics	3
	H&SS 251	Principles of Economics	3
	MATH 212	Calculus III	3
	STPS 201	Engineering Practices I	3
	PHYS 241	Physics II – Electromagnetism and Optics	4
	TOTAL		**16**
Spring	MATH 241	Probability and Statistics	3
	MATH 261	Differential Equations	3
	MEEG 205	Introduction to Mechanical Engineering	2
	MEEG 275	Basic Measurement Laboratory	2

	MEEG 324	Engineering Dynamics	3
	MEEG 365	Thermodynamics	4
	TOTAL		**17**
		Junior Year	
Fall	ELEG 205	Electric Circuits I	4
	MEEG 221	Engineering MATLAB	3
	MEEG 334	Materials Science	3
	MEEG 335	Materials Science Laboratory	1
	MEEG 344	Mechanics of Materials	3
	MEEG 354	Fluid Mechanics	3
	TOTAL		**17**
Spring	MEEG 245	Machine Workshop and Manufacturing Lab I	2
	MEEG 246	Machine Workshop and Manufacturing Lab II	1
	MEEG 374	Machine Design	3
	MEEG 384	System Dynamics and Control	3
	MEEG 394	Heat Transfer	3
	MEEG 436	Measurements and Instrumentation	4
	STPS 251	Engineering Practices II	3
	TOTAL		**18**
Summer	MEEG 399	Mechanical Engineering Summer Intern Program	**3**
		Senior Year	
Fall	MEEG 376	Core Measurement Laboratory	2
	MEEG 404	Computer Aided Engineering	3
	MEEG 414	Design I	3
	MEEG XXX	Technical Elective 1	3
	MEEG XXX	Technical Elective 2	3
	H&SS XXX	H&SS Elective	3
	TOTAL		**17**
Spring	MEEG 415	Design II	3
	MEEG 444	Noise and Vibration	3
	MEEG 459	Turbo Machinery	3
	MEEG	Technical Elective 3	3
	MEEG	Technical Elective 4	3
	TOTAL		**15**
		Total Credit Hours	**135**

Petroleum Engineering Program

Bachelor of Science in Petroleum Engineering

Program Mission and Description

The mission of the Petroleum Engineering Program at the Petroleum Institute is to become a leading international center of excellence in education, training, research and professional service dedicated to serving the competence, training and technology development needs of ADNOC and other allied sponsors. The program emphasizes the importance of ethical conduct; health, safety and environmental issues and provides platforms for life-long learning.

Petroleum Engineering is the branch of engineering that covers reservoir management, drilling and production aspects of the exploration, development and operation of hydrocarbon resource production.

The Petroleum Engineering Program at the PI has a modern curriculum that emphasizes not only petroleum engineering fundamentals but also the business processes applied to reach optimal engineering solutions for field development and operations. Course content, projects and other assignments are selected to help prepare graduates to launch careers within ADNOC and other allied sponsors as willing and eager contributors, equipped with knowledge and skills of basic engineering and science, fundamental understandings of reservoir, well, production and surface facilities processes. Every activity requires the student to exercise communication skills and frequently gain experience in carrying out tasks as part of a multidisciplinary team.

Program Educational Goals

The goals of the Petroleum Engineering Program are to prepare its graduates, through formal education and preparation for life-long learning and continuing education to:

- Progress through ADNOC and industry-standards of Competency-Based Development Programs at a rate that is faster than that of the average of new hires from other educational institutions;
- Demonstrate highest levels of technical, ethical and behavioural competencies;.
- Develop and establish themselves as Engineering Specialists, Supervisors and Managers;
- Become a major source of highly competent UAE National engineers and managers to serve the country's objectives of nationalization;
- Undertake graduate studies, become involved in research and development, and potentially work as Petroleum Institute faculty.

Program Outcomes

On completion of the Petroleum Engineering Program, graduates will be able to:

- Function as a member of a multidisciplinary team and communicate effectively in English [ABET Criterion 3 d];
- Apply knowledge of mathematics and basic science and engineering to the identification, formulation and solution of petroleum engineering problems [ABET Criteria 3 a, e];
- Design and conduct experiments and analyze and interpret experimental data [ABET Criterion 3 b];
- Design, construct and analyze petroleum engineering systems and models using modern engineering tools and skills [ABET Criteria 3 c, e, h, j, k];
- Ethically manage and adapt to professional and societal changes through life-long learning and knowledge of contemporary issues in a global context [ABET Criteria 3 f, h, i, j];
- Acquire, quality control, manage and utilize engineering data for optimal technical and economic decisions [ABET Criteria 3 a, b, k];
- Communicate effectively in oral English [ABET Criterion 3 g];
- Communicate effectively in written English [ABET Criterion 3 g].

Degree Requirements

The Petroleum Engineering Program at the Petroleum Institute is designed to give students a rigorous education in the fundamentals of petroleum engineering science, and specific training in applications of petroleum engineering to the production of hydrocarbon resources in the oil and gas industries. The program incorporates extensive laboratory work which is used to reinforce the principles and concepts used in the classroom. The program features a summer internship in industry where students will gain significant exposure to the petroleum production and processing industries in the Middle East or elsewhere in the world. The Petroleum Engineering Program requires 138 credits to graduate.

Program of Study for Petroleum Engineering

Term	Course Code	Course Title	Credit
		Freshman Year	
Fall	CHEM 131	General Chemistry I	4
	COMM 101	Communication I	4
	ENGR 103	Engineering Success Seminar	1
	HFIT 101	Personal Health & Fitness I	0.5
	MATH 111	Calculus I	4
	PEEG 151	Overview of Petroleum Industry	3
	TOTAL		**16.5**
Spring	CHEM 181	General Chemistry II	4
	COMM 151	Communication II	4
	HFIT 102	Personal Health & Fitness II	0.5
	MATH 161	Calculus II	4
	PHYS 191	Physics I – Mechanics	4
	TOTAL		**16.5**
		Sophomore Year	
Fall	CHEG 222	Introduction to Engineering Thermodynamics	3
	MATH 212	Calculus III	3
	PEEG 201	Introduction to the Petroleum Industry	2
	PEEG 211	Reservoir Rock Properties	3
	PHYS 241	Physics II Electromagnetism and Optics	4
	STPS 201	Engineering Practices I	3
	TOTAL		**18**
Spring	H&SS 251	Principles of Economics	3
	MATH 261	Differential Equations	3
	PEEG 213	Reservoir Fluid Properties	3
	PEEG 252	Strength of Materials	3
	PGEG 220	Historical Geology of the Middle East	3
	STPS 251	Engineering Practices II	3
	TOTAL		**18**
		Junior Year	
Fall	CHEG 302	Heat and Mass Transfer	4
	PGEG 311	Sedimentary Petrology	3
	PEEG 314	Well Logging	3
	PEEG 321	Drilling Engineering I	3

	PEEG 331	Reservoir Engineering I	3
	TOTAL		**16**
Spring	PEEG 315	Reservoir Characterization	3
	PEEG 323	Drilling Engineering II	3
	PEEG 334	Reservoir Engineering II	3
	PEEG 341	Completion and Workover	3
	PEEG 342	Production Facilities	3
	PEEG 353	Petroleum Project Economics	3
	TOTAL		**18**
Summer	PEEG 399	Petroleum Engineering Summer Internship Program	3
		Senior Year	
Fall	H&SS 111	Islamic Studies	3
	PEEG 435	Reservoir Simulation	4
	PEEG 443	Production Systems Design and Analysis	3
	PEEG 454	Uncertainty and Risk Analysis in the Petroleum Industry	3
	PEEG 455L	Senior Design Project Laboratory	0
	TBA	Technical Elective	3
	TOTAL		**16**
Spring	H&SS	Elective	3
	PEEG 436	Reservoir Evaluation and Monitoring	3
	PEEG 455	Senior Design Project	4
	TBA	Technical Elective	3
	TBA	Technical Elective	3
	TOTAL		**16**
		Total Credit Hours	**138**
		Petroleum Engineering Technical Electives	
	CHEM201	Organic Chemistry I	
	CHEM241	Organic Chemistry II	
	ELEG205	Electric Circuits I	
	ELEG400	Elect Eng Overview	
	MATH361	Advanced Engineering Mathematics	
	MATH461	Linear Algebra	
	MEEG334	Materials Science	
	MEEG374	Machines Design	
	PGEG321	Structructal Interpretation	
	PGEG351	Petroleum Geophysics	
	PGEG361	Sediment + Startigraphy	
		H&SS Electives	
	H&SS111	Islamic studies	
	H&SS121	German I	
	H&SS201	West in the Middle East	
	H&SS211	Introduction to Political Science	
	H&SS251	Introduction to Economics	
	H&SS271	Special Topics in the Humanities	

	H&SS272	Special Topics in the Social Sciences	
	H&SS301	Origins of Two World Wars	
	H&SS311	Leadership	
	H&SS351	World Oil Markets	
	H&SS372	Topics in International Economics	
	H&SS373	Personal Financial Management	

Petroleum Geosciences Engineering Program

Bachelor of Science in Petroleum Geosciences Engineering

Program Mission and Description

The educational mission of the Petroleum Geosciences Engineering Program at the Petroleum Institute is to provide a high-quality education in petroleum geology and geophysics and to produce graduates for successful and socially and ethically responsible careers in the petroleum industry that meet or exceed the needs and expectations of ADNOC and other industry sponsors.

The Petroleum Geosciences Engineering Program at the Petroleum Institute is a blend of geology and geophysics as they relate to the discovery and exploitation of oil and gas. Strengths of the Petroleum Geosciences Engineering curriculum include an emphasis on geosciences project work and use of modern software applications. In addition, emphasis is placed on the development of "soft skills" during coursework. Petroleum Geosciences Engineering laboratories, including a computer laboratory, are well equipped, and up-to-date geophysical equipment is available for field exercises. The program features a summer field geology course.

Students who successfully complete the Bachelor of Science program will be able to enter the petroleum industry as petroleum geologists or geophysicists, and have a solid educational base if they decide to continue in a graduate program.

Program Educational Objectives

The Petroleum Geosciences Engineering graduates will accomplish the following:

- Apply geological and geophysical knowledge and skills to recognize exploration, development, and production problems and design technically, economically, and environmentally sound solutions to find and maximize the value of petroleum resources in the UAE;
- Contribute effectively, including in leadership roles, in multi-disciplinary exploration and production teams;
- Function ethically and with integrity such that society benefits from their work as petroleum geoscience engineers;
- Continue personal and professional growth through self education;
- Meet or exceed expectations of the ADNOC Group and corporate sponsors in attaining technical and personal competencies.

Program Outcomes

On completion of the Petroleum Geosciences Engineering Program, graduates will be able to.

- Apply knowledge of math, chemistry, physics, geology, and geophysics to solve petroleum geosciences engineering problems [ABET Criteria 3a, e];
- Formulate solutions to geoscience problems involving design of geophysical surveys, acquisition and processing of geophysical data, and making reasonable geological interpretations from results [ABET Criteria 3a, b, c, e, k];
- Design and construct 3-dimensional Earth models to solve E&P-type problems from appropriate geological, petrophysical, and geophysical data [ABET Criteria 3a, c, e, k];
- Function effectively on multi-disciplinary teams [ABET Criterion 3d];
- Demonstrate an awareness of social, ethical, and professional responsibilities in the exploitation of petroleum resources and an awareness of major regional and global social and environmental issues [ABET Criteria 3f, h, j];
- Demonstrate an ability to communicate in oral and written forms in English appropriate to the petroleum industry [ABET Criterion 3g];
- Demonstrate recognition of the need for and an ability to engage in continual self-education [ABET Criteria 3j.

Degree Requirements

In their freshmen year, students take common basic science, calculus, and communications courses.

The degree program begins in the second year with an overview of the industry with Fundamentals of the Petroleum Industry. The program continues with advanced courses in geology and geophysics. Several courses are taken with students studying Petroleum Engineering, including Petroleum Economics. The program incorporates extensive laboratory, field, and project work. A highlight of the program is a summer Field Petroleum Geology course in Italy. The Petroleum Geosciences Engineering program requires 132 credits to graduate.

Program of Study for Petroleum Geosciences Engineering

Term	Course Code	Course Title	Credit
		Freshman Year	
Fall	CHEM 131	General Chemistry I	4
	COMM 101	Communication I	4
	ENGR 103	Engineering Success Seminar	1
	HFIT 101	Personal Health & Fitness I	0.5
	MATH 111	Calculus I	4
	PEEG 151	Overview of Petroleum Industry	3
	TOTAL		**16.5**
Spring	CHEM 181	General Chemistry II	4
	COMM 151	Communication II	4
	HFIT 102	Personal Health & Fitness II	0.5
	MATH 161	Calculus II	4
	PHYS 191	Physics I - Mechanics	4
	TOTAL		**16.5**
		Sophomore Year	
Fall	CHEG 222	Introduction to Thermodynamics	3
	PEEG 205	Fundamentals of the Petroleum Industry	3
	MATH 212	Calculus III	3
	PHYS 241	Physics II - Electromagnetism and Optics	4
	STPS 201	Engineering Practices I	3
	TOTAL		**16**
Spring	PEEG 213	Reservoir Fluid Properties	3
	PEEG 353	Petroleum Project Economics	3
	PGEG 210	Earth Materials	3
	PGEG 220	Historical Geology of the Middle East	3
	STPS 251	Engineering Practices II	3
	TOTAL		**15**
		Third Year	
Fall	H&SS 251	Principles of Economics	3
	PGEG 311	Sedimentary Petrology	4
	PGEG 321	Structural Interpretation	4
	PGEG 331	Igneous and Metamorphic Petrology	2
	PGEG 341	Paleontology	3
	TOTAL		**16**
Spring	H&SS 111	Islamic Studies	3

	PGEG 351	Petroleum Geophysics	4
	PGEG 361	Sedimentology and Stratigraphy	3
	PGEG 371	Data Analysis and Geostatistics	4
	PGEG 381	Rock Mechanics and Reservoirs	3
	TOTAL		**17**
Summer	PGEG 391	Field Petroleum Geology	**4**
		Fourth Year	
Fall	PGEG 401	Petrophysics and Logging	4
	PGEG 411	Reflection Seismology	4
	PGEG 421	Petroleum Geosciences Engineering Computing Project	4
	H&SS	Elective	3
	TOTAL		**15**
Spring	PGEG 451	Environmental Geology	3
	PGEG 461	Reservoir Characterization Project	4
	PGEG 471	Petroleum Systems Project	3
	TBA	Technical Elective*	3
	TBA	H&SS Elective	3
	TOTAL		**16**
		Total Credit Hours	**132**

**PGEG 431 Geochemistry, PEEG 331 Reservoir Engineering I, or MATH 261 Differential Equations are recommended as technical electives. The technical elective must be approved by the Petroleum Geosciences Engineering Program.*

Course Descriptions

This section includes course descriptions listed alphabetically by subject area. The descriptions provide information on subject, course codes, titles and level in the first line. This is followed by content, prerequisites, corequisites and restrictions, and finally lecture and lab hours and weight or credit hours as shown in the following example:

Example:

CHEM 181 GENERAL CHEMISTRY II

A continuation of CHEM 131, this course concentrates on chemical kinetics, thermodynamics, electrochemistry, and chemical equilibrium.

Prerequisite	CHEM 131
Corequisite	MATH 111
Restrictions	None
3:3:4	
Key	
Subject code	The area of study or discipline *e.g. CHEM = Chemistry*
Course code	
001 - 099	Foundation Program
100 - 199	Freshman (1st year) *e.g. 181 is a Freshman course*
200 - 299	Sophomore (2nd year)
300 - 399	Junior (3rd year)
400 - 499	Senior (4th year)
Title / Level	Name of the Course *e.g. General Chemistry II*
Description	Course Content
Prerequisite	Course(s) students must have passed before enrolment *e.g. CHEM 131*
Corequisite	Courses students must have passed or be currently enrolled in *e.g. MATH 111*
Restrictions	Limitations on who may and may not take the course
Hours	*e.g. 3:3:4 = 3 class hours per week: 3 lab hours per week: 4 credit/weight* hours*

**Foundation courses use "weight" instead of "credit" because they do not count for degree credit.*

Subject Codes:

COMP	Computing	ENGR	Engineering
ENGL	English	HFIT	Personal Health & Fitness
MATH	Math	H&SS	Humanities & Social Sciences
PSCI	Physical Science	MEEG	Mechanical Engineering
CHEG	Chemical Engineering	PEEG	Petroleum Engineering
CHEM	Chemistry	PGEG	Petroleum Geosciences Engineering
COMM	Communication	PHYS	Physics
ELEG	Electrical Engineering	STPS	Strategies for Team-Based Engineering Problem Solving

Foundation Program Courses

Computing

COMP 002 COMPUTING APPLICATIONS I

An introduction to computing basics for students in the three-semester Foundation Program, this course consists of an introduction to the Windows XP operating system including Windows XP interface, keyboarding using a touch-typing program, file management, and an introduction to basic word-processing, use of graphics and the Internet.
Prerequisites: Prior enrolment in ENGL000 or PreTOEFL/TOEFL 350-399 on admission
Corequisites: None
Restrictions: None
3:0:2

COMP 032 COMPUTING APPLICATIONS II

An introduction to computing concepts and functions of a personal computer, this course focuses on the use of commercial software applications as communication tools. The course also emphasizes information acquisition and processing based on knowing what new information is necessary to solve a problem and where to find information efficiently. Software packages include word processing (MS Word), presentation (PowerPoint) for documenting and presenting information, web page design using basic html, and Internet browsers and search engines for acquiring information.
Prerequisites: PreTOEFL/TOEFL ≥400 on admission or C in ENGL003 and PreTOEFL/TOEFL ≥400
Corequisites: None
Restrictions: None
3:0:2

COMP 082 COMPUTING APPLICATIONS III

A continuation of COMP032, this course focuses on advanced features of communication tools and use of commercial software applications as problem solving tools. Software applications include spreadsheet application (MS Excel) for analysing information with emphasis on tables and charts, advanced features of word-processing application (MS Word) and integration of all applications taught through a final project.
Prerequisites: COMP 032
Corequisites: None
Restrictions: None
3:0:2

English

ENGL 000 BASIC ENGLISH LANGUAGE

This course is designed to meet the needs of students who have not achieved a minimum of 350 on the TOEFL. This is a general English proficiency course introducing students to the fundamental vocabulary, grammar and skills they will need to meet the demands of ENGL003.
Prerequisites: PreTOEFL/TOEFL 300 – 350
Corequisites: None
Restrictions: None
24:0:12

ENGL 003 FOUNDATION ENGLISH I

Students build language and academic skills in themed learning cycles. The themes are Organization and Engineering (definition, description and career paths). In tandem, students learn relevant information literacy skills to apply in the context of the cycles. They are also introduced to behavioural competencies including planning, organization and teamwork.
Prerequisites: ENGL000 or PreTOEFL/TOEFL 350-399 on admission
Corequisites: None
Restrictions: None
24:0:12

ENGL 053 FOUNDATION ENGLISH II

Learning cycle themes for semester two are: Organization and Language Learning, Introduction to the Petroleum Industry and Simple Machines. Students build their language skills to a higher level of complexity in the context of the cycles. They also begin to work on readings derived from the science course materials. Learning cycles during this semester integrate vocabulary concepts and applications from science and mathematics. Relevant computing skills are also applied. Students begin to work with presentation skills and continue to work in teams.
Prerequisites: PreTOEFL/TOEFL ≥400 on admission or ENGL003 ≥C and PreTOEFL/TOEFL ≥400
Corequisites: None
Restrictions: None
15:0:8

ENGL 073 FOUNDATION ENGLISH III

Learning cycle themes for semester three are: Future of the Oil and Gas Industry and Health Safety and Environment. Students work on individual and group industry-related projects with a higher-level integration of information technology, mathematics and sciences. Students continue to develop information literacy and presentation skills.
Prerequisites: ENGL053 ≥D
Corequisites: None
Restrictions: None
15:0: 8

ENGL 098 BASIC TOEFL PREPARATION COURSE

This course is designed for students who do not meet the exit criterion of ≥400 on the TOEFL upon completion of ENGL003. The course provides a solid grounding in grammar and reading skills, strategies for taking the TOEFL, and test-taking practice to familiarize students with the expectations of the TOEFL exam.
Prerequisites: ENGL003 ≥C, PreTOEFL/TOEFL ≤ 399
Corequisites: None
Restrictions: None
Variable:0:0

ENGL 099 ADVANCED TOEFL PREPARATION COURSE

This course is designed for students who do not meet the exit criterion of ≥500 on the TOEFL upon completion of ENGL073. The course provides a solid grounding in grammar and reading skills, strategies for taking the TOEFL, and test-taking practice to familiarize students with the expectations of the TOEFL exam.
Prerequisites: PreTOEFL/TOEFL ≤499
Corequisites: None
Restrictions: None
Variable:0:0

Mathematics

MATH 011 PRE-CALCULUS I

This course is designed for students who have had exposure to college algebra and trigonometry in Arabic but need a review of that material in English in preparation for calculus. The course introduces students to the use of the graphing calculator and explores graphical and analytical techniques for solving linear and non-linear functions and their applications. Students are also introduced to basic mathematical modelling using regression techniques. Students develop critical thinking and independent study skills.
Prerequisites: PreTOEFL/TOEFL ≥400 on admission or C in ENGL003 and PreTOEFL/TOEFL ≥400
Corequisites: None
Restrictions: None
5:0:4*

MATH 061 PRE-CALCULUS II

A continuation of MATH 011, this course explores matrices, trigonometry, including multi-angle identities and solutions to trigonometric equations, the use of trigonometric functions in real world models and applications. Solving systems of linear and non linear equations in two variables is explored as a means of solving problems that arise in the models that the students construct.
Prerequisites: MATH011 ≥D
Corequisites: None
Restrictions: None
5:0:4

Physical Science

PSCI 034 PHYSICAL SCIENCE I

This course covers Physics and Chemistry concurrently. Measurement is taught in both parts of the course. In Physics, instruction is provided in the areas of force and motion, and work and energy. The Chemistry part of the course covers the elements, bonding and an introduction to reaction types. Both parts of the course are designed to give students a solid understanding of the basics of these sciences in the English language and to develop independent learning and study, higher-level thinking, and hands-on laboratory skills.
Prerequisites: TOEFL ≥400
Corequisites: None
Restrictions: None
4:0:3

PSCI 035 PHYSICAL SCIENCE II

This course covers Geology at the beginning and then returns to the concurrent teaching of Physics and Chemistry. The Geology part of the course covers a brief geologic history of the UAE, minerals and rocks (with an emphasis on sedimentary rocks), relative and absolute geological time, structural geology, igneous and metamorphic rocks and Plate Tectonics. A half-day geology field trip is included. The Chemistry part of the course continues with reaction types and then organic chemistry. The Physics part covers temperature and heat
followed by electricity. All three parts of the course are designed to give students a solid understanding of the basics of these sciences in the English language and to develop independent learning and study, higher-level thinking and hands-on laboratory skills.
Prerequisites: PSCI 034 ≥D
Corequisites: None
Restrictions: None
4:3:4

Degree Courses

Chemical Engineering

CHEG 201 PRINCIPLES OF CHEMICAL ENGINEERING

This course presents the principles of state and transient mass and energy balances. Computer-aided chemical process simulation is introduced.
Prerequisites: CHEM 181
Corequisites: MATH 261
Restrictions: None
3:0:3

CHEG 222 INTRODUCTION TO ENGINEERING THERMODYNAMICS

This course is designed to introduce students to the fundamental concepts of thermodynamics and their application in energy transformation systems. Topics covered include first, second, and third laws of thermodynamics, phase behavior of simple and multi-component systems, and transport properties.
Prerequisites: CHEM 181
Corequisites: None
Restrictions: not open to students in CHEG
3:0:3

CHEG 301 FLUID MECHANICS FOR CHEMICAL ENGINEERS

This course examines principles of flow of fluids, transport phenomena related to fluid flow, momentum balances, unit operations for fluid transport processes (pumps, compressors, etc.), principles of compressible flow, and flow of fluids through fixed and fluidized beds. Relevant aspects of computer-aided process simulation are applied.
Prerequisites: CHEG 201, MATH 261
Corequisites: None
Restrictions: None
3:0:3

CHEG 302 HEAT AND MASS TRANSFER

This course introduces the principles of momentum transfer and overall mass, energy and momentum balances including an introduction to multiphase flow in pipes. Topics also include the principles of steady-state and unsteady-state heat transfer. Specific applications such as measurement of fluid flow, pumps, gas-moving equipment, prediction of pressure drop in pipes, restrictions and manifold systems, heat exchangers, and thermal gradient and heat transfer in oil and gas wells are stressed. The course intended for students in the PEEG program.
Prerequisites: CHEG 322 or PEEG 212
Corequisites: None
Restrictions: not open to students in CHEG
3:0:3

CHEG 311 UNIT OPERATIONS LABORATORY I

Students are given an introduction to designed experimentation and statistical analysis. This material is followed by laboratory experiments in fluid mechanics. Students design experiments, analyse laboratory data using appropriate

statistical methods and produce oral and written technical reports.
Prerequisites: CHEG 201
Corequisites: CHEG 301, CHEG 322
Restrictions: None
1:4:3

CHEG 322 CHEMICAL ENGINEERING THERMODYNAMICS (Formerly CHEG 321)

This course presents fundamentals of thermodynamics including phase and reaction equilibria for application to chemical engineering processes and systems. Relevant aspects of computer-aided process simulation are applied.
Prerequisites: CHEM 181
Corequisites: None
Restrictions: None
3:0:3

CHEG 323 CHEMICAL ENGINEERING THERMODYNAMICS LABORATORY (Formerly CHEG 321)

This course consists of laboratory experiments to accompany CHEG322. Students investigate phase equilibria, thermophysical properties of materials and first and second law of thermodynamics.
Prerequisites: CHEM 181
Corequisites: CHEG 322
Restrictions: None
0:3:1

CHEG 331 DESIGNED EXPERIMENTATION AND STATISTICAL PROCESS CONTROL

This course gives students the ability to solve important engineering problems by applying statistical tools. The course starts with description of random variables and probability distributions. The use of statistical decision-making tools is then discussed. The next section of the course covers application of empirical models to optimize engineering systems which is followed application of designed experimentation. The last section covers application of statistical process control in process control, management of operating costs, and optimization in the transactional environment.
Prerequisites or Corequisites: MATH 212
Restrictions: None
4:0:4

CHEG 351 MASS TRANSFER

This course presents fundamentals of stage-wise and diffusional mass transport with applications to chemical engineering systems and processes. Relevant aspects of computer-aided process simulation are applied.
Prerequisites or Corequisites: CHEG 201, CHEG 321 or (CHEG 322 and CHEG 323)
Restrictions: None
3:0:3

CHEG 361 HEAT TRANSFER

In this course, students investigate theory and applications of energy transport: conduction, convection and radiation. Fundamentals of microscopic phenomena and application to macroscopic systems are also considered. Relevant aspects of computer-aided process simulation are applied.
Prerequisites: CHEG 322, CHEG 301, MATH 261
Corequisites: None
Restrictions: None
3:0:3

CHEG 371 UNIT OPERATIONS LABORATORY II

This course consists of laboratory experiments in heat and mass transfer. Students design experiments and analyse laboratory data using appropriate statistical methods, and produce oral and written technical reports.
Prerequisites: CHEG 311, CHEG 322
Corequisites: CHEG 351
Restrictions: None
1:4:3

CHEG 381 POLYMER CHEMISTRY AND REACTION ENGINEERING

This course introduces the chemistry of polymerization and the polymer manufacturing process. It begins with basic concepts about polymers and polymerization and covers each major type of polymerization with relevant kinetics. The qualitative effect of reactor design on polymer manufacture is discussed as well as actual polymer manufacturing processes including those taking place in the UAE.
Prerequisites: CHEM 201
Corequisites: None
Restrictions: None
3:3:4

CHEG 399 CHEMICAL ENGINEERING SUMMER INTERN PROGRAM

Students are employed by an ADNOC operating company to gain experience in application of chemical engineering principles and develop insight into the ADNOC culture.
Prerequisites: senior year standing in CHEG
Corequisites: None
Restrictions: None
0:0:3

CHEG 401 ENGINEERING ECONOMICS

This course starts with economic evaluation of chemical and petroleum investments by discounted cash flow rate of return, net present value and present value ratio. The course then covers cost escalation, revenue escalation, and constant currency analyses. Material incorporating risk into economic analyses applies Monte-Carlo simulation of investments and risk-adjusted cash flow analyses. The application of depreciation, depletion, and amortization in tax computation is incorporated into the analysis of major chemical and petroleum investments. The course then describes application of process behavior charts to identify important trends in business metrics.
Prerequisites: H&SS 251
Corequisites: None
Restrictions: None
3:0:3

CHEG 411 REACTION ENGINEERING

Students apply the fundamentals of thermodynamics, physical chemistry, and organic chemistry to the engineering of reactive processes. Course content includes reactor design, acquisition and analysis of rate data, and heterogeneous catalysis. Relevant aspects of computer-aided process simulation are applied.
Prerequisites: CHEG 321 or (CHEG 322 and CHEG 323), CHEG 361, CHEG 201, MATH 261
Corequisites: None
Restrictions: None
3:3:4

CHEG 415 AIR POLLUTION MONITORING AND CONTROL

This course presents the fundamentals of air pollution impact on the environment. Topics covered include hydrocarbon fuel energy, the different combustion devices and systems, pollutant emission predictions from chemical equilibrium and ideal flow reactors, design of flues and chimneys, atmospheric dispersion models, air pollution sampling and measurement, and air pollution control methods and equipment. Applications in the petroleum industry are stressed.
Prerequisites: CHEG 301, CHEG 322, CHEG 361, CHEG 351
Corequisites: None
Restrictions: None
3:0:3

CHEG 416 CORROSION ENGINEERING

This course presents fundamental material on corrosion and oxidation thermodynamics and electrochemical thermodynamics. The course then describes commonly encountered corrosion environments and discusses typical forms of corrosion encountered in each environment typical to the petroleum industry. Methods of corrosion control are then described, and the course concludes with a description of important corrosion and oxidation monitoring techniques.
Prerequisites: CHEM 181
Corequisites: None
Restrictions: None
3:0:3

CHEG 421 PETROLEUM REFINING AND PROCESSING

This course presents methods for the characterization of crude oil and refining products. Unit operations of petroleum refining are discussed including distillation, catalytic cracking, reforming, hydrotreating and hydrocracking, coking and gas treatment. Manufacture of petrochemical feedstocks from petroleum and petroleum products is included. Relevant aspects of computer-aided process simulation are applied.
Prerequisites: CHEG 201, CHEM 351
Corequisites: None
Restrictions: None
3:0:3

CHEG 431 CHEMICAL ENGINEERING DESIGN I

This course presents applications of the principles and theory of process design to synthesis of chemical processes and systems. Computer-aided process simulation and design, and process optimization are stressed.
Prerequisites: CHEG 351, CHEG 361
Corequisites: None
Restrictions: None
2:3:3

CHEG 441 Polymer Properties, Testing, and Characterization

This course commences with the basic structure-property relationships and covers many of the modern techniques used in the characterization and testing polymers in order to determine the structural, thermal, mechanical, and chemical properties of polymers. Topics covered include polymer structure, glass-rubber transition, mechanical properties, viscoelasticity, solution properties and methods of polymer analysis.
Prerequisites: CHEM 131
Corequisites: None
Restrictions: None
3:3:4

CHEG 451 CHEMICAL ENGINEERING DESIGN II

This is a continuation of CHEG 401, Chemical Engineering Design I. Students perform simulations of chemical processes including synthesis, analysis, and evaluation. Students do costing and economic evaluation of projects with emphasis on applications in petroleum refining and gas processing. Applications of computer-aided process simulation to plant and process design are stressed.
Prerequisites: CHEG 401
Corequisites: None
Restrictions: None
3:0:3

CHEG 461 PROCESS DYNAMICS AND CONTROL

This course covers the fundamentals of mathematical modelling and analysis of transient systems. Applications of control theory to response of dynamic chemical engineering systems and processes are included. Relevant applications of computer-aided process simulation are stressed.
Prerequisites: CHEG 351, CHEG 411, MATH 261, MEEG 221
Corequisites: None
Restrictions: None
3:3:4

CHEG 471 TRANSPORT PHENOMENA

This course presents the theory and chemical engineering applications of the concepts of momentum, heat, and mass transport. Students apply conservation equations to analysis of chemical engineering problems and systems.
Prerequisites: CHEG 301, CHEG 321 or (CHEG 322 and CHEG 323), CHEG 351, CHEG 361
Corequisites: None
Restrictions: None
3:0:3

CHEG 472 WATER TREATMENT AND MEMBRANE PROCESSES

This course deals with the fundamental principles and practical applications of membrane processes in water and wastewater treatment facilities. The topics covered in this course are water chemistry, membrane structure and performance, membrane transport, concentration polarization, membrane fouling and fouling characterization in relation to water and wastewater engineering. Applications of nano-filtration (NF), ultra-filtration (UF), micro-filtration (MF), reverse osmosis (RO) electro- dialysis, and pervaporation membranes in various water and wastewater treatment facilities will be discussed.
Prerequisites: CHEG 351, CHEG 301, MATH 261
Corequisites: None
Restrictions: None
3:0:3

CHEG 481 GAS PROCESSING ENGINEERING

This course deals with characterization of natural gas and gas reservoirs with particular emphasis on the unique qualities of gas from the UAE. Unit operations of gas processing including compression, transportation, acid gas removal, gas liquefaction, cryogenic distillation are covered. Gas processing products and economics, and the manufacture of petrochemical feedstocks from natural gas are also discussed.
Prerequisites: CHEG 201, CHEG 322, CHEG 431
Corequisites: None
Restrictions: None
3:0:3

CHEG 491 Polymer Processing and Materials Design

This course offers students an introduction to the subject of polymer processing. Following a short overview of the polymer industry, the course commences with a brief look at polymer rheology and leads on to discuss most of the major types of polymer processing, focusing particularly on extrusion and injection molding. Additionally, polymer formulation and additives are discussed.
Prerequisites: CHEM 131, CHEG 441
Corequisites: None
Restrictions: None
3:3:4

Chemistry

CHEM 131 GENERAL CHEMISTRY I

This course presents a comprehensive study of the facts, concepts and laws of chemistry including elementary atomic structure, the Periodic Table, chemical bonding and structure, stoichiometry, chemical reactions in aqueous solutions, thermochemistry and the gas laws. This is a combined lecture and laboratory course that is designed to meet the requirements of students majoring in any engineering program requiring a strong background in chemistry.
Prerequisites: Freshman year standing
Corequisites: None
Restrictions: None
5:3:4

CHEM 181 GENERAL CHEMISTRY II

This course is a continuation of CHEM 131 concentrating on chemical kinetics, thermodynamics, electrochemistry, and chemical equilibrium.
Prerequisites: CHEM 131, MATH 111
Corequisites: MATH 111
Restrictions: None
5:3:4

CHEM 201 ORGANIC CHEMISTRY I

This is the first course of a two-semester sequence introducing the fundamental principles of organic chemistry. Topics include structure, physical and chemical properties, reactions of several important functional classes, reaction mechanisms, and stereochemical considerations. Computational chemistry software is introduced as an aid to understanding the relationship between structure, properties, and chemical reactivity.
Prerequisites: CHEM 181
Corequisites: None
Restrictions: None
4:3:4

CHEM 241 ORGANIC CHEMISTRY II

This course is a continuation of CHEM 201. It concentrates on reactions of organic compounds, analysis of chemical reaction mechanisms, and design of chemical synthesis pathways. Computational chemistry software is used to clarify the relationships between structure, properties, and chemical reactivity.
Prerequisites: CHEM 201
Corequisites: None
Restrictions: None
4:3:4

CHEM 301 PHYSICAL CHEMISTRY I

This course includes topics in thermodynamics, interfacial chemistry, theory of rate processes, electrochemical kinetics, aqueous-solution equilibria, adsorption thermodynamics and reactions on surfaces. Colloidal systems including aerosol particles dispersed in gases, colloids in aqueous solutions, emulsion polymers and fine liquid droplets are covered. The application of these topics in chemical and petroleum engineering is described.
Prerequisites: CHEG 322
Corequisites: None
Restrictions: None

Communications

COMM 101 COMMUNICATION I (Formerly ENGL101)

This course raises student awareness of meta-cognitive and critical thinking skills in a context of humanities and social sciences. In the required research projects, students undertake both individual and team assignments that introduce them to time management tools and provide a platform for the cultivation of critical reading and writing, and presentation skills.
Prerequisites: TOEFL ≥500
Corequisites: None
Restrictions: None
5:0:4

COMM 151 COMMUNICATION II (Formerly ENGL151)

This course develops and builds on skills learned in COMM101and focuses on the application of critical thinking and problem solving skills. Students are required to undertake two real-world academic, educational or technical projects. Project planning and time management skills are developed as students participate in seminars and work in teams to gather and share information, leading to extensive, full written reports and multi-media research presentations.
Prerequisites: COMM 101
Corequisites: None
Restrictions: None
5:0:4

ELEG 205 ELECTRIC CIRCUITS I

Physical principles underlying the modelling of circuit elements are taught. The course also deals with basic circuit elements, resistance, inductance, capacitance, independent and controlled sources, and op-amps. The course teaches the students the techniques of circuit analysis, and introduces complex numbers. The students are taught sinusoidal steady-state analysis and sinusoidal steady-state power calculations.
Prerequisites: MATH 161
Corequisites: PHYS 241
Restrictions: None
3:3:4

ELEG 206 INTRODUCTION TO C++ PROGRAMMING

This course presents an overview of computer hardware and software. The students will learn programming in "C++". Topics included are input/output, data types, variables, pseudocode, algorithms, control statements, operators, functions, arrays, strings, classes, objects, inheritance, polymorphism, pointers, references, file processing, exceptions, templates, and operator overloading.
Prerequisites: MATH 111
Corequisites: None
Restrictions: None
2:3:3

ELEG 305 ELECTRIC CIRCUITS II

The course discusses the time-domain transient analysis of first-order and second-order circuits. Students learn Laplace transform, s-domain circuit analysis, and state variable circuit analysis. The course also covers frequency selective circuits, first order passive filters, Bode diagrams, two-port networks, and mutual inductance and transformers.
Prerequisites: ELEG 205
Corequisites: None
Restrictions: None
3:3:4

ELEG 315 SIGNALS AND SYSTEMS

This course is fundamental to the study of many fields that constitute the ever-expanding discipline of electrical engineering. "Signals and systems" serves as a prerequisite for additional studies in signal processing, control and telecommunications. The focus of this course will be on the analysis of deterministic signals and an important class of systems known as time-invariant (LTI) systems. Topics included are Laplace, Fourier and Z-Transforms. Practical examples drawn form control and telecommunications will be presented.
Prerequisites: ELEG 205, MATH 261
Corequisites: None
Restrictions: None
3:0:3

ELEG 325 ELECTRONIC DEVICES AND CIRCUITS

This course introduces semiconductor devices and their application in electronic circuits. It covers principles of operation of devices such as PN-junction diodes, bipolar junction transistors (BJTs), junction field effect transistors (JFETs), metal oxide semiconductor field effect transistors (MOSFETs) and operational amplifiers (OPAMPs). Students will analyze and design basic analog circuits. This course consists of an integrated lecture and laboratory.
Prerequisites: ELEG 205
Corequisites: None
Restrictions: None
3:3:4

ELEG 330 FUNDAMENTALS OF ELECTRIC MACHINES

This course introduces the subjects of power systems and electromechanics. Topics covered include three-phase circuits, magnetic circuit concepts and materials, transformer analysis and operation, steady state and dynamic analysis of rotating machines. Students study the basic machine types: dc, induction, synchronous. A laboratory is integrated into the course; the focus of the laboratory is the study of external characteristics of machines and transformers.
Prerequisites: ELEG 205
Corequisites: None
Restrictions: None
3:3:4

ELEG 350 POWER SYSTEMS ANALYSIS

The course covers Phasor diagrams, Real and Reactive power concepts, Elements of Power systems, Single line diagrams; and the modeling of power system components. Finally, per unit quantities, load flow studies and symmetrical components are discussed.
Prerequisites: ELEG 330
Corequisites: None
Restrictions: None
3:0:3

ELEG 360 FEEDBACK CONTROL SYSTEMS

This course presents System modeling through an energy flow approach and discusses modeling of electrical and mechanical systems. Feedback control design techniques using pole-placement, root locus, lead-lag, and PID compensators are presented and analyzed.
Prerequisites: ELEG 305
Corequisites: None
Restrictions: None
3:3:4

ELEG 380 LOGIC AND DIGITAL DESIGN

Students utilize switching theory techniques to find solutions to logic design problems. Boolean algebra, the basic logic mathematical tool, is used to analyze and synthesize various combinational logic circuits with defined input and output signals. The logical properties of flip-flops are presented to demonstrate how memory devices are used in sequential switching circuits. Flip-flops and logic gate circuits are combined to design counters, adders, sequence detectors and similar circuits.
Prerequisites: ELEG 305
Corequisites: None
Restrictions: None
3:3:4

ELEG 385 MICROPROCESSORS AND MICROCONTROLLERS

This course provides a comprehensive understanding of the fundamentals of microprocessor/microcontroller systems. Topics include architecture, data and instruction formats, addressing, linking, interrupt processing and interfacing using assembly language programming. The microcontroller with its built-in processor, on-chip memory and input/output capabilities is covered in detail. Design applications involving the interface and control of external devices by the PIC microcontroller are implemented using interrupt driven software.
Prerequisites: ELEG 325, ELEG 380
Corequisites: None
Restrictions: None
3:3:4

ELEG 399 ELECTRICAL ENGINEERING SUMMER INTERN PROGRAM

Students are assigned to a variety of ADNOC operating companies. They work on short-duration projects and apply the acquired knowledge at the PI. They gain practical experience and familiarity with the industrial working environment. Students are required to submit individual written reports and deliver presentations at the PI on their own work assignments.
Prerequisites: senior year standing in ELEG
Corequisites: None
Restrictions: None
0:0:3

ELEG 405 DESIGN I

This course is designed to teach students project engineering techniques and professional practice issues. Design methods and tools, standards, project management, communication skills, legal and ethical issues in engineering, proposal preparation, design reviews, and technical report writing will also are covered. The students complete the course by writing a design project proposal and give a proposal presentation that will be reviewed by student peers.
Prerequisites: senior year standing in ELEG, approval of project advisor
Corequisites: None
Restrictions: None
3:0:1

ELEG 410 FUNDAMENTALS OF POWER ELECTRONICS

The course covers the basic of power semiconductor devices such as Bipolar Junction Transistors, MOSFETs, and Thyristors. It also looks at the design and analysis of circuits utilizing power electronics including conversion of AC and DC in their many configurations.
Prerequisites: ELEG 325, ELEG 330
Corequisites: None
Restrictions: None
3:0:3

ELEG 420 MODERN CONTROL SYSTEMS

This course teaches the design of modern control systems using matrix approach and the linear systems tools in Matlab. Examples are given from electrical, chemical, mechanical and other engineering disciplines. Students learn realization techniques, discretization of continuous systems, controllability, observability and their gramians, and other dynamical system properties. Pole-placement, disturbance rejection, Lyapunov stability and state estimation are taught. The students are also introduced to multivariable systems.
Prerequisites: ELEG 360
Corequisites: None
Restrictions: None
3:0:3

ELEG 430 ELECTRIC MACHINES

The course covers the steady-state analysis of DC machines, synchronous machines, and induction machines. Students also investigate the equivalent circuits and efficiency of rotating machines. This course has several laboratory experiments which include finding the parameters, and analyzing the performance of DC, and single and three-phase AC machines.
Prerequisites: ELEG 330
Corequisites: None
Restrictions: None
3:3:4

ELEG 440 INSTRUMENTATION AND MEASUREMENT

This course deals with the fundamentals of instrumentation and data acquisition. It also teaches the techniques for measuring physical properties such as impedance, displacement, temperature, and seismic activities among others. Sensors, transducers and signal conditioning are discussed. Students also learn about measurement errors, system reliability, design of measurement systems and experimental uncertainty. Efforts are made to link advanced mathematics and measurement systems. Computer interfacing and ergonomics are discussed.
Prerequisites: ELEG 360
Corequisites: None
Restrictions: None
3:3:4

ELEG 450 ELECTRIC POWER DISTRIBUTION SYSTEMS

The course covers electric power distribution network architecture and composition including Load Curves, Substations, Industrial Networks, Distribution voltage and power control, Distribution system planning and design, Distribution system losses, Distribution transformer applications, Pole-top and pad-mounted distribution transformers, Unbalance voltage and unsymmetrical loading.
Prerequisites: ELEG 350 or equivalent
Corequisites: None
Restrictions: None
3:0:3

ELEG 455 DESIGN II

This course is intended, along with Design I, to provide a "capstone" or major design experience that culminates the students' undergraduate engineering program. It is a team-oriented major design project in the two electrical engineering tracks – Controls and Power Systems, incorporating engineering standards and realistic design constraints. Formal reports and oral presentations are required.

Prerequisites: ELEG 405
Corequisites: None
Restrictions: None
3:3:4

ELEG 460 DIGITAL SIGNAL PROCESSING

This combined theory and practical course introduces the principles of digital signal processing (DSP). The course begins with an introduction to discrete-time signals and systems followed by such topics as sampling, A/D conversion, aliasing, the z-transform, discrete and fast Fourier transform and digital filter design.
Prerequisites: ELEG 315, ELEG 360
Corequisites: None
Restrictions: None
3:0:3

ELEG 465 INDUSTRIAL AUTOMATION

The course teaches principles of industrial systems control and automation. The material in this course places emphasis on automated manufacturing industries. Hardware and software associated with system modeling are discussed. Topics on sensors, signal conditioning, and microcontrol of industrial systems are covered. PLC's, ladder logic and computer integrated manufacturing are introduced.
Prerequisites: ELEG 440
Corequisites: None
Restrictions: None
3:3:4

ELEG 470 ADVANCED POWER ELECTRONICS

This course is a study of high frequency switching circuits that convert and condition electrical power. Topics covered are linear and switching DC power supplies, inverters, dc-dc converters and power-factor correction converters. This course provides the fundamental knowledge of pulse-width modulated converter circuits, modelling and design of their feedback systems, current-mode control, simulation, input EMI filter design, modelling and design of high-frequency power magnetic elements and low-harmonic rectifiers. Design-oriented analysis is always emphasized.
Prerequisites: ELEG 410 or equivalent
Corequisites: None
Restrictions: None
3:0:3

ELEG 480 DIGITAL CONTROL SYSTEMS

This course is concerned with the analysis and design of closed-loop systems that contain a digital computer. The distinction between a purely digital system and a continuous system that may be sampled to emulate a digital system is emphasized. Topics covered include sampling, signal conversion and processing (hold devices; z-transform; state variable technique; pole-assignment and state estimation; stability of digital control systems; digital simulation and redesign; time and frequency domain analyses; digital filter structures and microcomputer implementation of digital filters.
Prerequisites: ELEG360
Corequisites: None
Restrictions: None
3:0:3

ELEG 489 SPECIAL TOPICS IN ELECTRICAL ENGINEERING

This course presents special topics of interest to electrical engineering selected by the faculty for the students.
Prerequisite: Students must have senior standing, approval from their advisors, and the permission of the program for each case.
Prerequisites: topic specific
Corequisites: topic specific
Restrictionss: topic specific
Lecture Hours: Regular lecture hours may be required. However, a course proposal must be submitted with the request for permission from the program. The proposal should outline justification for the course, topics covered, and methods of student assessment.
Lab hours: There is no regular lab; the course instructor may, however, define a lab requirement in his/her proposal.
Credit hours: One to three credit hours are available, repeatable to a maximum of six credits through a second Special Topics course for exceptionally qualified students and/or special circumstances.

ELEG 490 POWER SYSTEMS PROTECTION AND RELAYS

The course covers the principles behind the protection of electric systems and the role of Relaying Theory, Relaying Fundamentals, Transducers, Transient Phenomena, and DC offset in fault currents. It also covers the design of protection for electric elements like Pilot Line, Transformer and Rotating Machinery and systems like Distribution Systems and Sub-transmission Systems.
Prerequisites: ELEG 350
Corequisites: None
Restrictions: None
3:0:3

Engineering

ENGR 103 ENGINEERING SUCCESS SEMINAR (Formerly FRSS 101 / ENGR 104)

This course provides an opportunity for students to learn and adopt methods and practices to enhance their success both at the PI and later at ADNOC. Emphasis will be placed on skill development, attitudes, and practical knowledge that will enable students to reach their short and long-term academic goals. Themes will include classroom management, time management, learning styles, and teamwork. Exposure to the degree programs through a series of lectures and guest speakers will help students make a mature and informed decision on their choice of major.
Prerequisites: Freshman year standing
Corequisites: None
Restrictions: None
2:0:1

ENGR 201 STATICS

This course deals with forces, moments, couples, equilibrium, centroids and second moments of areas, volumes and masses, hydrostatics, friction, virtual work. Applications of vector algebra to structures are examined.
Prerequisites: PHYS191
Corequisites: None
Restrictions: None
3:0:3

ENGR 469 TECHNOLOGY DEVELOPMENT VENTURES AND ENTREPRENEURSHIP

This course is designed to help students learn the basic business, strategy, and leadership skills needed to launch new technology-oriented ventures. Topics include learning how to assess the feasibility of a technological innovation as well as how to apply best practices for planning, launching, and managing new technology-oriented companies. Students will participate in team projects and case studies which will include feasibility studies, writing and presenting business plans, and presentations for investors. Prerequisites: Senior standing at the Institute or by special permission from the instructor for Junior students
Prerequisites: None
Corequisites: None
Restrictions: None
3:0:3

Personal Health and Fitness

HFIT 101 PERSONAL HEALTH & FITNESS I

The fundamental aims of this course are to promote lifelong learning in an enjoyable and accessible way and to encourage people to improve their personal approach to health and fitness and to take part in exercise. The Level 1 Certificate provides a much needed foundation program in the area of personal health and fitness comprising of three units.
Prerequisites: Freshman year standing
Corequisites: None
Restrictions: None
2:0:0.5

HFIT 102 PERSONAL HEALTH & FITNESS II

The fundamental aims of this course are to promote lifelong learning in an enjoyable and accessible way and to encourage people to improve their personal approach to health and fitness and to take part in exercise. The Level 1 Certificate provides a much needed foundation program in the area of personal health and fitness comprising of three units.
Prerequisites: HFIT 101
Corequisites: None
Restrictions: None
2:0:0.5

Humanities and Social Sciences

H&SS 111 ISLAMIC STUDIES

This course explores the meaning of the traditional values and ethics of Islam and their significance in today's modern, scientific, and technological world. It includes a brief survey of Islamic ethics across the history of Islam. The course highlights the application of Islamic ethical values within three major spheres: the social setting, the workplace, the environment. Based on the Sunnah and the historical record of Islam, emphasis is placed on how Islamic ethics can contribute to the issues facing modern society in meeting the challenges of the working environment and in raising an ecological consciousness of a modern, global society in its relationship with the natural environment.

Prerequisites: COMM 101 or ENGL101
Corequisites: COMM 151 or ENGL151
Restrictions: None
3:0:3

H&SS 121 GERMAN LANGUAGE I

German I is designed for students interested in learning the German language. Initial focus is on conversational German to allow the student to function in a German speaking setting. Elementary grammar and written construction are introduced.
Prerequisites: None
Corequisites: None
Restrictions: any previous secondary or post secondary course in German
3:0:3

H&SS 161 TOPICS IN ISLAMIC STUDIES

This course includes special topics in Islamic studies, history, and culture.
Prerequisites: COMM 101 or ENGL101
Corequisites: COMM 151 or ENGL151
Restrictions: topic specific
3:0:3

H&SS 171 GERMAN LANGUAGE II

In this course, students understand and make up short simple questions, directions and messages in various situations including public announcements and short conversations at a higher level. Their skills in writing, reading, speaking and listening are improved so that they can take part in the official examination START 1 of the German Goethe-Institute at the end of this course.
Prerequisites: H&SS 121
Corequisites: None
Restrictions: None
4:0:3

H&SS 201 THE WEST IN THE MIDDLE EAST

This course examines the presence of the West in the Middle East over the past thousand years. Its starting point is the Crusades, and it goes on to consider the impact of European commercial activity in the seventeenth and eighteenth century. European colonialism in the region during the nineteenth and twentieth century, and the effects of World War I upon it provide the subsequent stages. The course includes an examination of the discovery and exploitation of the Middle East's oil reserves, and the geopolitics that accompanied the development.
Prerequisites: COMM 151 or ENGL 151
Corequisites: None
Restrictions: None
4:0:3

H&SS 221 INTRODUCTION TO POLITICAL SCIENCE

This course introduces the fundamental principles of comparative government, political theory, international and public policy, and their application in the Islamic societies of the Arabian Gulf and the oil and gas industry.
Prerequisites: COMM 151 or ENGL 151

Corequisites: None
Restrictions: None
3:0:3

H&SS 222 THE UAE BEFORE AND SINCE THE DISCOVERY OF OIL

This course examines the special relationship between the Gulf sheikhdoms and Britain from 1820 until 1971, and the UAE in the oil era.
Prerequisites: COMM 151
Corequisites: None
Restrictions: None
3:0:3

H&SS 251 PRINCIPLES OF ECONOMICS

This course looks at the basic social and economic institutions of market capitalism. The topics of contemporary economic issues, business organization, price theory and market structure, and economic analysis of public policies are included. Inflation, unemployment, fiscal policies and monetary policy are discussed.
Prerequisites: COMM 151 or ENGL 151
Corequisites: MATH 111
Restrictions: None
3:0:3

H&SS 271 SPECIAL TOPICS IN THE HUMANITIES

This course introduces special topics relevant to engineering in the humanities.
Prerequisites: COMM 151 or ENGL 151
Corequisites: None
Restrictions: None
4:0:3

H&SS 272 SPECIAL TOPICS IN THE SOCIAL SCIENCES

This course introduces special topics relevant to engineering in the humanities.
Prerequisites: COMM 151 or ENGL 151
Corequisites: None
Restrictions: None
4:0:3

H&SS 301 THE ORIGINS OF THE TWO WORLD WARS

Students examine the political, economic and diplomatic causes behind the two world wars. The differing and sometimes conflicting interpretations of the long and short-term causes of each war are considered. Topics include the 1919 peace settlement and its contribution to inter-war political instability, an outline survey of the military conduct of each war, and consideration of the reasons behind the respective outcomes of the conflicts.
Prerequisites: H&SS 201
Corequisites: None
Restrictions: None
4:0:3

H&SS 311 LEADERSHIP

The course aims to enhance student understanding of what leadership is and how it works, to help students understand the real goal of leadership which is the achievement of mutual objectives which are intended to enhance one's group, organization or society. It also gives students the competencies needed to be effective in the practice of leadership.
Prerequisites: junior year standing, ENGL 151
Corequisites: None
Restrictions: None
3:0:3

H&SS 321 THE POLITICAL, ECONOMIC AND TECHNOLOGICAL DEVELOPMENT OF JAPAN

Provides a broad introduction to Japan including its importance as a major economic partner of the U.A.E. Topics covered include history, politics, economics, society and technology.
Prerequisites: COMM 151 or ENGL 151
Corequisites: None
Restrictions: None
3:0:3

H&SS 351 WORLD PETROLEUM MARKETS

This course introduces the principles of economics as applied to the oil industry, including the economics of petroleum markets, and the role of petroleum resources in the economic development of owner states. Price theory, petroleum supply components and issues, petroleum market structure, petroleum politics, and case studies on economic development from oil wealth are examined, as well as production contracts, and oil and gas transportation and distribution.
Prerequisites: H&SS 251
Corequisites: None
Restrictions: None
3:0:3

H&SS 372 TOPICS IN INTERNATIONAL ECONOMICS (Formerly H&SS371)

Selected topics in international trade and finance, including goods trade, labor and resource movements, and foreign exchange markets are discussed.
Prerequisites: junior year standing, H&SS 251
Corequisites: None
Restrictions: None
3:0:3

H&SS 373 PERSONAL FINANCIAL MANAGEMENT

Students gain knowledge about financial planning, budgeting and organization including concepts of risk management, insurance, mortgages, financial markets and investment vehicles. Students also interface with the market for personal financial products.
Prerequisites: junior year standing, H&SS 251
Corequisites: None
Restrictions: None
3:0:3

H&SS 375 THE ECONOMICS OF MONEY, BANKING AND FINANCIAL MARKETS

This course is an economic analysis of the world financial system, from its central banks to local and regional banks. It explains and examines how money is created and destroyed in an economy, how much money an economy needs for optimal growth, and many other similar subjects.
Prerequisites: H&SS 251
Corequisites: None
Restrictions: None
3:0:3

Mathematics

MATH 111 CALCULUS I

This is the first course in the Calculus series. The course explores the concept of limits and introduces students to the various rules for differentiation (sums, products, powers, together with implicit differentiation) for polynomial and trigonometric functions. Practical applications of derivatives in science and engineering form the basis of the course. Basic integration techniques and their application are also covered in detail. Students are encouraged to use technology and practical computer-based laboratory sessions to supplement their lectures. They must complete a series of individual portfolio assignments.
Prerequisites: Freshman year standing
Corequisites: None
Restrictions: None
5:0:4

MATH 161 CALCULUS II

The course includes work with two and three dimensional vectors as well as multivariable calculus: partial differentiation, gradient vectors, directional derivatives, optimization, and multiple integration including change of coordinate systems. Students complete a number of problem sets to strengthen their understanding of mathematics as it is applied to science and engineering.
Prerequisites: MATH 111
Corequisites: None
Restrictions: None
5:0:4

MATH 212 CALCULUS III (Formerly MATH 211)

This course includes work with vector fields, line and surface integrals, and techniques of integration as they apply to solutions of differential equations. First order and second order constant coefficient differential equations are covered as are infinite series including series solution of differential equations. Students complete a number of problem sets to strengthen their understanding of mathematics as it is applied to science and engineering.
Prerequisites: MATH 161
Corequisites: None
Restrictions: None
4:0:3

MATH 241 PROBABILITY AND STATISTICS FOR ENGINEERS

This course is an introduction to probability and statistics for engineers. Topics include data analysis, probability, random variables, discrete and continuous probability distributions, estimation, hypothesis testing, correlation, and linear regression.
Prerequisites: MATH 212
Corequisites: None
Restrictions: None
3:0:3

MATH 261 DIFFERENTIAL EQUATIONS

This course treats the solution of ordinary and partial differential equations along with their applications in the physical and geosciences.
Prerequisites: MATH 212
Corequisites: None
Restrictions: None
3:0:3

MATH 361 ENGINEERING MATHEMATICS

This course treats the classical partial differential equations of mathematical physics. Fourier series, transforms, and integrals are covered, as are topics from linear algebra, difference equations, and complex numbers.
Prerequisites: MATH 261
Corequisites: None
Restrictions: None
3:0:3

MATH 461 LINEAR ALGEBRA

This is an introductory course in linear algebra. Topics covered in this course includes systems of linear equations, matrix algebra, determinants, vector spaces, subspaces, linear independence, span, basis, coordinates, linear transformations, matrix representations of linear transformations, eigenvalues and eigenvectors, diagonalization, Gram-Schmidt orthogonalization, orthogonal projection and least squares.
Prerequisites: MATH 212, proficiency in MATLAB or other language
Corequisites: None
Restrictions: None
3:0:3

MEEG 205 INTRODUCTION TO MECHANICAL ENGINEERING (Formerly MEEG204)

This course is an introduction to modern mechanical engineering and the engineering profession in general. It provides an overview of the mechanical engineering discipline, including research areas in mechanical engineering, career paths in modern mechanical engineering, emerging technologies in mechanical engineering, applications of mechanical engineering in the oil and gas industry, virtual reality design concept and sample project and feasibility studies. Students also examine rules of ethics and professional engineering practice, codes and standards, and common trends for technical leadership and success.
Prerequisites: STPS 201, ENGR 201
Corequisites: None
Restrictions: None
1:2:2

MEEG 221 ENGINEERING MATLABORATORY

This course develops the required skills to use MATLAB as a tool for obtaining numerical solutions to a wide range of engineering problems and displaying the results with fully annotated graphics. Moreover, students will learn the fundamentals of structural programming and numerical analysis techniques as well as debugging programs.
Prerequisites: MATH 212
Corequisites: None
Restrictions: None
2:2:3

MEEG 245 MACHINE WORKSHOP AND MANUFACTURING LABORATORY I
(Formerly MEEG 375)

The machine shop course provides hands-on experience in the use of machine tools. In addition, students use a wide range of precision measuring tools, cutting tools, work holding and tool holding devices, and implement correct metal cutting theory on a range of Ferrous and non Ferrous metals. SolidWorks®, a computer-aided design software package is used extensively to produce engineering drawings and solid models of components and devices. Design and manufacture projects are an integral part of the course.
Prerequisites: None
Corequisites: None
Restrictions: None
1:3:2

MEEG 246 MACHINE WORKSHOP AND MANUFACTURING LABORATORY II

The course provides both theoretical and hands-on experience using standard welding and brazing equipment. Safe working practices and codes of conduct are emphasized throughout the course. Joining techniques using welding and brazing are employed on Ferrous and non Ferrous metals and alloys. A wide range of welded joints is employed on a variety of fabricated structures. Computer-aided design is used to detail welded joints to international standards. Undertake standard weld testing and crack detection. A range of projects carried out in the practical activities undertaken.
Prerequisites: STPS 201, MEEG 245
Corequisites: None
Restrictions: None
1:1:1

MEEG 275 BASIC MEASUREMENT LABORATORY (Formerly MEEG 345)

This is an introduction to the measurement of temperature, pressure, and fluid flow. Students also look at data and error analysis, metrology, instrumentation and calibration.
Prerequisites: junior year standing
Corequisites: None
Restrictions: None
1:3:2

MEEG 311 ENGINEERING THERMODYNAMICS (Formerly ENGR311)

This course examines the fundamental concepts of thermodynamics and their application in energy conversion and exchange systems. Topics include the first and second law fundamentals and applications, non-reacting gas mixtures, and gas power cycles. The course is intended for non-mechanical engineering students.
Prerequisites: PHY 191
Corequisites: None
Restrictions: None
3:0:3

MEEG 324: ENGINEERING DYNAMICS

The areas of study in this course include rectilinear and curvilinear motion of particles and rigid bodies, kinematics and kinetics of particles and rigid bodies, rotational and translational motion of rigid bodies, principle of work and energy in particles and rigid body dynamics, and principle of impulse and momentum in particle and rigid body dynamics.
Prerequisites: ENGR 201
Corequisites: None
Restrictions: None
3:0:3

MEEG 334 MATERIALS SCIENCE

This course is an introduction to the science of solid metals and non-metals with emphasis on the connection between materials processing, atomic and grain structure, and mechanical properties. Students study atomic structure, crystal structures, imperfections in solids, strengthening mechanisms, phase transformations, heat treatment/control of microstructures. The course teaches some techniques for materials selection/design.
Prerequisites: CHEM 131, MEEG 205
Corequisites: None
Restrictions: None
3:0:3

MEEG 335 MATERIALS SCIENCE LABORATORY

This laboratory course is an introduction to basic characterizations and processing techniques for materials, with special emphasis on metals and polymers. The approach used will focus on the understanding of the relationship between the compositions and the microstructural features of materials and their mechanical properties on one hand, and how these are affected by mechanical and thermal processing. The topics covered will include, metallographic preparations and observations, optical microscopy, heat treatments and mechanical properties such as hardness and tensile. This course is designed to support the Materials Science Course MEEG 334.
Prerequisites: MEEG 334
Corequisites: None
Restrictions: None
0:3:1

MEEG 344 MECHANICS OF MATERIALS

This course is an Introduction to the concepts of stress, strain and constitutive relations. Students examine torsion of circular and thin-walled sections, pure bending, analysis and design of beams for strength and deflection of beams, shearing stress in beams and thin walled sections, compound stresses, stress transformation and pressure vessels. The theory and design of columns and an introduction to energy methods are also covered.
Prerequisites: ENGR 201
Corequisites: None
Restrictions: None
3:0:3

MEEG 354 FLUID MECHANICS I

This course examines fluid flow characteristics, dimensions and units, and fluid statics. Students are introduced to the fundamentals of one-dimensional fluid flow, conservation of mass, momentum and energy with applications to ideal fluid flow and flow measuring devices. The course also covers dimensional analysis and similitude, fundamentals of real fluid flow: laminar and turbulent flow, boundary layer concept, flow about immersed objects, flows in pipe networks.
Prerequisites: MEEG 365
Corequisites: None
Restrictions: None
3:0:3

MEEG 365 THERMODYNAMICS (Formerly MEEG 364)

The course introduces students to the fundamental concepts of thermodynamics and their application in energy exchange systems. Emphasis is placed on the analysis of power and refrigeration cycles and the application of basic principles to engineering problems with systems involving mixtures of ideal gases, chemical reactions, combustion, chemical equilibrium cycle analysis, and one-dimensional compressible flow. This course is designed to improve on problem solving abilities, and to prepare students for more advanced courses in thermal sciences and energy conversion design.
Prerequisites: PHYS241, CHEM131
Corequisites: None
Restrictions: None
5:0:4

MEEG 374 MACHINE DESIGN

This course is designed to introduce fundamentals of mechanical engineering machine design, basic operation of various machine elements, and stability analysis of the design. Students will apply their knowledge of statics, dynamics, strength of materials, and materials science to the selection and design of various machine components. Using state of the art computer aided design (CAD) and manufacturing (CAM) software, students will learn design concept evaluation and optimization as part of a product development process.
Prerequisites: MEEG 344, MEEG 334
Corequisites: None
Restrictions: None
3:0:3

MEEG 376 CORE MEASUREMENTS LABORATORY

This lab course covers the principles and applications of measurements and instrumentation techniques in engineering, characteristics of dynamic signals, signal conditioning and recording systems, transducers and calibration, and statistical data analysis. The labs cover experiments in core subject matters of mechanical engineering including mechanics, materials science, energy conversion and thermofluids, control, and automation.
Prerequisites: MEEG 275, MEEG 245
Corequisites: None
Restrictions: None
1:3:2

MEEG 384 SYSTEM DYNAMICS AND CONTROL

This course introduces students to the subject of dynamics modeling and feedback control of electromechanical systems. Topics include Laplace transform techniques, time response analysis, block diagram representation, feedback systems, root locus method, frequency response techniques and state-space representation. Emphasis is placed on the modeling and control of mechanical systems.
Prerequisites: MATH 261, MEEG 221, MEEG 324, ELEG 205
Corequisites: None
Restrictions: None
3:0:3

MEEG 394 HEAT TRANSFER

This course covers the theory and applications of steady state and transient one and multidimensional heat transfer by conduction. It also covers the subject of convection heat transfer mechanism and the governing equations for forced, free and mixed convection. The students will learn how to derive empirical equations for solving of engineering convection heat transfer problems. The last part of the course deals with radiation heat transfer properties and their role in radiation heat transfer. Students will also learn how to apply basic equations for solving radiation heat transfer problems for commonly known engineering applications.
Prerequisites: MEEG 354, MATH 261
Corequisites: None
Restrictions: None
3:0:3

MEEG 399 MECHANICAL ENGINEERING SUMMER INTERN PROGRAM

Students are assigned to a variety of ADNOC's operating companies where they will work on short-duration projects allowing them to apply the acquired knowledge from the PI, gain practical experience and become acquainted with the industry's working environment. Each student is required to submit a written report and deliver a presentation on his work assignment
Prerequisites: senior year standing in MEEG
Corequisites: None
Restrictions: None
0:0:3

MEEG 401 ENGINEERING ANALYSIS I

This course covers the topics of analytic function, residues, contour integration, power series solutions of ordinary differential equations: Bessel's, Legendre's, Chebycheve's and Laguerre's functions. A good portion of the course deals with linear algebra which includes matrix algebra, eigenvalues, Eigen functions, solutions of systems of differential

equations, and linear integral equations.
Prerequisites: senior year standing
Corequisites: None
Restrictions: None
3:0:3

MEEG 404 COMPUTER AIDED ENGINEERING

This course introduces students to the fundamental concepts of finite element modeling and its applications in mechanical engineering using ANSYS. Topics include a review of solid mechanics, derivation of bar/beam element stiffness matrix, matrix assembly, introduction to ANSYS, static and dynamic analyses, thermal analysis and design optimization. The emphasis is on practical case studies in mechanical engineering.
Prerequisites: MEEG 344, MEEG 221
Corequisites: None
Restrictions: None
2:2:3

MEEG 409 COMBUSTION ENGINEERING

This course deals with the thermodynamics of reacting mixtures: e.g., phase and chemical equilibrium, flame temperature and product composition. It also covers the principle of the chemical kinetics of combustion, premixed flame propagation, flame ignition, speed, thickness, and extinction. Other topics covered in the course include diffusion flame of gaseous jets, liquid droplets, and solid particles, laminar vs. turbulent combustion, and mechanisms of pollutants formation.
Prerequisites: MEEG 394
Corequisites: None
Restrictions: None
3:0:3

MEEG 414 DESIGN I

Design I, which represents part I of a senior design project, runs during the first semester of the senior year. The course aims at teaching students how to utilize and integrate the knowledge gained from the various courses taken previously and concurrently within the context of a final year design project. Students learn how to collect information related to their project, organize, and plan an open-ended project using resources from workshops, industry, library, internet and discussions with their supervisors and colleagues. The course gives students the chance to practice and improve their oral and written communication skills by giving oral presentations and submitting written interim reports throughout the semester.
Prerequisites: STPS 251, MEEG 374
Corequisites: None
Restrictions: None
1:4:3

MEEG 415 DESIGN II

Design II is a continuation of part I of the same senior design project and runs during the second semester of the senior year. At this stage, students are able to implement their plans and design processes outlined in Design I. Students learn how to build/design a mechanical system, an experiment, or conduct simulation work to improve the performance of a certain mechanical system. In this course, students improve their oral and written communication skills by giving oral presentations, preparing posters, and submitting written final reports at the end of the academic year.
Prerequisites: MEEG 414
Corequisites: None
Restrictions: None
1:4:3

MEEG 419 FLUID MECHANICS II

This course examines applications of the fundamentals of fluid mechanics in the petroleum industry. Topics include pressure drop in pipelines, economic sizing of pipelines, pipe networks, pumps, water hammer, and ventilation and fans.
Prerequisites: MEEG 354
Corequisites: None
Restrictions: None
3:0:3

MEEG 424 GAS DYNAMICS

This courses deals with the principles of thermodynamics and fluid dynamics of compressible gas flows with friction and heat transfer, and its application to nozzles and pipe flow. Normal and oblique shock waves are presented followed by Prandtl-Meyer flow.
Prerequisites: MEEG 354
Corequisites: None
Restrictions: None
3:0:3

MEEG 436 MEASUREMENTS AND INSTRUMENTATION

Measurements and instrumentation is a course in experimental methods where students will learn how to design an accurate measuring system, process and interpret collected data, and report the results. Practice will be given to students, through laboratory exercise, on the measurement of mechanical engineering quantities, such as thermal, stress, vibration and shock.
Prerequisites: MEEG 384
Corequisites: None
Restrictions: None
3:0:3

MEEG 438 FAILURE OF ENGINEERING MATERIALS: DESIGN, ANALYSIS, PREDICTION, AND PREVENTION

This course will introduce students to the principles of fracture mechanics, modes of mechanical failures, and Metallurgical/ structural failure analyses. Analytical methods presented include stress analysis, fracture mechanics, fatigue, corrosion, and non-destructive testing. Case studies illustrating the application of basic principles of metallurgy and failure analysis to a wide variety of real-world situations will be covered. Statistical methods will be used to study the fatigue behavior of engineering materials and estimate their reliability under service conditions.
Prerequisites: MEEG 324, MEEG 334
Corequisites: None
Restrictions: None
3:0:3

MEEG 439 MACHINE DYNAMICS

This course introduces students to the application of dynamics to the analysis and design of machine and mechanical components. Some of the topics covered in the course include kinematics and dynamics of rigid body motion, velocity and acceleration analysis of planar and spatial mechanisms, design and analysis of cam follower systems, balancing of rotating machines, flywheels.
Prerequisites; MEEG 221, MEEG 324
Corequisites: None
Restrictions: None
3:0:3

MEEG 441 MECHATRONICS

This course introduces students to many types of sensors and actuators as well as the integration of these in the design of mechanical systems. Topics covered include real-time programming, motion control elements, interfacing of sensors and actuators, basic electronics, and microprocessor architecture. Laboratory exercises and team projects are expected in the course.
Prerequisites: MEEG 384
Corequisites: None
Restrictions: None
3:0:3

MEEG 443 MEMS AND NANOTECHNOLOGIES

This course will cover fundamentals of most commonly known transport phenomena and system characteristics at the nano, micro, and meso systems. Basic micro fabrication processes and techniques are covered. Applications of micro and nano systems in energy are demonstrated with assigned feasibility and design projects.
Prerequisites: MEEG 354, MEEG 334, MEEG 344
Corequisites: None
Restrictions: None
3:0:3

MEEG 444 NOISE AND VIBRATION

This course deals with the modelling and analysis of free and forced vibration of single and two degree of freedom systems, determination of natural frequencies and mode shapes, sound waves, interactions between sound waves and solid structures, noise and vibration measurement and control procedures. Many case studies are covered in the course to illustrate the various principles discussed in the course.
Prerequisites: MEEG 384
Corequisites: None
Restrictions: None
3:0:3

MEEG 445 INTRODUCTION TO FRACTURE MECHANICS

This course teaches the principles of stress analysis of cracks, stable and unstable crack growth in structures and materials, materials fracture resistance, fatigue, fatigue life estimation, and fatigue crack growth.
Prerequisites: MEEG 344
Corequisites: None
Restrictions: None
3:0:3

MEEG 446 PRESSURE VESSELS AND PIPING DESIGN

This course is designed to introduce students to piping and pressure vessel design drafting practices as they relate to the oil, gas, and petrochemical industries. The course is divided into two major topics consisting of :

1. basic design of pressure vessels and applications
2. basic design of piping system and applications

The basic design of pressure vessels considers the following items: codes, internal and external pressures on cylinders and heads, design pressure and temperature, calculation of vessel wall and nozzle reinforcements, maximum allowable working pressure, criteria for choice of materials of construction, nozzles, closures, supports, and foundations. Whereas, the basic design of piping systems covers codes, standards and regulatory requirements, design considerations, loads on piping systems, calculations-guidelines and rules of thumb, external loads on piping, and piping systems configuration and sizing.
Prerequisites: MEEG 334, MEEG 344
Corequisites: None
Restrictions: None
3:0:3

MEEG 447 INTRODUCTION TO COMPOSITES

This course provides an overview of composite materials, their manufacture, properties and applications, with emphasis on analysis and design of fiber-reinforced composites. Micro- and macro-mechanics analysis, laminate theory, failure theories and design of composites are also presented. This course is not restricted to MEEG students.
Prerequisites: MEEG 334
Corequisites: None
Restrictions: None
3:0:3

MEEG 448 FINITE ELEMENT ANALYSIS

The course introduces students to computer modeling and fundamental analysis of solid, fluid and heat flow problems using existing computer codes.
Prerequisites: MEEG 221, MEEG 344
Corequisites: None
Restrictions: None
3:0:3

MEEG 449 POWER PLANT DESIGN AND FOSSIL FUEL ENERGY SYSTEMS

This course introduces students to thermodynamics design and heat rate of steam cycle, gas turbine cycles, and combined cycles with co-generation for desalination. Students will also learn the design and off-design performance of power plants, plant availability calculations, and economics in design and electricity cost estimation.
Prerequisites: MEEG 365 or MEEG 364
Corequisites: None
Restrictions: None
3:0:3

MEEG 454 REFRIGERATION/AIR CONDITIONING AND CRYOGENICS

This is a senior level course designed to introduce fundamentals and applications of refrigeration, air conditioning, and cryogenics systems. The course begins with calculation of moist air properties and psychometrics as applied to conditioning of moist air. This is followed by the fundamentals of heating and cooling load calculations for space heating/

cooling load applications. Finally, students examine refrigeration systems fundamentals including principles of ultra low temperature refrigeration and cryogenics.
Prerequisites: MEEG 365 or MEEG, MEEG 394
Corequisites: None
Restrictions: None
3:0:3

MEEG 459 TURBO MACHINERY

This course introduces students to the Euler torque equation, dimensional analysis and similitude. The students will deal with the modelling of centrifugal and axial flow pumps, pump and system matching and cavitation (NPSH). Moreover, the course provides opportunities to study two-dimensional cascade theory, axial flow compressors and turbines in power production engines and fans, and emissions and gas turbines.
Prerequisites: MEEG 354
Corequisites: None
Restrictions: None
3:0:3

MEEG 464 ADVANCED MEASUREMENT, INSTRUMENTATION, AND DATA ANALYSIS TECHNIQUES

This course is designed to cover the latest methodologies for fabrication, measurement, and instrumentation of interest to mechanical engineering students. The course is divided into two main segments. In the first segment (about 40% of the course), students are introduced to the frontiers of small-scale micro- and nano-technologies and the challenges they present in fabrication, measurement and instrumentation. In the second segment (about 60%), the course covers state of the art measurement and instrumentation techniques, given in three specific modules:

1. Fundamentals of mechanics, thermal and fluid processes as applied to measurement and instrumentation
2. Measurement/instrumentation techniques for pressure, temperature, flow rate, heat flux; stress, and strain
3. Experimental design and planning, sources of errors in measurements, and uncertainty analysis

Student understanding is reinforced with carefully designed homework and projects.
Prerequisites: MEEG 275 or MEEG 345, MEEG 364 or MEEG 365
Corequisites: None
Restrictions: None
3:0:3

MEEG 469 TECHNOLOGY DEVELOPMENT AND ENTREPRENEURSHIP

This course will help students learn how to assess the feasibility of a technology start-up ventures as well as how to apply best practices for planning and launching tech companies. The course is divided into four parts: background information on tech start-ups; assessing the commercial feasibility of a technical innovation; planning and launching tech ventures; and writing and presenting business plans and presentations for investors.
Prerequisites: junior year standing, H&SS 251
Corequisites: None
Restrictions: None
3:0:3

MEEG 479 ENGINEERING PROJECT MANAGEMENT

The course involves systematic approach to engineering project management with focus on project planning, scheduling, and quality/cost control. Intellectual/proprietary property management, communication management with the executives, work ethics, and health/safety/environmental aspects of project management will also be discussed.
Prerequisites: senior year standing, good academic standing
Corequisites: None
Restrictions: None
3:0:3

MEEG 480 RENEWABLE ENERGY APPLICATIONS

In this course, students will be introduced to the thermodynamics and heat transfer analyses of renewable energy sources for heating, power generation and transportation. Students will also learn about wind energy, solar thermal, photovoltaic, biomass, waste burning and OTEC. The course also provides a broad overview on renewable energy sources in the world economy with detailed analysis of specific applications.
Prerequisites: MEEG 365, MEEG 394
Corequisites: None
Restrictions: None
3:0:3

MEEG 484 AVANCED CONTROL

This course is designed as a continuation to the first controls course MEEG384. In this course, the subject of state space modelling and digital control is covered.
Prerequisites: MEEG 384
Corequisites: None
Restrictions: None
3:0:3

MEEG 485 INTRODUCTION TO ROBOTICS

In this course, the students will how to write mathematical representation of industrial manipulators, forward, and inverse manipulator kinematics, dynamic modeling techniques (Newton - Euler and Lagrange formulations), joint space and Cartesian space trajectories, trajectory planning, and computed torque control of manipulators.
Prerequisites: MEEG 324
Corequisites: None
Restrictions: None
3:0:3

MEEG 486: INDUSTRIAL AUTOMATION

This course will introduce students to sensors and actuators, Programmable logic control, Ladder Logic and SFCs, Use and Integration of PLCs for automation. The students will also be introduced to micro-controllers (PBasic and the stampII IC) and the control of systems using PLCs and micro-controllers.
Prerequisites: MEEG 384 or equivalent
Corequisites: None
Restrictions: None
3:0:3

MEEG 487 ARTIFICIAL INTELLIGENCE

This course introduces the basic concepts of artificial intelligence and its application in the modeling and analysis of engineering problems. The emphasis is mainly on the use of Neural Networks as computational tools, modelling, simulation, and analysis of artificial neural networks, design and optimization of discrete and continuous neural networks, backpropagation, and other gradient descent methods. Emphasis is on the selection of data representations and algorithms useful in the design and implementation of intelligent systems.
Prerequisites: senior year standing, MEEG 221
Corequisites: None
Restrictions: None
3:0:3

MEEG 489 SPECIAL TOPICS IN MECHANICAL ENGINEERING

This course consists of special topics of current interest to mechanical engineering selected by the faculty for the student.
Prerequisites: ≥75 credits and CGPA of ≥2.8, topic specific
Corequisites: topic specific
Restrictions: topic specific
3:0:3

Petroleum Engineering

PEEG 151 OVERVIEW OF PETROLEUM INDUSTRY (Formerly PGEG 121)

This course introduces geology and geophysics, emphasizing the processes that form and shape Earth, petroleum geology and geophysics, and the geology of UAE and the Middle East. Course topics include origin of minerals and rocks, seismology, Earth's gravity, geomagnetism, geologic time, plate tectonics, structural geology, sedimentary transport and depositional environments of reservoirs, geohazards and geological engineering, hydrology, and economic geology. The course includes at least one all-day field trip.
Prerequisites: TOEFL ≥ 500; C in MATH 061; C in PSC1 025
Corequisites: PEEG 151
Restrictions: None
5:3:4

PEEG 205 FUNDAMENTALS OF THE PETROLEUM INDUSTRY

This course provides a comprehensive overview of the petroleum industry with emphasis on formation evaluation, drilling, production and reservoir engineering. Exploration, refining, gas processing and petrochemicals are also discussed. The economics and HSE aspects of the industry are considered throughout the course. An overview of the OPEC organization and supply-demands trends is presented. The course concludes with a field development case study where students work in teams and make an oral presentation of the results.
Prerequisites: PEEG 151
Corequisites: None
Restrictions: not open to students in PEEG
2:3:3

PEEG 211 RESERVOIR ROCK PROPERTIES (Formerly known as PEEG 332 and PEEG 333)

This course covers the basic rock properties and their core-based measurement in the laboratory. Reservoir rock properties determined by conventional core analysis and special core analysis are covered. Topics include porosity and permeability, capillary pressure, resistivity, fluid saturations, wettability, Darcy's law, mechanical properties, the effects of internal and external forces on these properties and discussion on how to obtain reliable core analysis data. The experimental part covers a range of laboratory work on rock samples and cores. Students develop a basic understanding of how laboratory data are obtained and the factors that influence their reliability.
Prerequisites: sophomore year standing
Corequisites: PEEG 201 or PEEG 204
Restrictions: None
2:3:3

PEEG 213 RESERVOIR FLUID PROPERTIES

This course covers the basic characterization of reservoir fluids, their properties and their measurement. Topics covered include phase behaviour, density, saturation pressures, gas-oil ratios, shrinkage, viscosity, and interfacial tension, in addition to the composition of oil, gas, and brine. The importance and challenges of obtaining representative fluid samples are discussed. Utilization of the data for day-to-day reservoir management and reservoir modelling are also covered. The laboratory part of this course covers a range of experimental work on fluid samples, known as pressure-volume-temperature study, which gives students a basic understanding of how laboratory data are obtained and the factors that influence their reliability.
Prerequisites: CHEG 322, PEEG 201 or PEEG 204
Corequisites: None
Restrictions: None
2:3:3

PEEG 252 STRENGTH OF MATERIALS (Formerly PEEG270)

This course covers topics in statics and strength of materials which are related to petroleum engineering applications. Force vectors and couples, force system resultants, free body diagrams, equations of equilibrium, internal/external forces and friction are introduced first and then applied to problems of stress/deformation analysis in various structural members, considering successively axial loading, torsion, pure bending and shearing. The relations between stress and strain in brittle and ductile materials are explained and the significance of elastic parameters is highlighted. Topics such as residual stresses, stress concentrations, failure criteria and stress transformations are discussed. Stresses around circular openings (wellbores and boreholes) are discussed and the concept of failure criteria is introduced using the Mohr-Coulomb failure criterion. Finally, the concept of plastic deformation is introduced and the limitations of a linear stress-strain analysis are emphasized.
Prerequisites: MATH 161, PHYS 191
Corequisites: None
Restrictions: None
3:0:3

PEEG 314 WELL LOGGING (Formerly PEEG302)

This course introduces the various well logging methods, tools and their principles of operation with emphasis on the relationship between measurements and reservoir petrophysical properties. Conditions and limitations for applications of various logs are discussed. Graphical and analytical methods used to determine formation composition, contents, and its potential for production are developed and applied. Computer and commercial software packages are used to handle data, create graphs and log traces, and determine reservoir parameters.
Prerequisites: PHYS 241 and PEEG 211 (or PEEG 332 and PEEG 333)
Corequisites: PEEG 312 or PEEG 321
Restrictions: None
3:0:3

PEEG 315 RESERVOIR CHARACTERIZATION

This course covers the principles and practice of characterizing petroleum reservoirs using geologic and engineering data, including well logs, sample descriptions, routine and special core analyses. The course reviews the source, scale and resolution of data acquisition. Means of data integration are demonstrated as a means of overcoming inconsistency in the data due to the different levels of resolution. The concept of reservoir rock typing is introduced and the way it is applied in reservoir modelling is demonstrated. This course takes the students in systematic fashion through structural modelling, reservoir layering, rock types modelling, and reservoir petrophysical modelling to build a geological model. Students export this model to build a dynamic simulation model.
Prerequisites: PEEG 211 or (PEEG 332 and PEEG 333), PEEG 213, PEEG 302 or PEEG 314, PGEG311
Corequisites: None
Restrictions: None
2:3:3

PEEG 321 DRILLING ENGINEERING I (Formerly PEEG 312)

This is an introductory-level drilling course. It introduces the rotary drilling process and drilling rig components. A number of drilling problems such as formation kicks, differential sticking are also covered. At the end of the course students should be able to design basic components of a drilling rig, select optimum operational parameters for some key drilling equipment, circulate kick safely and the performance of a given drilling case.
Prerequisites: PEEG 252 or PEEG 270
Corequisites: None
Restrictions: None
3:0:3

PEEG 323 DRILLING ENGINEERING II (Formerly PEEG 362)

This course builds on the knowledge of the fundamentals of drilling engineering learned in the first course. Topics covered include drill bits, directional drilling, tubular design, drilling fluids and cementing. In addition to two hours of class periods, a weekly laboratory session is used to conduct drilling fluid experiments.
Prerequisites: PEEG 312 or PEEG 321
Corequisites: None
Restrictions: None
2:3:3

PEEG 331 RESERVOIR ENGINEERING I

This course presents the students with the derivation and application of zero dimensions reservoir models for reservoir management and performance prediction. Rock and fluid data requirements of these models are reviewed, pointing out level of uncertainty. Volumetric calculation methods for determination of STOIIP and GIIP are given. The subject of oil and/or gas initial and remaining reserve is introduced through the concept of unit recovery, recovery efficiency and recovery factor. The MBE is given and tailored for both volumetric and water drive dry and wet gas reservoirs, saturated and under saturated oil reservoirs under depletion, gas-cap drive, water drive and/or gravity segregation drives. The reservoir performance of gas condensate reservoirs is also explained. These reservoir models are utilized to explain the concepts of reservoir history matching and future prediction.
Prerequisites: MATH 261, PEEG 211 and PEEG 213 or PEEG 332 and PEEG 333
Corequisites: None
Restrictions: None
2:3:3

PEEG 334 RESERVOIR ENGINEERING II

This course introduces the reservoir engineering aspects of reservoir displacement mechanisms and recovery processes. The theory and application of liquid-liquid displacement processes are studied through the frontal advance theory. The effect of wettability and heterogeneity on the displacement efficiency is demonstrated along with the practical use of immiscible displacement concepts in estimating field recovery factors. Gas-liquid displacement processes are introduced including factors affecting oil recovery. Furthermore, this course covers the principals of natural water influx into oil and gas reservoirs, and the different methods to determine the water flood front movement in normal and stratified reservoirs. This course touches upon the practice of water and gas injection for reservoir pressure maintenance.
Prerequisites: PEEG 331 or PEEG 352
Corequisites: None
Restrictions: None
3:0:3

PEEG 339 OVERVIEW OF PETROLEUM RESERVOIR ENGINEERING

The course covers the fundamentals and basic principles of reservoir engineering. Topics include an overview of reservoir rock and fluids properties, formation and types of petroleum reservoirs, reservoir drive mechanisms, basic equations of fluid flow in porous media, determination of original hydrocarbon in place, material balance calculations, forecasting future recover, an overview of enhanced oil recovery methods, and the basics of reservoir management.
Prerequisites: junior year standing
Corequisites: None
Restrictions: not open to students in PEEG
3:0:3

PEEG 341 COMPLETION AND WORKOVER

This course covers the basic completion and workover operations. Topics include tubing design, completion and workover fluids, subsurface production and control equipment, perforating, sand control, remedial cementing and matrix stimulation.
Prerequisites: None
Corequisites: PEEG 312 or PEEG 321
Restrictions: None
3:0:3

PEEG 342 PRODUCTION FACILITIES

This course covers the description, applications, design, analysis and operational problems of surface production facilities. Topics include two-phase and three-phase separation, emulsion treatment, desalting, oil stabilization, water treatment, gas dehydration and sweetening, and storage and transportation.
Prerequisites: None
Corequisites: CHEG 302, or CHEG 351 or MEEG 354 for non-PEEG students
Restrictions: None
3:0:3

PEEG 353 PETROLEUM PROJECT ECONOMICS (Formerly PEEG 250)

This course covers the application of economic analysis and property evaluation techniques in the petroleum industry. The economic factors that directly affect petroleum production from its initial geological perception to its eventual sale are discussed. Techniques for comparing competing investment opportunities are covered. Students learn to employ industry-standard economic analysis and cashflow techniques to evaluate exploration and development projects and incorporate the results into the decision-making process.
Prerequisites: junior year standing
Corequisites: None
Restrictions: None
3:0:3

PEEG 359 HEALTH, SAFETY AND THE ENVIRONMENT (Formerly PEEG 382)

HSE is critically important to all petroleum industry activities, and is integral to the ADNOC Group mission. This course gives students an in-depth understanding of the key issues for the industry and the employee behaviour that is required by leading organisations. Subjects include HSE terms and definitions, accident statistics and their use, hazard identification and assessment, changing HSE culture, management of hydrogen sulphide, hazardous waste management, HSE management systems and goals, and basic safety training in selected topics.
Prerequisites: PEEG 201 or PEEG 204, EPCS 251 or STPS 251
Corequisites: None
Restrictions: None
3:0:3

PEEG 399 PETROLEUM ENGINEERING SUMMER INTERN PROGRAM

Students are assigned to a variety of ADNOC's operating companies where they work on short-duration projects. This allows them to apply the acquired knowledge at the PI and gain practical experience while becoming acquainted with the industry's working environment. Each student is required to submit a written report and deliver a presentation on the work assignment
Prerequisites: senior year standing in PEEG
Corequisites: None
Restrictions: None
0:0:3

PEEG 423 HORIZONTAL AND MULTILATERAL WELL TECHNOLOGY

This is a comprehensive course designed to familiarize petroleum-engineering students with the benefits and design of horizontal and multilateral wells. The topics covered include key details of drilling and completion of horizontal and multilateral wells, such as planning, drilling, surveying, tubular selection, failure analysis, cutting transport, hole-stability, cementing, centralizer spacing, etc. Students work on design examples and utilize a number of popular industry software packages.
Prerequisites: PEEG 322
Corequisites: None
Restrictions: None
3:0:3

PEEG424 UNDERBALANCED DRILLING TECHNOLOGY

This course is designed to familiarize students with the five popular UBD techniques. These are Air/Natural Gas Drilling, Mist Drilling, Foam Drilling, Gasified Liquid Drilling and Flow Drilling. Benefits and limitations of each technique along with the design principles and operational procedures are discussed. Common problems pertinent to each technique and recommended procedures are also discussed.
Prerequisites: PEEG 322
Corequisites: None
Restrictions: None
3:0:3

PEEG 425 PRESSURE CONTROL

This course provides detailed discussions of the principles and procedures of basic well control operations. The students become familiar with the equipment used to handle the subsurface kicks by using drilling simulators during practical sessions. An IWCF written exam is given at the end of the course and successful students are issued an IWCF certificate at the supervisory level.
Prerequisites: PEEG 322
Corequisites: None
Restrictions: None
3:0:3

PEEG 435 RESERVOIR SIMULATION

This course introduces a comprehensive review of why and how a simulation model is built. Required data and its source are identified. The importance of data screening and quality checking are demonstrated. The continuity equation is integrated with the flow equation and the equation of state to derive the multiphase and multi-dimension diffusivity equation. These nonlinear partial differential equations are solved numerically using the finite difference formulation approach. The principals of dynamic model initialization and its validation are given using some practical examples. A model history matching process is explained. The use of these models for reservoir management and long term development planning are explained. The commercial simulator eclipse is used as the medium of demonstration.
Prerequisites: PEEG 315, PEEG 331 or PEEG 352
Corequisites: None
Restrictions: None
3:3:4

PEEG 436 RESERVOIR EVALUATION AND MONITORING

The measurement and monitoring techniques used to evaluate well performance and reservoir processes are developed as the basis for reservoir management. Included techniques are well testing, production logging and seismic monitoring. Production logging includes TDT, PLT and RFT Testing. Well testing includes pressure draw down, pressure build up and type curve analysis. The practice and capabilities of 4-D is included. The possibilities for future integration of reservoir and facilities management are also covered.
Prerequisites: PEEG 302 or PEEG 314, PEEG 331 or PEEG 352
Corequisites: None
Restrictions: None
3:0:3

PEEG 437 NATURAL GAS ENGINEERING

This course starts by reviewing the gas reservoirs rock and fluid properties, including Darcy and non-Darcy flow phenomena near the gas wells. Gas reserves estimation using linearized MBE and Decline Curve Analysis is studied. Various decline curves are reviewed. Gas flow and gas well testing based on gas transient flow equation are studied after performing pressure solution:- p2, solution, Real Gas Pseudo Pressure solutions. Wellbore storage is evaluated along with pressure DD analysis and pressure BU analysis. Deliverability of gas wells are determined using Multi-Rate draw down testing, flow after flow testing, Isochronal Testing, and Modified Isochronal Testing. Finally, Prediction of Future Performance and Ultimate Recovery form gas reservoirs are studied.
Prerequisites: PEEG 334
Corequisites: None
Restrictions: None
3:0:3

PEEG 443 PRODUCTION SYSTEMS DESIGN AND ANALYSIS

This course utilizes the Nodal Analysis technique for the design and performance analysis of the production system starting from the formation up to the production separator. Topics include inflow performance relationships, multiphase flow in horizontal, vertical and inclined flow, overall well performance evaluation considering various nodes within the production system, and applications to design and analysis situations.
Prerequisites: PEEG 331 or PEEG 352, PEEG 341, PEEG 342
Corequisites: None
Restrictions: None
3:0:3

PEEG 444 ARTIFICIAL LIFT

A review of well performance evaluation is presented and conditions that lead to consideration of artificial lift implementation are discussed. The various methods of artificial lift are described and their applications and technical and economic limitations are discussed. Detailed description, design and analysis of gas lift, electric submersible pumps, jet pumps and sucker rod pumps are studied and practiced.
Prerequisites: None
Corequisites: PEEG 331 or PEEG 352, PEEG 341
Restrictions: None
3:0:3

PEEG445 PRODUCTION ENHANCEMENT

This course discusses the causes of production impairment and methods of improving well productivity. Topics include loss of productivity due to formation damage, solids deposition, excessive water and gas production, and bottlenecks in the production system; and production enhancement by matrix treatments, remedial cementing and production profile control. De-bottlenecking of the production system through Nodal analysis of the production system is also covered.
Prerequisites: PEEG 341, PEEG 443
Corequisites: None
Restrictions: None
3:0:3

PEEG446 HYDRAULIC FRACTURING

This course introduces the fundamentals of hydraulic fracturing in petroleum operations. Basic principles of rock and fluid mechanics are integrated with reservoir performance analysis to design and optimize hydraulic fracture treatments. Techniques for analyzing the success of hydraulic fracture treatments are introduced. The use of hydraulic fractures for productivity improvement and for sand control is discussed.
Prerequisites: PEEG 250 or PEEG 353, PEEG 331 or PEEG 352, PEEG 341
Corequisites: None
Restrictions: None
3:0:3

PEEG454 UNCERTAINTY AND RISK ANALYSIS IN THE PETROLEUM INDUSTRY

This course introduces the application of the basic tools of statistics and probability to understand and quantify the risks and uncertainties found in the upstream petroleum industry. Risk analysis techniques are integrated with economic analysis to assist in project planning and decision analysis. Topics covered include decision tree analysis, deterministic and probabilistic risk analysis techniques, Monte Carlo simulation, and risked cash flow analysis techniques.
Prerequisites: PEEG 250 or PEEG 353
Corequisites: None
Restrictions: None
3:0:3

PEEG 455 DESIGN PROJECT

This is a multidisciplinary system design course integrating the fundamentals, design concepts, economic analysis, project management, and risk assessment from petroleum and geosciences engineering. Students work, in integrated teams, on open-ended design problems in oil and gas exploration and field development with emphasis on optimum economics and maximum recovery. This is a two-semester course. The first semester is dedicated to establishing detailed definition of the project and individual tasks, preparing the implementation schedule, acquiring data and information, and establishing the reservoir description. In the second semester, students prepare the reservoir simulation model, conduct simulation studies for different development scenarios, determine the optimum development case, and design the subsurface and surface facilities. Discussions, short reports, and presentations are held throughout the two semesters to monitor and evaluate work progress. A final report and presentations are made by all team members in addition to an oral examination.
Prerequisites: senior year standing, approval of course instructor
Corequisites: PEEG 250 or PEEG 353, PEEG 323 or PEEG 362, PEEG 341, PEEG 342, PEEG 392 or PEEG 454, PEEG 443
Restrictions: None
2: 3:4

PEEG 456 PETROLEUM RELATED ROCK MECHANICS

This course covers the principles of rock mechanics and their applications to petroleum engineering problems. Topics included are: deformability of rock and rock masses; discontinuities in rock; origins and measurement of rock stress and in-situ stress, engineering properties of rocks from laboratory analysis and field data, thermal and swelling properties, poroelastic effects, strength and yield including effects of normal stress and pore pressure, rock failure and mechanisms of rupture and yield including dilation, brittle behavior, ductile behavior and residual stress. A mathematical approach to stress-strain analysis, constitutive representation of rock behavior, time-dependent effects, crack phenomena and acoustic wave propagation in rocks are also covered. The applications part of the course addresses rock fracturing, calculation of borehole stresses and wellbore integrity analysis, sand production and reservoir compaction.
Prerequisites: PEEG 252 or PEEG 270
Corequisites: None
Restrictions: None
3:0:3

PEEG 457 INTRODUCTION TO ARTIFICIAL INTELLIGENCE APPLICATIONS

This course introduces the basics and fundamentals of artificial intelligence methods and their applications in the petroleum industry. Practical examples and case studies are discussed to illustrate the power of these methods. The course is concluded with a term project where students utilize AI methods to solve specific problems in various areas of petroleum engineering.
Prerequisites: senior year standing
Corequisites: None
Restrictions: None
3:0:3

PEEG 458 SPECIAL TOPICS IN PETROLEUM ENGINEERING

In this course, various topics may be proposed by the instructor and approved by the Program and Institute Curriculum Committees. Topics may represent recent advances in specific areas of the industry, a directed study, a research topic, or an open-ended design problem.
Prerequisites: senior year standing, topic specific
Corequisites: topic specific
Restrictions: topic specific
3:0:3

Petroleum Geosciences Engineering

PGEG 210 EARTH MATERIALS

This course introduces the fundamentals of mineralogy, including systematic chemistry and crystallography and physical and optical properties of minerals, emphasizing the carbonate group and silicate minerals. Students learn to use the petrographic microscope and to describe and identify a variety of rock-forming minerals in hand samples and petrographic thin-sections.
Prerequisites: GEOS 121 or PEEG 151
Corequisites: PGEG 210L
Restrictions: None
3:3:3

PGEG 220 HISTORICAL GEOLOGY OF THE MIDDLE EAST

This course covers application of the principles of stratigraphy and age-dating methods, first introduced in Overview of Petroleum Industry and introduces biologic evolutionary theory to interpret and understand evolution of Earth's lithosphere, atmosphere, hydrosphere, and biosphere. Emphasis of the course is on tectonic, stratigraphic, geographic, and biologic evolution of the Middle East, and particularly on paleo-environments, facies, paleontology, and the tectonic setting of UAE reservoirs intervals. The course includes at least one all-day field trip.
Prerequisites: GEOS 121 or PEEG 151
Corequisites: PGEG 220L
Restrictions: None
3:3:3

PGEG 311 SEDIMENTARY PETROLOGY

Sedimentary Petrology is concerned with the origin of sediment and sedimentary rock. The course covers sedimentary processes, facies, and diagenesis. Emphasis is on petrographic analysis of microfacies and diagenesis and on carbonate reservoirs and source rocks. Students learn how to characterize reservoirs using limited subsurface information from petrographic thin sections and cores. The course includes a five-day field trip.
Prerequisites: PGEG 220
Corequisites: PGEG 311L
Restrictions: None
3:3:4

PGEG 321 STRUCTURAL INTERPRETATION

Structural geology is the study of deformed rock. The course deals with the range of structures produced in rock by deformation; with the role of structures in trapping petroleum and their effect on production with application of structural methods in exploration and production. Course topics include stress and strain; rheological behavior of rock; effects of time, temperature, and pressure on deformation; kinematic and dynamic analysis of deformed rock; the origin of fractures, faults, and folds; structural interpretation from seismic reflection, well, and other exploration and production data; mapping of subsurface structures from industry data; regional structural geology of the UAE. The course includes one three-day field trip.
Prerequisites: PEEG 151, PHYS 191, MATH 111
Corequisites: PGEG 321L
Restrictions: None
3:3:4

PGEG 331 IGNEOUS AND METAMORPHIC PETROLOGY

This course provides an overview of igneous and metamorphic rocks as a background for discussing their origin and distribution in relation to plate tectonics. Course topics include rocks and Earth structure, structures, textures, chemistry, and mineralogy of igneous rocks; phase rule and phase diagrams; origin and movement of magmas; metamorphism and metamorphic rock texture, structures and mineralogy, metamorphic facies and metamorphic phase diagrams.
Prerequisites: GEOS 121 or PEEG 151, PGEG 210
Corequisites: PGEG 331L
Restrictions: None
1:3:2

PGEG 341 PALEONTOLOGY

Paleontology is the study of past life. The course covers the application of taxonomic procedures to the identification of fossils and the application of paleontology in paleo-environmental and biostratigraphic analysis. Students learn about the fundamental morphology, modes of life, evolutionary trends, and time ranges of major macrofossil and microfossil groups. Emphasis is on fossil types that are important in the analysis and interpretation of petroleum reservoirs of the Middle East. The course includes one all-day field trip.
Prerequisites: PGEG 220
Corequisites: PGEG 341L
Restrictions: None
2:3:3

PGEG 351 PETROLEUM GEOPHYSICS

The course introduces the principles and methods involved in modern geophysical petroleum exploration. The course concentrates on physical principles and interpretation of seismic surveying and its application to petroleum exploration. Gravity, magnetics, electrical, and electromagnetic principles and survey techniques are covered, but in less detail. Students will learn about the equipment used, typical fieldwork design, numerical data corrections, and data processing for each survey method. The course includes at least three all-day field trips.
Prerequisites: PEEG 151, MATH 161, PHYS 241
Corequisites: PGEG 351L
Restrictions: None
3:3:4

PGEG 361 SEDIMENTOLOGY AND STRATIGRAPHY

Stratigraphy instructs in the sedimentological and stratigraphic methods used to analyze and interpret sedimentary sequences. Students will learn to interpret physical processes and depositional environments from sedimentary structures and textures, and to apply sequence stratigraphic methods to interpret and model facies and sedimentary basin evolution. The course incorporates modern and ancient examples from the Middle East, particularly from the UAE. The course includes five days of fieldwork.
Prerequisites: PGEG 311
Corequisites: PGEG 361L
Restrictions: None
2:3:3

PGEG 371 DATA ANALYSIS AND GEOSTATISTICS

This course introduces the conceptual basics of statistical analysis of geoscience data, and instructs students in how to apply statistical methods including geostatistics to interpret geoscience data and solve petroleum geoscience problems. Course topics include graphical representations, univariate statistics, probability, normal distributions, statistical

inference, analysis of variance, bivariate correlation and regression analysis, directional data, circular statistics, Markov analysis, event series and time series analysis, analysis of spatially distributed data, trend surface analysis, kriging, and multivariate methods.
Prerequisites: PEEG 151
Corequisites: PGEG 371L
Restrictions: None
3:3:4

PGEG 381 ROCK MECHANICS AND RESERVOIRS

This course builds on material introduced in PGEG 321 and is concerned with the prediction and identification of structures produced during deformation, particularly faults and fractures, and the effect of structures on subsurface flow and reservoir behavior. Course topics include stress, strain, and rock failure; rock anisotropy; testing methods; fractures, faults, and fluid flow; detection, mapping, and modeling of faults and fractures. The course includes a one-day field trip.
Prerequisites: PGEG 321
Corequisites: PGEG 381L
Restrictions: None
2:3:3

PGEG 391 FIELD PETROLEUM GEOLOGY

Field Petroleum Geology is concerned with the study of lithologies and structures in the field. The course addresses vertical and horizontal variability in depositional facies and physical characteristics in reservoirs in three dimensions, and shows how physical variability affects petroleum capacity, flow, and production. Attention is paid to post-depositional diagenetic processes and their effect on reservoir evolution. Students make geological and petrophysical measurement of time- and facies-equivalents to UAE carbonate reservoirs. The course includes four weeks of fieldwork followed by one week of data integration and report writing at the Petroleum Institute.
Prerequisites: PGEG 361
Corequisites: None
Restrictions: None
0:0:4

PGEG 401 PETROPHYSICS AND LOGGING

This course presents the physical principles of well logging. PGEG 401 introduces students to geophysical measurements made under borehole and lab conditions. The course also demonstrates methods to correlate geophysical measurements and rock properties and prepares students to perform basic well log and core data interpretation. The course covers concepts of rock properties and their application in the oil industry; lab measurements of rock properties (porosity, permeability, density, resistivity, fluid saturation lithology logs, porosity logs, fluid saturation and permeability estimation from well logs; full well log interpretation. The course refers to rock mechanics from core and well log data.
Prerequisite: PEEG 213, PGEG 351, PGEG 361
Corequisites: PGEG 401L
Restrictions: None
3:3:4

PGEG 411 REFLECTION SEISMOLOGY

The most important method for finding and investigating reservoirs on a large scale is reflection seismology. This course covers the fundamental wave theory that is the basis for the method, and the seismic data acquisition, processing, and display techniques in such a way that one can map the underground and describe its characteristics. The course has a significant theoretical component, and includes class exercises using seismic software and display systems on real-world seismic data. A major component of the course is to design, acquire data, and interpret a seismic reflection survey. The

course requires fieldwork.
Prerequisite: PGEG 351
Corequisites: PGEG 411L
Restrictions: None
3:3:4

PGEG 421 PETROLEUM GEOSCIENCE ENGINEERING COMPUTING PROJECT

Petroleum Geoscience Engineering Computing introduces the concepts, methods, workflow, and computer software applications used to analyze petroleum exploration and production data. The course consists of a number of problems that are best solved using modern industry software. Problems include reservoir mapping and characterization integrating 2D and 3D seismic and well data, upscaling of reservoir models, processing and analysis of regional magnetic and gravity data, and use of remote imagery and Geographical Information Systems (GIS) to support environmental studies.
Prerequisite: PGEG351, PGEG371, PGEG391
Corequisite: PGEG 401, PGEG 421L
Restrictions: None
2:6:4

PGEG 431 GEOCHEMISTRY

Geochemistry introduces the geochemical fundamentals and techniques of petroleum systems evaluation. The course includes inorganic and organic geochemistry, and emphasises diagenesis, evolution of carbonate rock systems, organic maturation, and reservoir fluid migration. Students learn geochemical laboratory techniques, data management, and geochemical interpretation. The course is optional for Petroleum Geoscience Engineering students.
Prerequisites: PEEG 213, PGEG 361
Corequisites: PGEG 431L
Restrictions: None
2:3:3

PGEG 451 ENVIRONMENTAL GEOLOGY

This course deals with how people interact with Earth's natural systems. Environment profoundly controls social and economic systems but, simultaneously, humans are major agents of geologic change. The course covers natural hazards, landscape and soil characteristics, groundwater, surface water, and climate change, emphasizing the environment and environmental issues of the UAE.
Prerequisites: PEEG 151, CHEM 181, junior year standing
Corequisites: PGEG 451L
Restrictions: None
3:0:3

PGEG 461 RESERVOIR CHARACTERIZATION PROJECT

The course introduces and applies the principals and practices used to characterize petroleum reservoirs using core, structural, seismic, petrographic, and petrophysical data. Emphasis is on depositional geometries, petrophysical properties, and compartmentalization of carbonate reservoirs. Much of the coursework involves characterizing and designing a model of a UAE reservoir integrating multiple datasets.
Prerequisites: PGEG 361, PGEG 401, PGEG 421
Corequisites: PGEG 461L
Restrictions: None
2:6:4

PGEG 471 PETROLEUM SYSTEMS PROJECT

This course involves completion of a project in the student's area of interest in some area of petroleum geology or geophysics. Students must arrange for supervision from an instructor and the project must be approved by the Petroleum Geosciences Engineering Program. The course consists mostly of independent project work.
Prerequisites: PGEG 401, PGEG 411, PGEG 421
Corequisites: None
Restrictions: None
0:0:3

Physics

PHYS 191 PHYSICS I – MECHANICS

This is a first course in physics covering the basic principles of mechanics using vectors and calculus. The course consists of a fundamental treatment of the concepts and applications of kinematics and dynamics of particles and systems of particles, including Newton's Laws, energy and momentum, rotation, oscillation and waves.
Prerequisites: MATH 111
Corequisites: MATH 161
Restrictions: None
5:3:4

PHYS 241 PHYSICS II - ELECTROMAGNETISM AND OPTICS

This is a continuation of PHYS 191. The course introduces students to the fundamental laws of electricity and magnetism, electromagnetic devices, the electromagnetic behavior of materials, applications to simple circuits, electromagnetic radiation, and an introduction to optical phenomena.
Prerequisites: MATH 161, PHYS 191,
Corequisites: MATH 211 or MATH 212
Restrictions: None
5:3:4

PHYS 341 MODERN PHYSICS WITH APPLICATIONS

The major goal of this course is to instil an appreciation of the concepts and methods of twentieth-century physics. Experimental tests of phenomena are discussed throughout. Topics include the radiation and propagation of electromagnetic waves, ideas behind the special theory of relativity, introductory quantum mechanics and elements of solid-state physics. Emphasis is placed on the application of these ideas and concepts to modern optics, semiconductor and other modern devices. The laboratory part consists of experiments selected to illustrate the principles, laws and concepts discussed in the course.
Prerequisites: PHYS 241
Corequisites: None
Restrictions: None
3:Variable:3

Strategies for Team-Based Engineering Problem Solving

STPS 201 ENGINEERING PRACTICES I

In STEPS I, students are introduced to the engineering design and project management process. Multidisciplinary teams respond to a client specification that requires the design and building of an engineering system or device. Professional technical writing including engineering reports and documents, and effective presentations are developed in this context. Engineering drawing and sketching, and the application of computer-aided drawing using SolidWorks (3D Mechanical Design and 3D CAD Software) are introduced and integrated.
Prerequisites: COMM 151
Corequisites: PHYS 191
Restrictions: None
2:3:3

STPS 251 ENGINEERING PRACTICES II

This is a continuation of STPS 201. Team-based multidisciplinary engineering project work is undertaken. Oral and written professional technical communications as well as teamwork are further developed. There is an increased focus on the application of engineering practices and principles to solve open-ended problems.
Prerequisites: STPS 201
Corequisites: None
Restrictions: None
3:0:3

Directory of the Institute

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Dennis Siginer, Ph.D.	Director of Arts & Sciences Program
John Herlihy	Director of Foundation Program
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Roy Simmons	Registrar
John Rogan	Head Librarian
LaJuana Mooney, Ph.D.	Head of Institutional Research and Assessment
Babiker Osman	Manager of Finance
Mohamad Al Qamzi	Manager of Information Technology (Acting)

Full-Time Faculty

A

Abdala, Ahmed, Ph.D., M.S., North Carolina State University, 2002, 2001, B.S., Suez Canal University, 1990, Assistant Professor, Chemical Engineering

Abdel Magid, Youssef, Ph.D., M.S., University of Manitoba, 1976, 1972, B.S., Cairo University, 1969, Professor, Electrical Engineering

Adcock, David, M.S., Newcastle Upon Tyne Polytechnic, 1986, B.Eng., University of Durham, 1974, Lecturer, Physical Science

Aggour, Mohamed, Ph.D., University of Manitoba, 1978, B.S., Alexandria University, 1967, Professor, Petroleum Engineering

Agyeman, Kofi, Ph.D., S.M., MIT, 1976, B.Sc., University of Ghana, 1970, Professor and Coordinator, Physics
Ahmad, Jamal, Ph.D., M.S., North Carolina State University, 1993, 1986, B.S., Birzeit University, 1986, Associate Professor, Mechanical Engineering

Akgun, Ferda, Ph.D., Colorado School of Mines, 1989, M.S., University of Louisiana, 1985, B.S., Middle East Technical University, 1982, Associate Professor, Petroleum Engineering

Al Ameri, Tareq, Ph.D., Imperial College, 2005, B.S., Washington University, 2001, Assistant Professor, Chemical Engineering

Al-Hammadi, Khalid, Ph.D, North Carolina State University, 2006, M.S., Vanderbilt University, 1998, B.S,, United Arab Emirates University, 1992, Assistant Professor, Electrical Engineering

Al Hasani, Nadia, Ph.D., M.S., University of Pennsylvania 1990, 1986, M.S., Massachusetts Institute of Technology, 1984, B.S. University of Baghdad, 1980, Professor, Science and Technology

Al Hashimi, Saleh, Ph.D., M.S., B.S., Tufts University, 2000, 1998, 1995, Assistant Professor, Chemical Engineering

Al Mansoori, Ali, Ph.D., B.S., DIC Imperial College London, 2006, Florida Institute of Technology, 2002, Assistant Professor, Chemical Engineering.

Al Rayyes, Yahya, M.PH., University of Kentucky, 2005, B.S., University of Garyounis, 1995, Lecturer, Physical Science

Ali, Mohammed, Ph.D., Oxford University, 2003, M.S., University of Birmingham, 1998, B.S., University of Wales, 1997, Assistant Professor, Petroleum Geosciences Engineering

Ali, Sayel, Ph.D., The Ohio State University, 1987, M.S., University of Dundee, 1980, B.S., University of Jordon, 1976, Associate Professor, Mathematics

Al Shami, Abdullah, Ph.D., University of Manchester 1992, I.L.M., Islamic University of Muhammad b. Saud, 1986, I.L.B. Islamic University of Muhammad b. Saud, 1983, Professor, Islamic Studies.

Allison, David, Ph.D., Teesside Polytechnic, 1986, M.S., University of Kent, 1981, B.S., University of London, 1981, Assistant Professor, Mathematics

Allison, Elena, B.A., Rostov State University, 1997, Lecturer, Computing

B

Baird, Jamie, M.A., Concordia University, 1989, B.A., University of British Columbia, 1979, Lecturer, English

Barkat, Braham, Ph.D., Queensland of Technology, 2000, M.S., University of Colorado, 1988, Associate Professor, Electrical Engineering

Barrow, Mara, M.A., B.A., Monterey Institute of International Studies, 1996, 1996, Lecturer, English

Bassioni, Ghada, Ph.D., Technical University of Munich, 2004, M.S., Technical University of Munich & Ain Shams University, 2000, B.S., Ain Shams University, 1996, Assistant Professor, Chemistry

Beig, Abdul Rahiman, Ph.D., M.E., Indian Institute of Science, 2004, 1998, B.E., Karnataka Regional Engineering College, 1989, Assistant Professor, Electrical Engineering

Benbow, Rachel, M.L.S., B.A., University of Pittsburgh, 2001, 1999, Librarian

Berteussen, Karl, Ph.D., University of Oslo, 1976, M.S., Bergen University, 1972, Professor and Acting Director, Petroleum Geosciences Engineering

Bolt, Philip, Ph.D., University of Exeter, 1997, M.S., Plymouth Polytechnic, 1988, B.A., University of Liverpool, 1987, Assistant Professor, English

Bouchalkha, Abdellatif, Ph.D., Oklahoma State University, 1993, M.S., Oklahoma State University, 1989, B.S., Central State University, 1986, Associate Professor, Physics

Bowery, Erven, M.S., Nova Southeastern University, 1991, B.S., B.A., Northeastern State University, 1987, 1972, Lecturer, English

Bradley, Curtis, Ph.D., M.A., Rice University, 1997, 1992, B.S., Oregon State University, 1985, Assistant Professor, Physics

Brandt, Caroline, Ph.D., University of East Anglia, 2004, M.A., University of Surrey, 1996, M.A., University of Edinburgh, 1980, Cambridge ESOL Diploma in Teaching English as a Foreign Language to Adults, 1985; Assistant Professor

Bursiewicz, Paul, M.S., University of Albany, 1989, B.A., Regents College, 1987, Lecturer, Physical Science

Bursiewicz, Virpi, M.A. , University of Jyvaskyla, 1996, Lecturer, English

C

Caulfield-Browne, Mark, Ph.D., B.S., University of Nottingham, 1994, 1988, Assistant Professor, Mechanical Engineering

Chambers, Jane, M.S., London South Bank University, 2004, Lecturer, English

Chaar, Lana, Ph.D., University of Minnesota, 1996, M.S.E.E., University of Minnesota, 1993, B.S.E.E., University of Minnesota, 1991, Assistant Professor, Electrical Engineering

Cozens, Philip, M.A., University of Surrey, 1996, Lecturer, English

Craig, Robert, M.A., University of Essex, 1987, Senior Lecturer and Coordinator, Communication

D

Dalton, David, M.A., University of Sheffield, 1995, Dip. Ed.,, University of Sheffield, 1994, B.Soc.Sc., Birmingham University, 1978, Senior Lecturer, Communication

Darwish, Naif, Ph.D., Oklahoma State University, 1991, M.S., Yarmouk University, 1984, B.S., Kuwait University, 1981, Associate Professor, Chemical Engineering

Dean, Kevin, Ph.D., King's College, 1981, M.Eng., University of Liverpool, 1978, B.S., University of Hull, 1977, Associate Professor, Physics

Dib, Khalid, Ph.D., North Dakota State University, 1999, M.S., Eastern New Mexico University, 1992, B.S., Iowa State University, 1988, Assistant Professor, Mathematics

Didenko, Andriy, Ph.D., M.S., Odessa National University, 1986, 1978, Assistant Professor, Mathematics

Dirks, Marinus, Drs., State University of Leiden, 1973, Assistant Professor, Physics

Dupree, Donn, M.A., B.A., University of Dallas, 1976, 1968, Lecturer, English

Duthler, Kirk, Ph.D., M.A., University of Kentucky, 2001, 1994, B.A., Hope College, 1991, Assistant Professor, Communication

Dyer, Marc, M.A., Monterey Institute of International Studies, 1998, B.A., San Francisco State University, 1986, Lecturer and Coordinator, English

E

Eide, Constance, B.A., St. Olaf College, 1962, Lecturer, English

El Kadi, Mirella, Ph.D., University of Lausanne, 1993, Certificate of Higher Studies, University of Lausanne, 1988, B.S., Lebanese University, 1986, Assistant Professor, Chemistry

Eriksen, Jens, Ph.D., M.S., New York University, 1976, 1974, B.S., Aarhus University, 1972, Associate Professor, Chemistry

Eveloy, Valerie, Ph.D., Dublin City University, 2003, M.S., National Institute of Applied Science, 1994, Research Assistant Professor, Mechanical Engineering

F

Faul, Deborah, M.A., Iowa State University, 1989, B.A., Hampshire College, 1982, Lecturer, English

Ferguson, Mary, M.S., B.S., University of Saskatchewan, 1990, 1986, Lecturer, Physical Science

Fernandes, Ryan, Ph.D., University of Kentucky, 1991, M.S., B.S., University of Bombay, 1981, 1979, Associate Professor, Mathematics

Fok, Sai Cheong, Ph.D., Monash University, 1990, B.A., University of Ottawa, 1985, Associate Professor, Mechanical Engineering

Ford, Michael, M.A., University of Texas, 1996, B.A., Emory University, 1975, Lecturer, English

Francis, Colin, Ph.D., B.S., University of Bristol, 1979, 1975, Professor and Coordinator, Chemistry

Friesen, Eldon, M.A., Carleton University, 1995, B.A., University of Waterloo, 1992, Lecturer, English

G

Garis, Dalton, Ph.D., University of Florida, 1996, M.S., Texas A&M University, 1989, B.S., University of Massachusetts, 1984, Associate Professor, H&SS

Geluk, Jaap, Ph.D., Drs.., University of Leiden, 1983, 1971, Professor & Coordinator, Mathematics

Ghedan, Shawket, Ph.D., M.S., Colorado School of Mines, 1989, 1984, B.S., University of Baghdad, 1978, Associate Professor, Petroleum Engineering

Giblin, Michael, B.S., National University of Ireland, 1983, Lecturer and Coordinator, Mathematics

Goharzadeh, Afshin, Ph.D., University of Le Havre, 2001, M.S., University of Rouen, 1998, B.S., University of Le Havre, 1997, Assistant Professor, Mechanical Engineering

Guefrachi, Hedi, M.A., Moray House College, 1985, B.A., University of Tunis, 1981, Lecturer, English

Gupta, Anuj, Ph.D., M.S., The University of Texas, 1991, 1987, B.Eng. The University of Delhi, 1983, Associate Professor, Petroleum Engineering

H

Hamid, Nihad, Ph.D., Leeds University, 1976, M.S., Bristol University, 1971, B.S., Imperial College, 1970, Lecturer, English

Harb, Gabriele, Diploma, University of Rostock, 1987, Lecturer, German

Hatakka, Mary, M.A., B.A., University of Helsinki, 1991, 1983, Lecturer, Communication

Hawras, Steve, M.A., University of Minnesota, 1996, B.A., Rutgers University, 1981, Lecturer, English

Hayman, Mark, Ph.D., University of Warwick, 2000, M.A., B.A., University of Birmingham, 1990, 1975, Assistant Professor, H&SS

Herlihy, John, M.F.A., Columbia University, 1974, B.A., Boston University, 1967, Director, Foundation Program

Hilal, Nidal, D.Sc., University of Wales, 2005, Ph.D., M.S., University of Wales, 1988, 1986, B.Eng., Bath University, 1981, Institute Distinguished Professor, Chemical Engineering

Hunaini, Enaam, M.S., Indiana University, 2002, B.A., Lebanese University, 1986, Lecturer, English

K

Kaddoura, Mawia, Ph.D., University of Alabama, 2000, M.A. University of Alabama, 1997, M.A. North Carolina state University, 1984, B.S. University of Tripoli 1976, Assistant Professor, Mathematics

Karkoub, Mansour, Ph.D., M.S., B.S., University of Minnesota, 1994, 1990, 1988, Professor of Mechanical Engineering

Kassim, Zein El Abedeen, B.S., Cairo University, 1976, Lecturer, Physical Science

Khalifa, Milad, B.A., University of Garyounis, 1970, Lecturer, English

Khezzar, Lyes, Ph.D., D.I.C., 1987, M.Sc., 1983, Imperial College of Science, Technology & Medicine, University of London, B.Eng., University of Bradford, 1982, Associate Professor, Mechanical Engineering

Knowling, Jeffrey, M.A., Northwestern Illinois University, 1997, B.A., University of Northern Iowa, 1983, Lecturer, English

Krishnaswamy, Nandakumar, Ph.D., Princeton University, 1979, M.S., University of Saskatchewan, 1975, B.S., Madras University, 1973, GASCO Chair Professor, Chemical Engineering.

Kruger, Uwe, Ph.D., University of Manchester, 2000, M.S., B.S., University of Essen, Germany, 1996, Associate Professor, Electrical Engineering

Kubo, Isoroku, Ph.D., Cornell University, 1974, M.B.A., Indiana University, 1987, Associate Professor, and Acting Director, Mechanical Engineering

L

Lamont, Lisa, Ph.D., University of Ulster, 2005, B.Eng., University of Ulster, 2001, Assistant Professor, Electrical Engineering

Lau, Laura, M.A., Southern Illinois University, 1974, B.A., University of Illinois, 1966, Lecturer, English

Lau, Richard, M.S., B.A., Southern Illinois University, 1974, 1971, Lecturer, Physical Science

Leanderson, James, Ph.D., Queen's University, 1978, M.S., B.S., Michigan State University, 1969, 1967, Assistant Professor and Coordinator, Physical Science

Lim, Hwee Ling, Ph.D., Murdoch University 2007, M.A., B.A., National University of Singapore, 1993, 1986, Assistant Professor, Communication

Lokier, Stephen, Ph.D., University of London, 2000, B.S., Oxford Brookes University, 1996, Assistant Professor, Petroleum Geosciences Engineering

M

Mangrum, Daniel, M.A., University of Memphis, 1998, B.A., Middle Tennessee State University, 1993, Lecturer, English

Martin, Neville, B.S., Newcastle upon Tyne Polytechnic, 1983, Lecturer, Mathematics

McNaught, Ian, Ph.D., B.Ed., B.S., Monash University, 1975, 1972, 1968, Associate Professor, Chemistry

Merrifield, Michael, M.A., Inter American University of Puerto Rico, 2001, B.A., University of West England, 1989, Lecturer, STEPS

Miller, Gary, Ph.D., University of New Brunswick, 1994, M.S., Queen's University, 1990, Assistant Professor, Mathematics

Moore, David, M.A., B.A., University of Dublin, 2001, 1998, Lecturer, STEPS

Morad, Sadoon, B.S., University of Baghdad, 1974, M.S., University of Baghdad, 1977, Ph.D., Uppsala University, Sweden, 1983, Professor Petroleum Geosciences Engineering

Munster, Dominic, M.S., Cranfield University, 1999, B.S., University of Salford, 1998, Lecturer, Mathematics

Murphy, Hugh, Ph.D., University of Arizona, 1979, M.S., Lehigh University, 1964, B.S., Manhattan College, Professor, Mechanical Engineering

N

Nachef, Rachida, B.S., Lebanese University, 1985, Lecturer, Physical Science

Najaf-Zadeh,Reza, Ph.D., M.S., Lehigh University, 1987, 1980, B.S., Tehran University, 1977, Associate Professor, Physics

Nawrocki, Pawel, Ph.D., Institute of Fundamental Technological Research, 1988, M.S., Technical University of Lodz, 1980, Associate Professor, Petroleum Engineering

Neilson, Jane, M.S., Simon Fraser University, 2000, B.S., University of British Columbia, 1974, Lecturer, Mathematics

Nunn, Roger, Ph.D., M.A., University of Reading, 1996, 1989, Associate Professor, Communication

O

O'Brien, Turlough, B.S., University College, Dublin, 1992, Lecturer, Mathematics

Ohadi, Michael, Ph.D., University of Minnesota, 1986, M.E., Northeastern University, 1982, M.S., B.S., Southern

Illinois University, 1980, Professor, Mechanical Engineering, Provost, Interim President
Olearski, Janet, M.A., University of London, 1986, M.A., University of Edinburgh, 1980, Learning Enhancement Coordinator

Ozden, Ozgur, M.S., Illinois Institute of Technology, 1996, B.S., University of Istanbul, 1992, Lecturer, Physical Science

P

Palmer, Bruce, Ph.D., University of Utah, 1972, B.S., Colorado School of Mines, 1968, Acting Director and Professor, Chemical Engineering

Pheasant, Richard, B.A., University of Gloucestershire, 1986, Senior Lecturer and Coordinator, Computing

Pillay, Avin, Ph.D., University of London, 1982, M.S., B.S., University of Durban - Westville, 1979, 1977, Associate Professor, Chemistry

Poshtan, Majid, Ph.D., Tulane University, 2000, M.S., University of New Brunswick, 1992, B.S., Tehran University, 1988, Assistant Professor, Electrical Engineering

Posner, Barry, M.S., B.S., University of Alberta, 1998, 1994, Lecturer, Economics

R

Rasmussen, Paul, Ph.D., McMaster University, 1969, M.S., B.S., Acadia University, 1966, 1964, Associate Professor, Chemistry

Rindfleisch, William, M.A., San Francisco State University, 1984, B.A., University of Wisconsin, 1971, Lecturer, English

Rodgers, Peter, Ph.D., B.S., University of Limerick, 2000, 1990, Associate Professor, Mechanical Engineering

Rogan, John, Grad. Dip., Royal Melbourne Institute of Technology, 1971, B.A., Monash University, 1969, Head Librarian Roos, Cathryn, M.Ed., University of Toronto, 1988, B.A., University of Manitoba, 1979, Lecturer, English

Roos, Gregory, Ph.D., B.S. (Hons), University of Cape Town, 1976, 1972, 1971, Associate Professor, Chemistry

Rostron, Paul, Ph.D. MRSC., University of Northumbria, 1996, B.S., Newcastle Polytechnic, 1990, Assistant Professor, Chemistry.

Rostron, Rehana, B.S., University of Staffordshire, 1995, Lecturer, Physical Science

S

Sassi, Mohamed, Ph.D., M.S., University of California, Berkeley, 1990, 1987, B.S., University of Rochester, 1985, Associate Professor, Chemical Engineering

Scott, Suzanne, Ph.D., University of Denver, 1997, M.A., Washington University, 1976, B.A., Drury College, 1972, Assistant Professor, STEPS

Seela, Jeffrey, Ph.D., Indiana University, 1989, B.S., Iowa State University, 1983, Professor, Chemistry

Seibi, Abdennour, Ph.D., M.S., B.S., Pennsylvania State University, 1993, 1988, 1985, Associate Professor, Mechanical Engineering

Shires, Michael, M.L.S., B.A., University of Alberta, 2000, 1991, Librarian

Siginer, Dennis, Ph.D., University of Minnesota, 1982, D.S. Technical University of Istanbul, 1972, M.S., Technical University of Istanbul, 1970, B.S., Technical University of Istanbul, 1970, Distinguished Professor of Mechanical Engineering & Arts & Sciences Program Director

Sirat, Manhal, Ph.D., Uppsala University, 1999, M.S., Baghdad University, 1982, B.S., Mosul University, 1977, Assistant Professor, Petroleum Geosciences Engineering

Steiner, Rex, M.A., M.L.S., B.A., Emporia State University, 1991, 1990, 1988, Librarian

Steuber, Thomas, Ph.D., University of Cologne, 1989, Associate Professor, Petroleum Geosciences Engineering

Stevens, Vance, M.A., University of Hawaii, 1983, B.S., University of Houston, 1971, Lecturer, Computing

Stewart, Sean, Grad.Dip.Ed., University of New England, 2002, B.S., University of Wollongong, 1995, Associate Professor, Mathematics

Stokes, Michael, Ph.D., B.S. Imperial College, 1972, 1968, M.Ed., Manchester University, 1984, Professor, Physics

Su, Charles Qi, Ph.D., University of New South Wales, 1990, M.S., Wuhan University, 1981; B.S., Huazhong University of Science and Technology, 1969, Professor, Electrical Engineering

T

Tapper, Richard, M.S., B.S., University of Otago, 1972, 1967, Lecturer, Physical Science

Tarfa, Tahar, Ph.D., University of Le Havre, 1994, Assistant Professor, Mechanical Engineering

Thomas, Eurof, M.A., University of Essex, 1984, B.S., Cardiff University, 1974, Lecturer, English

Thomson, David, M.A., School for International Training, 1997, B.A., The Evergreen State College, 1976, Lecturer, English

Toms, Colin, M.A., University of Reading, 1993, B.A., Thames Polytechnic, 1981, Lecturer, English

Takacs, Gabor, Ph.D., Hungarian Academy of Sciences, 1985, M.S. University of Miskolc, 1970
Professor and Acting Director, Petroleum Engineering

V

Vega, Sandra, Ph.D., M.S., Stanford University, 2004, 2000, Assistant Professor, Petroleum Geosciences Engineering

Vladea, Radu, Ph.D., Technical University of Timisoara, 1977, M.S., Polytechnic University, Bucharest, 1964, Research Professor, Chemical Engineering

Vukusic, Sulafudin, Ph.D., University of Leeds, 1999, M.S., University of Manchester, 1996, B.S., University of Sussex, 1991, Assistant Professor, Chemistry

W

Ward, Graeme, M.A., B.S., Sydney University, 1985, 1975, Lecturer, Mathematics

Webb, Matthew, Ph.D., Australian National University, 2001, M.Ed., Charles Stuart University 2005, M.A., B.A., Victoria University of Wellington, 1996, 1991, Assistant Professor, Communication

Westley, Neil, M.Ed., B.S., McGill University, 1979, 1969, Lecturer, Computing

Williams, John, Ph.D., University of Exeter, 1979, M.B.A., Open University, 1993, B.S., University of Exeter, 1974, Professor, Petroleum Engineering

Y

Yang, Joseph, B.S., University of Western Ontario, 1978, Lecturer, Computing

Location Map

Directions to The Petroleum Institute

The Petroleum Institute is located on the mainland near Al Maqta Bridge about 23 km from downtown Abu Dhabi and 17 km from Abu Dhabi International Airport. The campus is in an area called Sas Al Nakhl and/or Umm Al Nar (both names are used on road signs). Exits from Airport Road (also called Highway 2) are clearly marked near Al Maqta Bridge.

Campus Map

1- Zarkuh – Foundation Program
2- Bu Hasa – Arts & Sciences and ChE Programs
3- Ruwais – EE, ME, PE and PGE Programs
4- Umm Shaif – H&SS Faculty, Offices and Classrooms
5- Habshan – Library and Administration
6- Arzanah – Women's ~~Campus~~College
7- Mosque
8- Asab.- Sports Halls, Recreation & Fitness Centers
9- Football Fields
10- Satah – Dining Hall
11- B 11 – Student Hostel
12- B 21 – Student Hostel
13- Heil – Student Hostel
14- B 22 - Student Hostel
15- Bu Danah - Student Hostel and Umm Al Nar Club
16- Bunduq - Student Hostel
17- Abu Albokhoosh - Student Hostel
18- Jarnin - Student Hostel & ADNOC Health Clinic
19- Delma - Student Hostel
20- ADNOC Technical Institute

Content: Nadia Al Hasani - Graphic Design: Bart Daems

The Petroleum Institute
P.O. Box 2533
Abu Dhabi
United Arab Emirates
Telephone: +971 (0)2 607 5100
Fax: +971 (0)2 607 5200
http://www.pi.ac.ae

Email: General inquiries
enquiries@pi.ac.ae.

The Petroleum Institute is located on Airport Road midway between Abu Dhabi center and the Abu Dhabi airport.