Abu Dhabi Polytechnic

General Catalog

November 2016

The purpose of this catalog is to provide information about the education and training programmes of the Abu Dhabi Polytechnic to prospective students, students, faculty, and staff of Abu Dhabi Polytechnic. Included is information concerning admissions, academic regulations and requirements, services available to students, and academic offerings. While every effort has been made to make this catalog as complete and accurate as possible, changes may occur at any time in requirements, deadlines, curricula, and courses listed in this catalog.

The provisions of this catalog do not constitute a contract, expressed or implied, between any applicant, student, faculty, or staff member of Abu Dhabi Polytechnic or the Institute of Applied Technology. This catalog is for informational purposes only. Abu Dhabi Polytechnic reserves the right to change or alter any statement herein without prior notice. This catalog should not be interpreted to allow a student that begins their education under the catalog to continue the programme under the provisions in the catalog.

Document Revision Form

Document name: Abu Dhabi Polytechnic General Catalogue

Release #	Date	Revised by and reason for revision	Approved by	Approval Date
Rev 0				
Rev 1				
Rev 2	June 2013	Consolidation between Abu Dhabi Polytechnic and AAI AA Handbooks insertion of (Revised by Effectiveness and Assessment Manager)		
Rev 3	July 2013	Updated EET and ISET Applied Bachelor (Revised by Head of ISET)		
Rev 4	July 2013	Insertion of Document Revision Form (Revised by Effectiveness and Assessment Manager)		
Rev 5	Sept 2013	Update Petroleum Engineering Programme (PET) (Revised by Head of PET Programme)		
Rev 6	Oct 2013	P7 Updated Mission statement (Revised by Effectiveness and Assessment Manager)	Executive Committee 24th September 2013	
Rev 7	Nov 2013	Change Chief Academic Officer to Manager Students and Support Services P7 Clarification re OJT/OCT P14 Consolidate Admissions Requirements with Student Handbook, and Policy and Procedures Manual P15 Remove statement on Late Admissions as this is a remnant from merging handbooks P15 Consolidation of Foundation entry requirements with information in Student Handbook P37 amendment re credit hours P43 Remove duplicated statement on Foundation Programme.		
Rev 8	Sept 2014	Update to statement on page 9, Grading Chart p26/27, Failed courses P26, Attendance p 30, Undergraduate grading p38, Updates to coding for Academic Support p113-115, 117, 121-122, EMET p60-63, 96-113, AEET p55-58, p77, ISET 63-68,118-119,123-141.	See Student Handbook. Plus annual upgrading from HOPs.	October 2014
Rev 9	Oct 2014	Change AD Poly to Abu Dhabi Polytechnic	Director	October 2014
Rev 10	Dec 2014	P4-5 Table of contents(Updating Pages Number & Adding MET Program), P56 Updating statements to include Meteorology Program P78-82 Adding Diploma, Higher Diploma and Bachelor of Science Degrees in Meteorology	MET HOP	January 2015

		Program Requirements P84 Changing the sentence from alphabetical order into (Course descriptions of programs, which are offered in AD Polytechnic, are listed below.) P123 Adding ENGL-107 English for Met Course Description P129 Adding ICT-140 Modeling and Simulation I Course Description P130 ICT-210 Modeling and Simulation II Course Description P128 Adding MATH-104 Math IV, MATH-201 Statistics, and MATH-301 Advanced Math Course Descriptions P156 – P162 Adding MET Courses Course Descriptions		
Nov 15	11	Annual review updating: Academic Support p127-129,131,134-135, Autonomous Systems p57-59, AEET p55-59, 85-9, Meteorology p 78-81, 156-162, PET pages 70-77, 148-156 to reflect changes to programmes and specialisations P9		
Jan 2016	12	Change Meteorology Science to Meteorology	MET HOP / ERT	January 2016
Sept 2016	13	Annual review updating: Changes to P6/7 re changes to Semester and addition of Applied Bachelor – throughout pages 8 - 43 Attendance and punctuality p31 Academic Support p127-130, Autonomous Systems p57-59, AEET p58-61,, 89-98-, ,Aviation 10-14,43-55,98-110,130 EMET62.65,110-127,ISET 65-71, 136-147, 148-155, Meteorology p 78-81, 156-162, PET pages 72-84, 155-163 and MET 84-88, 163-170 to reflect changes to programmes and specialisations	Due to Substantial change to programmes	November 2016

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Dr. Ahmad Alawar

Welcome to Abu Dhabi Polytechnic

Welcome to the Abu Dhabi Polytechnic (Abu Dhabi Polytechnic). All of us here are delighted to welcome you and your family to the Abu Dhabi Polytechnic. Abu Dhabi Polytechnic is a governmental entity managed by the Institute of Applied Technology and licensed by the UAE Ministry of Higher Education and Scientific Research. Abu Dhabi Polytechnic is a strategic government initiative with the noble goal of developing a core of Emirati specialists in high technology areas to support the Abu Dhabi Economic Vision 2030. The training you will receive will be rigorous and challenging, but you will have the benefit of being the pioneers in the field of study and spearheading the development of these high-value industries. From today, you are part of this great vision for the UAE.

We are excited to offer you the opportunity to complete a Diploma/Higher Diploma/ Applied Bachelor Programme taught by our staff in collaboration with our global strategic partners. We aim to provide you with high quality learning opportunities during this important phase of your life and we believe that each student has the ability to achieve the targeted goals through the supportive environment at Abu Dhabi Polytechnic. Your diploma will take the innovative approach of combining face-to-face teaching alongside industry-based training attachments and projects which will be supervised by staff from the Abu Dhabi Polytechnic whether this is in Abu Dhabi or at the Al Ain campus. This will help you to identify your own personal strengths, develop project management, teamwork and personal skills and the ability to apply these to real-world situations. Additionally, for those interested in academic advancement, we plan to offer the Applied Bachelor degree in two years as a progression to the Higher Diploma.

We believe that each student has the ability to achieve his or her personal goals through the supportive environment present at Abu Dhabi Polytechnic, innovative programmes, and the opportunity to work with high quality faculty. For every generation, the future is an exciting challenge; we embrace it with confidence in the enormous potential of education, technology, and innovation. We invite you to join with us in creating an extraordinary future for the nation. We are sure that you will find this to be an exciting and rewarding time which will have a significant impact on the achievement of your future goals.

Dr. Ahmed Al Awar

Director, Abu Dhabi Polytechnic

1. General Information

IAT History and Mandate

The Institute of Applied Technology (IAT) was founded in 2005 through Royal decree of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the United Arab Emirates, Ruler of Abu Dhabi as a corporate body with full financial and administrative independence. The establishment of the IAT was an initiative of General Sheikh Mohamed Bin Zayed Al Nahyan, Crown Prince of Abu Dhabi. His Highness envisioned IAT as a world class Career-Technical Education system that would produce the scientists, engineers and technicians needed for the UAE to build a knowledge-based economy.

The Institute of Applied Technology is a dynamic organization which includes senior secondary schools, vocational education and training establishments, colleges, academies and other learning units. IAT also has a significant responsibility on behalf of the Abu Dhabi government to conduct special projects and educational activities that meet the strategic plans.

To achieve the objectives handed down to it by the Abu Dhabi Executive Council, the IAT relies on best practice teaching and learning processes underpinning a modern curriculum, conducted in state-of-the-art facilities. The aim of the IAT is to create the scientific and professional leaders of the future; therefore the Institute, its facilities and its outcomes are continually expanding and evolving as the needs of the Emirate and the nation evolve.

Abu Dhabi Polytechnic

Abu Dhabi Polytechnic was established by IAT and licensed in December 2010 by the Ministry of Higher Education and Scientific Research to offer a dual educational-professional training system with multiple high-tech disciplines (specializations) to produce technologists and engineers to serve the UAE industrial manpower required for Abu Dhabi Economic Vision 2030. In November 2012, Abu Dhabi Polytechnic merged with Abu Dhabi Polytechnic.

Academic Degrees and Job Qualification Certificates

Abu Dhabi Polytechnic currently offers accredited Diploma, Higher Diploma and Applied Bachelor programmes that were developed with industrial partners and therefore tailor-made to meet industrial needs. Abu Dhabi Polytechnic's programmes thoroughly integrate knowledge and practical skills through balanced delivery of instructional material at IAT and on-the-job training by industrial training providers appropriate for each discipline. In addition to academic studies, Abu Dhabi Polytechnic students receive on-the-job training leading to industrial job qualification certificates.

Graduates of the intended educational programmes must meet the expectations of industrial standards and be able to perform immediately at graduation. Given the limited population of domestic industrial manpower in the UAE, the programmes are designed for students who are not general seekers of degrees but aim to be employees of the targeted industries. Furthermore, industrial representatives and government agencies have to be involved in the development process as well as sponsoring the programmes.

The Higher/Advanced Diploma and Applied Bachelor programmes are three- or four-year semester-based programmes, where all the semesters including the summer semester are compulsory. Each semester is composed of 16 instructional weeks and one exams week. Semesters are separated by a two week break in December, a Spring break in Semester 2 and a one week break between Semester Two and the Summer Semester. Figure 1 illustrates the typical structure of the three-year programme for the Higher/Advance Diploma and four-year programme for the Applied Bachelor programme.

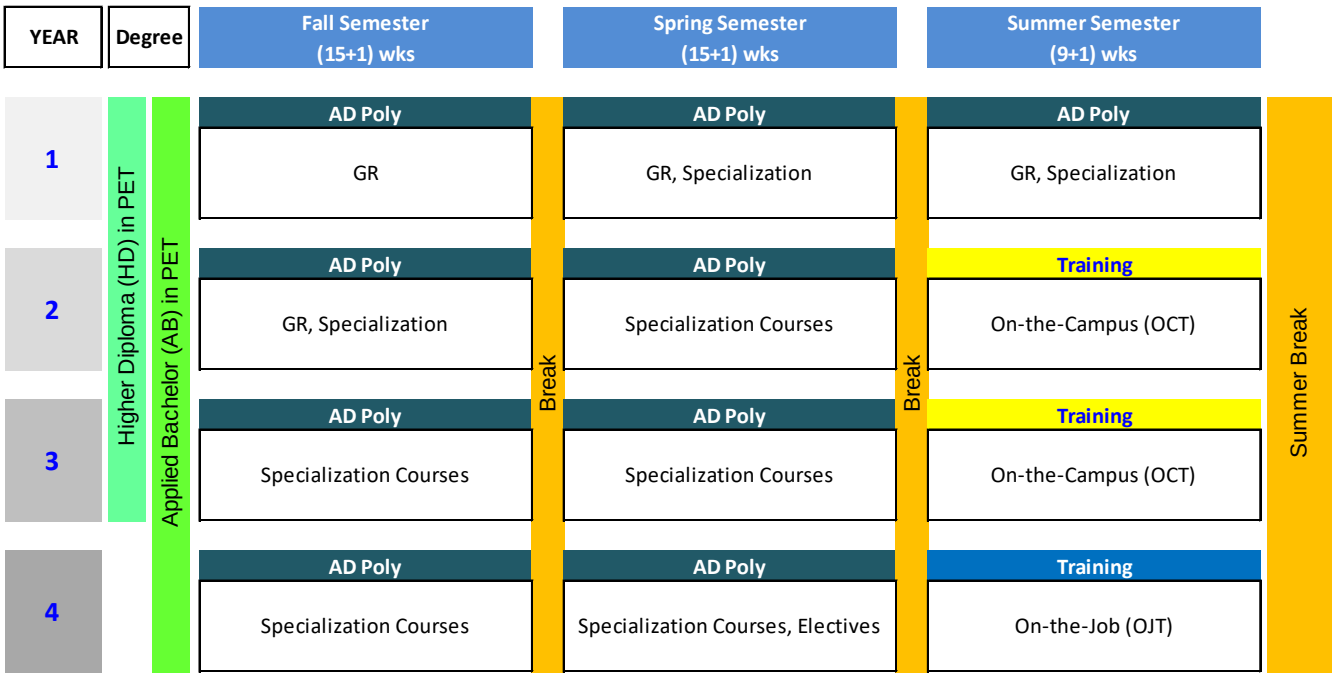


Figure 1: A typical Abu Dhabi Polytechnic Advanced/Higher Diploma and Applied Bachelor programmes structure (Different programmes contain different details which could include different periods of On-the-Job Training provision)

Location and Facilities

There are two campuses at Abu Dhabi Polytechnic: The Abu Dhabi campus is located in Mohammed Bin Zayed City along the Abu Dhabi–Al Ain Highway and the Al Ain Campus is based on the outskirts of Al Ain near the International Airport. The new Abu Dhabi campus opened September 2012

The Al Ain campus opened in 2009 and is located in the midst of the Al Ain Aviation cluster at the northeast corner of the Al Ain International Airport.

Both campuses offer state-of-the-art facilities and excellent support services for a Career-based Technical Education (CTE) in English.

Abu Dhabi Polytechnic Vision and Mission

The vision of Abu Dhabi Polytechnic is to create skilled professional technologists and engineers capable of performing at the highest international standards to build a knowledge-based economy in the UAE.

The mission of Abu Dhabi Polytechnic is to graduate technologists and engineers with an accredited academic degree and industrially recognized skills and competencies. Abu Dhabi Polytechnic accomplishes this mission through a dual educational-professional training system with multiple high-tech specializations to produce the workforce to serve the UAE industrial manpower for UAE aligned with Abu Dhabi Economic Vision 2030.

The Objectives

Abu Dhabi Polytechnic aims to provide the necessary balance of theoretical studies and practical on-the-job training and performance to prepare students for a career as technologists and engineers. The graduate from the programme is expected to be able to:

- Make independent technical judgments and assume responsible duties in their field of specialization under the general supervision of a professional engineer
- Apply current technologies and general engineering principles to solve technical problems
- Assist professional engineers to transfer and develop new technologies
- Understand the management and function of an industrial organization
- Communicate clearly both orally and in writing in English

To achieve these aims, Abu Dhabi Polytechnic is designed to consist of a balance of lectures, tutorials, laboratory/workshop/hangar work, on-the-job training, and on-the-job performance in centers of industry.

At the Abu Dhabi Campus

The Higher Diploma and Applied Bachelor students will spend most of their study period at the IAT campus for instructional training, mathematics and sciences, humanities, general engineering education, on-campus training and specialization courses. Internship / On-the-job training (OJT) will be delivered by industrial provider such as ADNOC and its group of companies. Figure 2 shows the sequence of PET program courses offered throughout the 4-years of study plan.

Higher Diploma (HD)											
Applied Bachelor (AB)											
Year 1			Year 2			Year 3			Year 4		
S1	S2	SS	S1	S2	SS	S1	S2	SS	S1	S2	SS
MATH, CHEM, ICT, PHYS & HUM	MATH, PHYS, CHEM, HUM & PET	ENG, HUM, PET & OGP	MATH, ENG, HUM, PET & OGP	MATH, ENG, HUM, PET & OGP	PET (On-the-Campus Training I)	PET & OGP	MATH, PET & OGP	PET or OGP (On-the-Campus Training II)	HUM, PET & OGP	HUM, PET & OGP	Internship
Common for both Specializations			Specialization 1: Petroleum Engineering Technology (PET)								
			Specialization 2: Oil and Gas Process Engineering Technology (OGP)								

S1 - Fall Semester
S2 - Spring Semester
SS - Summer Semester

Figure 2: Abu Dhabi Polytechnic sample programme outcomes: academic degrees and industry qualification certificates.

Licensure and Accreditation for Abu Dhabi campus Programmes

Abu Dhabi Polytechnic was licensed in December 2010. The Higher Diploma in Nuclear Technology and the Higher Diploma in Semiconductor Technology were accredited by the Ministry of Higher Education and Scientific Research (MOHESR) in January 2012. The Higher Diploma in Information Security Engineering Technology and the Higher Diploma and the Applied Bachelor in Petroleum Engineering Technology were accredited by the Ministry of Higher Education and Scientific Research (MOHESR) in January 2013. The Applied Bachelor programme in Information Security Engineering Technology and the Higher Diploma and the Applied Bachelor Electromechanical Engineering Technology were accredited by the Ministry of Higher Education and Scientific Research (MOHESR) in January 2014. More recently further programmes have been added for Meteorology Science and Autonomous Systems.

Licensure and Accreditation for the Al Ain campus Programmes

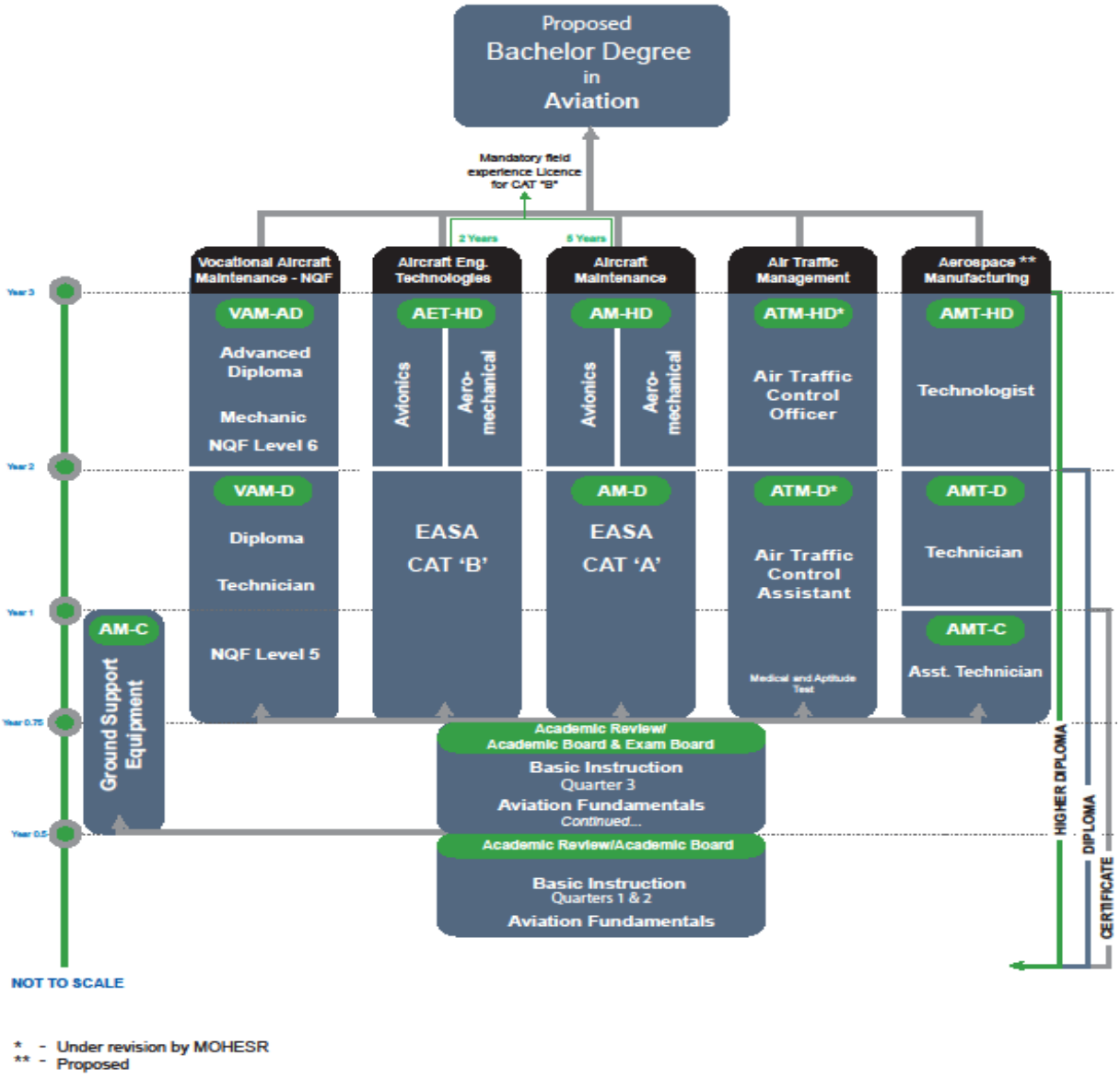
The Certificate, Diploma and Higher Diploma in Aircraft Maintenance were accredited by the Ministry of Higher Education and Scientific Research (MOHESR) in January 2010. Both the Diploma and Higher Diploma in Aircraft Engineering Technologies were accredited by the Ministry of Higher Education and Scientific Research (MOHESR) in January 2011. The Diploma and Higher Diploma in Air Traffic Management were accredited by the Ministry of Higher Education and Scientific Research (MOHESR) in January 2012.

It is expected that most Programmes will be offered at both campuses in the near future.

Academic Pathway at Al Ain campus

The Al Ain campus offers academic programmes in aviation technologies leading to both academic and licensing qualifications. All students entering Abu Dhabi Polytechnic undergo similar training and educational experiences, at least for the initial phase of their training. Student with a Grade point Average (GPA) exceeding 3.00 are given the opportunity to continue on the Higher Diploma in Aircraft Engineering Technology and later qualifying for EASA Cat B1 or B2 licenses. Students with a GPA between 2.00 and 3.00 are set on the Diploma/Higher Diploma in Aircraft Maintenance Technology and can qualify for EASA's Cat A license with an opportunity to continue a Cat B option. In addition to earning the above mentioned academic and professional qualifications, intentions for the future are to provide a continuing educational pathway to all students. These programmes will be offered from at the Abu Dhabi campus from September 2013

The chart below depicts the educational pathways available for students at ABU DHABI POLYTECHNIC. The vocational Aircraft Maintenance programmes parallels that of the Diploma and Higher Diploma in Aircraft Maintenance programmes. VAM offers programmes that meet the National Qualification Framework of the UAE at levels 5 and 6 simultaneously



* - Under revision by MOHESR
** - Proposed

Admission Requirements

- Grade 12, GPA 70% (Science/Technical Stream)
- IELTS 5.0 minimum
- Admission Test
- Interview

Programmes offered at the Al Ain campus cover the traditional academics and the technical professional simultaneously. The programmes offered are:

- Academic
    - Aircraft Engineering Technology higher diploma;
    - Aircraft Maintenance certificate, diploma, and higher diploma;
    - Air Traffic Management certificate, diploma, and higher diploma.
- Professional

- EASA Part-66 and GCAA CAR Category 'B' Licenses;
- EASA Part-66 and GCAA CAR Category 'A' license;
- ICAO 051, 052, 054 certification/training;
- Special programmes and training courses in aviation related areas.

International Accreditation

The Al Ain campus is an "EASA Part 147" and "GCAA CAR 147" approved maintenance training organization. The campus has the distinction of being the only such facility in the Middle East to hold both approvals. "EASA" is the European Aviation Safety Agency, which holds responsibility for regulation of civil air transport. It promotes the highest common standards of safety and environmental protection in Civil Aviation in Europe and worldwide.

European Aviation Safety Agency

APPROVAL CERTIFICATE

REFERENCE EASA.147.0066

Pursuant to Commission Regulation (EC) N°2042/2003 for the time being in force and subject to the conditions specified below, the Agency hereby certifies:

AL AIN INTERNATIONAL AVIATION ACADEMY (AAIAA)
Al Ain International Aviation Academy
P.O.Box 66844, Nr Al Ain International Airport
Al Ain
United Arab Emirates

National Accreditation

"GCAA" is the General Civil Aviation Authority of the UAE. The GCAA is the Federal Aviation Authority which focuses on regulating Civil Aviation and ensures safety and security of aircrafts and passengers in the UAE. The GCAA is a member of the International Civil Aviation Organization (ICAO) and is internationally recognized. Abu Dhabi Polytechnic also has the support of the Ministry of Higher Education and Scientific Research (MoHESR). The Ministry sets the standards for curriculum, teachers and their qualifications and the overall outcome of the programme. All academic programmes offered at Abu Dhabi Polytechnic are accredited by and under the standards of the MOHESR.

Facilities at the Al Ain campus

The Al Ain campus houses a complete set of aircraft maintenance training facilities to include:

- 3,000 square meters hangar housing a variety of aircraft used in maintenance training.
- A collection of training aircrafts to include: a Dornier 228, a Bell Jet Ranger Helicopter, a Falcon 20, and am Aermacchi B326 jet.
- 24 state-of-the-art classrooms, as well as 10 workshops and 14 laboratories equipped with electronics, avionics and mechanical training aids.
- Workshops equipped with fully-operational training devices that demonstrate the functioning of landing-gear, fuel systems, de-icing and anti-skid systems, and flight control systems.
- A Variety of jet engines to illustrate their technology and operation.
- A Learning Resource Center that includes a Library, an Internet Centre, and Computer Based Training classrooms.

Al Ain Partners

The Al Ain campus is proud to have partnerships with many prestigious organizations and become a major educational and training provider within the Al Ain Aerospace Cluster. The Abu Dhabi Polytechnic: Al Ain's partners contribute to the success of the programmes and provide opportunities for students to develop knowledge and experience during and after graduation from Abu Dhabi Polytechnic.

2. Admissions

Admission Policy

Abu Dhabi Polytechnic has two official admission intakes per year. These intakes are in the first and second semester of the academic year. A student who has completed their Secondary School education (or will complete their Secondary School education by the time they are to enroll in Abu Dhabi Polytechnic) and has an official transcript may apply.

All applications for admission have to be submitted through the Ministry of Higher Education and Scientific Research NAPO system. http://ws2.mohesr.ae/napo/Default_AR.aspx

An offer of admission is only valid for the semester for which a student applies. If the applicant is offered an admission but is unable to attend, the applicant may request in writing to postpone the admission for the next admission cycle. Admission consideration shall depend upon availability of seats, programme offerings, and other considerations such as sponsor concurrence for certain programmes.

Admission Requirements

The regular admissions requirements for Abu Dhabi Polytechnic are the following:

- Science stream students are eligible for admission. (Arts stream students may be accepted for admission under certain circumstances.)
- Science stream applicants should have an overall average above 70% with the exception of the Meteorology applicants who should have an overall average above 80% or more in the Science branch of the secondary school. (Arts stream applicants should have an overall average above 80% for consideration.)
- Applicants must have International English Language Testing System (IELTS) Academic band 5.0 or equivalent and a successful test and interview in English. (Applicants who do not meet this criterion may enroll in the Foundation Programme.)
- Applicants must hold UAE nationality. (Under special circumstances, non-nationals may be allowed to enroll in certain programmes.)
- Applicants for certain programmes will be required to take special entrance examinations based on programme sponsor requirements.
- Applicants must pass an admissions interview.

The following general documents are required for admission to Abu Dhabi Polytechnic:

- A completed application form
- An official Secondary School Certificate certified by the Ministry of Education
- A photocopy of the applicant's passport
- International standardized test of English (IELTS or TOEFL)
- A copy of UAE nationality documents
- A medical fitness certificate
- Six recent color photographs
- Any other diplomas, transcripts, or relevant documents

Applicants holding a Foreign Secondary School Certificate

Applicants who went to secondary school abroad should obtain a high school certificate awarded based on 12 years of study and accredited by the Ministry of Education. The applicant is required to provide the original Secondary School Certificate. Applicants who hold a non-UAE Secondary School Certificate must submit a Certificate Equivalency from the Ministry of Education.

Pre-admission/Entry Examination and Interview Policy

The Entry Exam is designed to assess the applicant's aptitude in English reading, writing, speaking and listening. In addition it will assess the applicant's aptitude in Mathematics. An interview panel conducts interviews of all students with applications for admissions for the upcoming academic cycle. The panel makes final recommendations for admissions based on the student's interview, suitability and motivation to pursue academic and vocational aerospace studies.

Re-Admission to Abu Dhabi Polytechnic Programmes

Students who have left an Abu Dhabi Polytechnic Programme may re-enter to the same Programme at a later date provided that:

- The application for re-entry is made within 12 months of leaving
- The Director approves the re-entry.

Students who apply for re-entry into a different Programme of study must complete a new application and submit supporting documents for the new Programme. In these circumstances the Student Services Office may waive resubmission of some documentation provided the details have not changed since the last application.

Repeating Students Policy and Guidelines

At the ABU DHABI POLYTECHNIC, we believe in career success and opportunity for all. Our students are drawn from both the traditional system of learning, IAT, and mature entry. Whatever the entry mode, the originating systems significantly contrast the ABU DHABI POLYTECHNIC in terms of the methods of deliver, the professional focus and aims as well as the learning objectives and level of curricular rigor.
It is accepted that student and sponsor expectations as well a time and financial expenditure may require some level of protection against the investment expended on those students.
For the purpose of clarity, "Repeat" will mean one of the following:

Repeat of a courses as agreed by the Exam Board

Repeat of a complete programme as agreed by the Exam Board

Repeat of a previous year or stage of training as agreed by the Exam Board

The guidelines that will allow due consideration and recovery of students are as stipulated below.

- An Examination Board comprised of Heads of Programmes, Senior, Technical and Academic Faculties, Student Support Services and the Student's Sponsor will review each case and recommend those fit for repeat of the failed modules on the basis of the academic records on each student.

- Only students, who have failed a maximum of 2 subjects and have not been permitted a repeat already, are eligible for a repeat.

- Only one repeat is permitted per programme per student.

- Repeat students are entitled to the same number of assessment attempts as if for the first time.

- Students undergoing repeat modules must attend all lessons. Failure to do so, without acceptable mitigating circumstances, will lead to the student being refused further training.

Withdrawals

Students can request to withdraw from the Programme at any time. The request is however to be initiated by the academic advisor, and routed through the Head of Programme, Student Counsellor and then (if applicable) the students sponsor. Final authority to withdraw will be given by the Director to the student. If a student fails to follow withdrawal procedures, he will be given a failing grade in all coursework attempted in that semester.

Re-enrollment

Students can request to re-enrol only within one year of their leaving date. **They must retain the current admission requirements mentioned in the admission policy.**

- All requests to return after the student has withdrawn must be recommended to the Director.
- Students cannot re-enrol in the ABU DHABI POLYTECHNIC later than one week after the start of the course for which they are re-enrolling.

Foundation Programme

The foundation programme for Abu Dhabi Polytechnic is the Edad Programme at IAT's Al Rowdah Abu Dhabi Polytechnic. The Abu Dhabi Polytechnic foundation programme at Al Rowdah Abu Dhabi Polytechnic is a one- or two-semester programme developed to provide students with foundation level competency in English to prepare them to achieve a minimum IELTS Academic band of 5.0. For more information about the Edad Programme at the Al Rowdah Abu Dhabi Polytechnic visit their link on the IAT website at www.iat.ac.ae.

Admission Requirements for Foundation Programme

The basic admissions requirements for Abu Dhabi Polytechnic Foundation Programme are the following:

- Science stream students should have an overall average above 70%. Students above 60% and Arts stream students may be eligible under certain circumstances.
- IELTS Academic band 4.0 or equivalent and a successful test and interview in English.
- Applicants for certain programmes will be required to take special entrance examinations based on programme sponsor requirements.

All documents presented by applicants to complete a file for admission become the property of the Abu Dhabi Polytechnic. Accepted or rejected applicants may not reclaim any of the documents.

Student Inquiries

Inquiries regarding admission status, academic grades, transcripts, timetables or information about examinations can be made at the Student Support Services.

Campus Hours

In Abu Dhabi all **classes start at 9.00am** and continue throughout the working hours of the day until 5pm. In Al Ain all **classes start at 8:00** am and continue throughout the working hours of the day until 4pm. Class periods are 55 minutes in duration and are separated by breaks. Students should be ready, follow their scheduled classes, and present in class before a class commences. The normal working day for the administrative-management staff is from **9:00 am until 5:00 pm** in Abu Dhabi and **8:00 am until 4:00 pm** in Al Ain**.**

Students are encouraged to stay afterhours on campus to work on class assignments, projects or other activities. All students **must wear an ID card at all times** while on Abu Dhabi Polytechnic grounds, and should sign in and out and abide by the same rules applicable regular Abu Dhabi Polytechnic days. Students should use specially designated area for students during this time. Students are not permitted to use staff desks, computers or telephones without permission. Food must be consumed in the designated food areas. The campus is closed to students on Fridays, Saturdays and public holidays. Abu Dhabi Polytechnic operating hours are shortened during the holy month of Ramadan.

3. Student Administration

The Student Services Department is responsible for admission, enrolment, coursework progress, scheduling, and student records. Students can obtain all relevant forms they need from the Student Services Department.

The Student Services Department is responsible for administering student records and to ensure that records are accurately maintained and students are aware of their responsibilities. For example, students must ensure the Student Services Department is notified of any changes in their contact details. Student records contain a variety of information about students, such as student identification numbers, student contact details, and academic results. Student records are kept to track progress and programme requirements. The Abu Dhabi Polytechnic maintains guidelines related to the privacy and confidentiality of student records.

Important Abu Dhabi Polytechnic: Abu Dhabi Contact Numbers

- Reception: 02 695 1062
- Student Support Services: 02 695 1041
  02 695 1043

Important Abu Dhabi Polytechnic: Al Ain Contact Numbers

- Reception: 03 799 6444
- Student Support Services: 03 799 6408
  03 799 6408
  03 799 6479

Website

The Abu Dhabi Polytechnic website is located at http://www.adpoly.ac.ae/. Visit our site for updates or newly adopted academic policies.

Registration

Registration is the process of enrolling in classes. From September 2012, Abu Dhabi Polytechnic will have switched over from a manual registration system to an on-line registration system in which students may select their courses and section numbers online via the Banner System. Course selections must be approved by an academic adviser or Programme head in person after being submitted online but prior to being finalized. Students entering their first semester at Abu Dhabi Polytechnic may select from complete first- semester schedules developed for each programme.

Orientation Programme

Orientation meetings and activities are arranged for all new students joining Abu Dhabi Polytechnic. Students are oriented regarding the facilities, general guidelines and expectations, and academic policies and procedures.

Academic Measures

All courses taken by the students are entered into the student's record. All grades attained by the students are taken into account in calculating their cumulative GPA. English is the language of instruction at the Abu Dhabi Polytechnic in all the courses.

4. Assessment Policy

Philosophy of Assessment

Assessment is the process of forming a judgment about the quality and extent of student achievement or performance, and therefore by inference a judgment about the learning itself. Assessment inevitably shapes the learning that takes place – what students learn and how they learn it – and should reflect closely the purposes and aims of the course of study.

The aims of assessment include:

- Formally certifying student achievements for programme progress and external audiences
- Improving and promoting subsequent learning through feedback that is clear, informative, timely and relevant
- Improving the quality of the curriculum (courses and programmes)
- Evaluating the effectiveness of the teaching process and facilitating continuing improvement
- Demonstrating accountability to Abu Dhabi Polytechnic, accrediting bodies, employers, and the wider community

Assessment methods may take a variety of forms: the key criterion for choice among methods should be appropriateness to the learning outcomes. Assessment should be criteria based rather than norm referenced, and may include individual or collaborative achievement or both. The requirements for student success should be made clear, and the overall strategy should be to develop in students the ability to evaluate the quality of their own work in order to equip them to function as professionals with a commitment to life-long learning.

Assessment practices within Abu Dhabi Polytechnic are based on the general principles of criteria based assessment. These are that the desired learning outcomes for a course of study are clearly specified; assessment tasks are designed to indicate progress towards the desired learning outcomes; and, the assessment grade is a measure of the extent to which the learning outcomes have been achieved.

The standard of performance that is required for the award of a particular grade is a judgment that is based on the professional expertise of the various staff that contributes to the assessment process and is informed by experience with accepted standards, including, where appropriate, standards in other institutions. There is no pre-determined distribution of grades as the outcome of assessing a group of students.

Non-Academic Programmes- EASA / GCAA Course Assessment

The EASA / GCAA assessment system is based entirely upon EASA Part 66 / GCAA (Engineering Licenses and Syllabus). Students enrolling on an EASA approved programme will be briefed of the EASA Pt 66 / GCAA requirements and should be aware of and familiar of the EASA Syllabus at all times.
Students will be issued with the relevant extracts of the curriculum manual at the beginning of each module. This is intended to allow students insight into the module learning objectives, methodology of assessment and programme structure. Assessment is conducted at the end of each module in the form of a multiple choice exam and an essay portion required of few of the modules as shown in the table below. All modules are assessed by means of Multiple Choice Questions. In addition, three modules require the student to answer short 20 minute Essay questions. In the case of practical evaluation, the assessment process will be conducted throughout the practical training phase through direct observation or practical testing.
Each multiple choice question is given a choice of **up to 3 answers** (EASA / GCAA requirement). However, only one of them shall be the absolutely correct and expected answer. Questions are designed to be answered in 1 minute and 15 seconds (EASA / GCAA requirement) and students are not permitted to use a calculator or any other mechanical or electronic aids. The pass mark for ALL EASA / GCAA examinations and assessments is 75%.

EASA / GCAA Assessments cannot be compensated. You should be aware of the following EASA Pt 147 /

GCAA rules concerning multi-choice examinations:

Any mock examinations will be conducted under the same rules as a final examination. Whilst the mock is reflective of the scope of the assessment it will not be directly reflective of the content of any Final Module Examination.

You will not be allowed to keep any examination papers and you will not be given any mock examination papers for self-study. Neither will you be able to view the corrected answer sheets after any examination. These requirements are derived from stringent EASA and GCAA regulations in order to protect the integrity of the examination process.

During examinations you will not be able to use any materials outside those which you are given, and these must all be returned at the end of the examination.

No calculators are permitted. (Now is a good time to start practising work without them)

At the time of going to print, the number and type of questions for each module and the time permitted for each examination are determined by Pt 66. However, these are a minima and the ABU DHABI POLYTECHNIC has derived its own examination process that is approved by EASA / GCAA and is shown at the end of this section. Students are notified of any changes should they occur, and students should note that changes will be adopted.

EASA / GCAA Course Re-assessment Policy

Students who are unsuccessful at any EASA / GCAA MCQ or Essay assessment in one calendar year, will be afforded a **maximum of two re-assessments** in each module. Re-assessment in a module can take place no sooner than:

- 30 days **after the last attempt** providing the student is retrained in particular areas of weakness. Attendance at any retraining is mandatory and should the student not achieve 90% of the retraining offered then he/she will be considered to have not been retrained.
- 90 days **after the last attempt** if the student has not been retrained or failed to meet 90% attendance at any retraining offered.
- 12 months after the third attempt at a module examination.

Complete re-assessment of practical tasks (similar to examination) is, in many ways, impractical. To this end any re-assessment will be focused on the student's specific area(s) of failure. All EASA / GCAA re-assessment grades will, with the exception of 'Practical Assessment', be recorded as scored. Any re-assessment during Practical will attract a 'Bare Pass' - 75% mark.

EASA / GCAA Certification Requirements

EASA / GCAA permit the issue of two types of certificate; 'Examinations Only' and 'Full Training Certificate'. The former is awarded at the end of the approved EASA / GCAA course where a student has not achieved 95% overall attendance over the whole training programme or has not successfully completed all approved examinations.

The 'Full Training Certificate' is awarded to students who: passed all modules of training with a minimum of 75% mark, demonstrated at least 95% overall attendance in the programme, and have successfully completed all approved modules with a requisite minimum of 90% attendance in each module.

Table of Required EASA Examination type and time allowed

EASA Module 1- Mathematics: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

EASA Module 2- Physics: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

EASA Module 3- Electrical Fundamentals: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

EASA Module 4- Electronic Fundamentals: B1.1 - 20 multi-choice and 0 essay questions. Time allowed

25 minutes. B2 – 40 multi-choice and 0 essay questions. Time allowed 50 minutes
EASA Module 5- Digital Techniques /Electronic Instrument Systems: B1.1 - 40 multi-choice and 0 essay questions. Time allowed 50 minutes. B2 - 72 multi-choice and 0 essay questions. Time allowed 90 minutes

EASA Module 6- Materials and Hardware: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

EASA Module 7- Maintenance Practices: B1.1 - 80 multi-choice and 2 essay questions. Time allowed 100 minutes plus 40 minutes for essays. B2 - 60 multi-choice and 2 essay questions. Time allowed 75 minutes plus 40 minutes essays.

EASA Module 8- Basic Aerodynamics: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

EASA Module 9- Human factors: 20 multi-choice and 1 essay questions. Time allowed 25 minutes plus 20 minutes for essay.

EASA Module 10- Aviation Legislation: 40 multi-choice and 1 essay questions. Time allowed 50 minutes plus 20 minutes for essay.

EASA Module 11- Aeroplane Aerodynamics, Structures and Systems: 132 multi-choice and 0 essay questions. Time allowed 165 minutes.

EASA Module 13- Aeroplane Aerodynamics, Structures and Systems: 132 multi-choice and 0 essay questions. Time allowed 165 minutes.

EASA Module 14- Turbine Engines: 28 multi-choice and 0 essay questions. Time allowed 35 minutes.

EASA Module 15- Gas Turbine Engine: 92 multi-choice and 0 essay questions. Time allowed 115 minutes.

EASA Module 17- Propeller: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.
Passing grade in all modules and including essay is 75%.

Submission of Assessment Items – Extensions and Penalties

Students are required to submit assessment items by the due date, as advised in the course syllabus. Assessment items submitted after the due date will be subject to a penalty unless an extension of time for submitting the item is approved by the course instructor.

Requests for Extension

Requests for extension of time to submit an assessment item must be made in writing to the course instructor. Where the request is made on medical grounds, an appropriate medical certificate must be submitted.

The request for an extension should be lodged by the due date for the assessment item. A copy of the extension request should be attached to the assessment item when it is submitted.

Penalties for Late Submission

An assessment item submitted after the due date, without an approved extension, will be penalized. The standard penalty is the reduction of the mark allocated to the assessment item by 10% of the maximum mark applicable for the assessment item, for each day or part day that the item is late. Weekends count as one day in determining the penalty. Assessment items submitted more than five days after the due date are awarded zero marks.

The course instructor may vary provisions provided that any penalties to be imposed for late submission are approved by the Academic Affairs Committee in the context of approving the course syllabus and are conveyed to the student as part of the course syllabus.

Deferred Assessment

Students may apply for deferred assessment if they were prevented from performing an assessment item, such as an examination, paper, presentation, or other assessment activity scheduled for a particular date. The following would generally be considered acceptable grounds to approve a deferred assessment:

- On the grounds of illness
- Accident
- Temporary disability
- Bereavement
- Sporting or cultural commitment at state, national or international representative level

Students applying for a deferred examination for this reason may also apply for an alternate sitting or other compassionate circumstances (for example, death of a family member or close relative, serious illness of a family member or close relative, involvement in an accident where this does not involve injury, significant and unexpected employment problems or pressures, significant relationship problems).

Approval to sit a deferred examination will not be granted where students could reasonably have been expected to avoid the circumstances of missing or performing poorly in an examination. The following would generally be considered unacceptable grounds to approve a deferred examination:

- Misreading an examination timetable
- Submitting applications after the three-day deadline
- Planning holiday arrangements, including for international travel (Booking a plane ticket prior to the end of semester examination period is not considered an adequate reason for a deferred examination.)
- Attending sporting or cultural commitments, other than at state, national, or international representative level

Applications may be rejected if there is reason to believe that a student is seeking to achieve an unfair advantage through deferred assessment. This judgment may be based on the particular circumstances of the application together with the student's academic record and history of deferred examination applications.

Requests for deferred assessment must be made on the form provided for this purpose and accompanied by appropriate documentary evidence. Requests for deferred assessment for an examination or other assessment items must be lodged with the instructor no later than three working days after the date of the examination or other pertinent date.

An application for deferred assessment shall be considered by the course instructor who approves or rejects the application. The course instructor notifies the chair of the Academic Affairs Committee of the outcome of the deferred assessment application.

Where the course instructor grants a student deferred assessment, this normally takes the form of a replacement assessment item or examination, in which case, the replacement assessment item should resemble as closely as possible the original assessment item or examination and should carry the same percentage of total weighting for the course.

In exceptional cases, the Academic Affairs Committee may respond to an application for deferred assessment by giving special consideration through one or more of the actions previously described.

A student who is granted deferred assessment in a course is eligible for the full range of grades available for that course.

Students applying for deferred assessment or special consideration on medical grounds must submit a medical certificate, completed by a registered medical or dental practitioner stating:

- The date on which the practitioner examined the student
- The severity and duration of the complaint
- The practitioner's opinion of the effect of the complaint on the student's ability to undertake the assessment item

A statement that the student was "not fit for duty" or was suffering from "a medical condition" will not be accepted unless the information required above is included.

Students applying for special consideration, extension or deferred assessment on other grounds must submit suitable documentary evidence, such as a bereavement notice, letter from employer, practitioner or professional, statutory declaration, or copy of accident report.

Students who feel that their case for special consideration, extension or deferred assessment has been wrongly dismissed by the course instructor or course leader, may appeal in writing against that decision to the Chief Academic Officer. The decision of the Manager Students and Support Services is final.

Appeals against Award of Grade

Students are encouraged to discuss with teaching staff their performance in assessment items during a course. Where a student believes that an error has been made or an injustice done with respect to the grade awarded for a course, the student may request a review of the grade. This request must:

- Be made in writing on the appropriate form
- State the grounds for the review request
- Be lodged with the Chair of the Academic Affairs Committee within 14 days of the date on which student grades are posted by Abu Dhabi Polytechnic.

All requests for review of grade shall be dealt with by the course instructor. Students will be notified of the outcome of the requested review of grade by the course instructor who will forward the recommendation back to the Academic Affairs Committee. The Grade Appeal Form for the course instructors can be obtained from their offices.

A student who is dissatisfied with the outcome of the review of grade may lodge a formal appeal to the Abu Dhabi Polytechnic Appeals Committee (refer to Policy on Student Grievances and Appeals).

Disposal of Assessment Material

Course instructors are required to retain all uncollected assignments, portfolios, and other assessment materials that are not included in the course files for a minimum of two years from the date of issue of results. At the completion of the two-year period, course instructors may destroy all assessment material that are not included in the course files except that material that relates to appeals that have not yet been finally determined.

Responsibility of Course Instructors

Course instructors are responsible for conveying to students clear advice about the aims and objectives of the course, the assessment requirements, the relationship between the assessment methods and the expected learning outcomes, the criteria against which individual assessment items are judged and their relative weight.

Course instructors are required to provide feedback to students on their performance in assessment items conducted during the semester. They should give guidance to students and comment on work presented

for assessment during the semester by written comments or other suitable means. Instructors should be prepared to discuss with students their performance in an examination.

Responsibility of the Academic Affairs Committee

The Academic Affairs Committee is responsible for implementing curricular policies of Abu Dhabi Polytechnic. This includes responsibility for dealing with individual student cases, monitoring results, and providing advice on student achievement.

The Academic Affairs Committee is responsible for determining final grades through scrutinizing grade recommendations from course instructors to ensure comparability of standards and consistency with Abu Dhabi Polytechnic policy; and, consulting relevant course instructors regarding any queries concerning their recommended grades.

The Academic Affairs Committee is also responsible for:

- Determining the classification to be awarded to students who have satisfied the requirements for diploma within the Abu Dhabi Polytechnic
- Approving the award of supplementary assessment
- Determining the outcome of applications from students for special consideration and deferred assessment
- Dealing with allegations of cheating and plagiarism as provided for in the policy on academic misconduct
- Recommending to the Awards Committee candidates for any academic prizes

The Academic Affairs Committee and the Assessment Committee are responsible for:

- Monitoring the outcome of assessment processes, identifying courses in which the outcomes are unsatisfactory, and providing advice to the instructors on actions to improve assessment outcomes.
- Providing advice to the Executive Committee on the basis of assessment performance indicators about the need to review programme structure and contributions of courses to a programme.
- Providing advice to the division heads or course leaders in relation to the review of student progress within programmes or courses.

The Academic Affairs Committee may modify the grades recommended by the course instructor. Where such modification is made on the basis of academic judgment, the course instructor will be consulted.

The functions of the Academic Affairs Committee may be carried out executively by the chair.

The chair of the Academic Affairs Committee is responsible for determining appeals from students against decisions in response to applications for special consideration and deferred assessment.

Supplementary Assessment

The Abu Dhabi Polytechnic Academic Affairs Committee may, at its discretion, grant supplementary assessment to any student with a grade of Fail whose overall performance in the course justifies it. The purpose of supplementary assessment is to provide the students with additional time for private study followed by the opportunity to demonstrate that the criteria for passing the course have been met.

The Abu Dhabi Polytechnic Academic Affairs Committee may, at its discretion, grant supplementary assessment where the student has failed the last course required to complete the requirements of the degree. To be offered a supplementary assessment under this provision, the student must have attempted all assessment items and attended any examination associated with the course and must apply to the Chair of the Abu Dhabi Polytechnic Academic Affairs Committee for the supplementary assessment within two weeks of the release of examination results.

A student will not be awarded a grade higher than “P” meaning "pass" for a course in which supplementary assessment is granted. A P grade replaces the F grade but does not count towards the calculation of the grade point average.

A student is allowed only one attempt at each supplementary assessment item. As a general rule, supplementary examinations are held in the designated supplementary examination periods as advised on Abu Dhabi Polytechnic’s academic calendar. Students who feel that their case for Special Consideration, Extension, or Deferred Assessment has been wrongly dismissed by the course instructor may appeal in writing against that decision to the Abu Dhabi Polytechnic Director or chair of the Academic Affairs Committee. The decision of the Abu Dhabi Polytechnic Director is final.

Missing an Examination

Students who miss an exam and present a legitimate reason shall be given an “incomplete” grade. Such students must apply for a deferred exam stating the reason with evidence for missing the exam. The application is reviewed by the Division Head and recommendation forwarded to the Abu Dhabi Polytechnic Director. If a deferred exam is announced, students shall be requested to take the make-up exam in the supplementary deferred period as announced in the academic calendar or agreed upon with the course instructor. Students who miss an exam and do not present a legitimate reason can be given a score of “zero” for the exam.

Grading and Results

During the semester, course instructors communicate their evaluations of individual assessment items to students with reference to the criteria against which performance has been assessed. A grade is awarded by the course instructor that signifies the student's overall performance in the course. Students' results in courses are recorded using the grades shown in Table 1. The description that accompanies each grade is given as a guideline to assist comparability across Abu Dhabi Polytechnic, but these descriptions must be interpreted within the context of each course.

Grade	Value
A or A+	4
B+	3.3
B	3
C+	2.3
C	2
D+	1.3
D	1
F	0
FA (fail due to absence)	0
WF (withdraw after deadline)	0
P (pass)	Non-impacting

NP (not pass)	Non-impacting
I (incomplete)	Non-impacting
W (withdraw)	Non-impacting
T (transfer credit)	Non-impacting

Table 1.Letter grades and their value in the calculation of grade point average (GPA).

The cumulative grade point average (cGPA) is calculated by adding the numerical value of each course grade multiplied by its credit hours for accumulated semesters and dividing the total over the total credit hours for all semesters. Courses in which a grade of P, NP, I, W, or T are recorded do not impact the cumulative GPA, i.e., these courses are not included in the calculation of the cumulative GPA.

Failed Courses and Remedial Action

Due to the prescribed nature of the curricula of many programs and the critical nature of their occupation, students cannot graduate if they have failed a course. Students who have failed a course need to take remedial action to pass the course or they will be expelled from Abu Dhabi Polytechnic. Remedial action can take two forms. First, the student can take supplementary lessons and arrange with their course instructor for reassessment, such as taking examinations, or submitting homework or special projects. Once they pass the reassessment, their grade will change from an F to a D. Second, the student can retake the course at their next opportunity. A student who retakes a course will have their old grade expunged and they will receive the new grade.

5. Policy on Academic Misconduct

Introduction

Students must conduct their studies at Abu Dhabi Polytechnic honestly, ethically, and in accordance with accepted standards of academic conduct. Any form of academic conduct which is contrary to these standards is academic misconduct, for which Abu Dhabi Polytechnic may penalize a student.

Specifically it is academic misconduct for a student to:

- Present copied, falsified, or improperly obtained data as if it were the result of laboratory work, field trips, or other investigatory work
- Include in the student's individual work material which is the result of significant assistance from another person if that assistance was unacceptable according to the instructions or guidelines for that work
- Assist another student in the presentation of that student's individual work in a way that is unacceptable according to the instructions or guidelines for that work
- Cheat
- Plagiarize (knowingly presenting the work or property of another person as if it were one's own)

Plagiarism is defined as the act of deliberately presenting another person's work as your own without acknowledgement. A student should therefore ensure that they acknowledge and appropriately reference all sources of information presented in their homework, presentations, or projects. Students are expected to ask their teachers if there are any questions regarding what is or is not considered plagiarism.

Plagiarism is easily detected by electronic plagiarism detection tools. Experienced teachers are ever vigilant to this activity. Both cheating and plagiarism can occur in a number of situations:

- In a homework assignment
- As part of an individual or group project assignment, students are to report instances in group work by others
- In an informal assessment activity
- In a formal testing situation
- Using others' words taken from text-based or internet sources.

The consequence of cheating or plagiarizing can result in dismissal from Abu Dhabi Polytechnic.

Examples of Plagiarism include:

- Word for word copying of sentences or paragraphs from one or more sources which are the work or data of other persons (including books, articles, thesis, unpublished works, working papers, seminar and conference papers, internal reports, lecture notes or tapes) without clearly identifying their origin by appropriate referencing.
- Closely paraphrasing sentences or paragraphs from one or more sources without appropriate acknowledgment in the form of a reference to the original work or works.
- Using another person's ideas, work or research data without appropriate acknowledgment.
- Submitting work which has been produced by someone else on the student's behalf as if it were the work of the student.
- Copying computer files in whole or in part without indicating their origin.
- Submitting work which has been wholly or partially derived from another student's work by a process of mechanical transformation. For example, changing variable names in computer programmes.

Programme administrators and course instructors are to provide students with advice concerning accepted standards of academic conduct in the area of the programme or course. They are to give particular attention to conventions on referencing and bibliography; and, the contribution of other students to assessment items which are meant to be the work of an individual student.

Penalties

On determination that academic misconduct has taken place, the penalty which may be imposed on the student is one or more of the following:

- A reduced or nil result for the assessment item affected by the academic misconduct
- A fail grade for the course in which academic misconduct occurred
- Exclusion from the programme; readmission to the programme is at the discretion of the Head of the Division based on consideration of the student's case for readmission.

Where a student has been found guilty of academic misconduct on more than one occasion and has previously been penalized as set out above, the penalty shall normally be exclusion from the programme or expulsion from Abu Dhabi Polytechnic, unless in the opinion of the relevant Academic Review Board there are mitigating circumstances.

Procedures

Making a Complaint of Academic Misconduct

An academic staff member who has reason to believe that a student has committed some form of academic misconduct (this includes receiving a report on student misconduct from a laboratory or teaching assistant and/or an examination invigilator) may take one of the following courses of action:

1. Request the student to attend an interview with the academic staff member to discuss the alleged misconduct. On the basis of the interview, the academic staff member may decide to:
    - Take no further action; or
    - Provide the student with a warning together with advice about what is acceptable academic conduct; or
    - Make a formal complaint of academic misconduct to the Chair of the Academic Affairs Committee by setting out in writing the nature of the alleged misconduct and the evidence in support of the charge.
2. Without an interview, make a formal complaint of academic misconduct to the Chair of the Academic Affairs Committee by setting out in writing the nature of the alleged misconduct and the evidence in support of the charge.

Dealing with a Complaint of Academic Misconduct

On receiving a complaint of academic misconduct against a student, the Chair of the Academic Affairs Committee may seek evidence concerning the matter from other sources. The Chair of the Academic Affairs Committee shall advise the student of the complaint, including a description of the grounds for the complaint and a copy of all the evidence relevant to the matter. Additionally, the Chair of the Academic Affairs Committee may delegate the matter to the student's Division Head.

Before determining the action to be taken concerning a complaint of academic misconduct, the Chair of the Academic Affairs Committee must provide the student with the opportunity to respond to the complaint of academic misconduct. The response must be in writing and must be received within fourteen days of the receipt of notification of the complaint.

Having considered the complaint of academic misconduct in the light of the evidence and the student's response, the Chair of the Academic Affairs Committee may take one of the following actions:

- Dismiss the complaint of academic misconduct. In this case no documentation concerning the complaint shall be placed on file.
- Provide the student with a warning together with advice about what is acceptable academic conduct.
- Where satisfied that academic misconduct has occurred, the Chair of the Academic Affairs Committee may impose a penalty as set out in the Penalties section.

- Where further investigation is needed to establish the facts of the case, the Chair may refer the matter to a meeting of the relevant Academic Review Board for a formal hearing.

In each case, the student shall be informed in writing of the decision of the Chair of the Academic Affairs Committee, including the reasons for the decision.

Dealing with Additional Complaints of Academic Misconduct

During the course of consideration of a complaint of academic misconduct, if an additional complaint of academic misconduct is received, that complaint shall be dealt with fully in terms of the preceding section.

Formal Hearing Concerning Alleged Academic Misconduct

The relevant Academic Review Board (hereafter referred to as the Board) may conduct a formal hearing into an allegation of academic misconduct. The student may attend the hearing or, if the student requests, participate in the hearing through telephone conferencing or similar facility.

If the student declines to attend the hearing (or participate by other means) the hearing shall proceed in the absence of the student.

The student may make a written submission to the hearing.

The student may be accompanied at the hearing by a companion who is a member of Abu Dhabi Polytechnic. The companion is present as a support to the student and is not an advocate or spokesperson for the student. In exceptional cases, for example a student with a disability which affects communication, the Chair may give permission for the companion to speak on behalf of the student.

Neither the student nor any other person participating in the hearing is entitled to be legally represented.

Prior to the hearing, the Board shall provide the student with a copy of (or access to) all written materials and other evidence available to the Board.

The Board may call witnesses to give evidence at a hearing or may receive written statements of evidence. If the Board thinks it appropriate or if the student requests it, the Board may require persons to attend the hearing and answer questions. The student may ask questions of any witnesses in attendance at the hearing.

The student may make submissions to the Board after the evidence of all witnesses has been given. The student's submissions may be oral or in writing.

As an outcome of the hearing, the Board may take one of the following actions:

- Dismiss the complaint of academic misconduct
- Provide the student with a warning together with advice about what is acceptable academic conduct
- Decide that the student is guilty of academic misconduct and impose a penalty as set out in the Penalties section

The student shall be informed in writing of the decision of the Board, including the reasons for the decision.

Recording of Penalty

Where a penalty of exclusion is applied, the Chair of the Academic Affairs Committee shall advise the Registrar for the purpose of recording the decision on the student's academic record. The academic record

will bear the annotation "excluded on (date) for disciplinary reasons."

Appeal

Where any penalty for academic misconduct is imposed as provided for in Penalties section, a student may appeal to the Executive Committee (or an Appeals Committee convened by the Executive Committee) under the provisions of the "Policy on Student Grievances and Appeals."

The student shall be informed of the right of appeal in the correspondence advising of the imposition of a penalty.

Respect for Policies Relating to the Use of Information Technology

All computers on the Abu Dhabi Polytechnic campus are the sole property of the IAT- Abu Dhabi Polytechnic and therefore, can be monitored by staff. Use of IT facility and equipment by students is a privilege and not a right. The use of the internet is for academic purposes only and students are to adhere to accepted standards of ethics and behaviour. The use of IAT's information technology resources to receive or distribute improper or immoral materials is strictly prohibited. Students in violation of such policies will be subject to disciplinary action with penalties ranging from suspension of computer and network privileges, to suspension or dismissal from the Abu Dhabi Polytechnic.

Attendance and Punctuality

Abu Dhabi Polytechnic expects students to take full responsibility for their academic work and progress. Success at Abu Dhabi Polytechnic depends largely on regular class attendance. Absence from instruction/lessons has been shown to be a contributing factor to failure or low academic achievement. Punctuality is mandated by employers, and as employees of IAT or one of its sponsors, it is expected that students adhere to strict attendance policy.
Students experiencing personal difficulties and contributing to poor attendance or punctuality should seek Abu Dhabi Polytechnic counselling support. Attendance is calculated on a per-course, per-module, and an overall course basis.

Students with excessive absence are excluded from formal assessment (final examinations). This exclusion results in failure of the unit assessed. Excessive absence is defined as absence that is greater than 15% of the total number of meetings of the course or module. For EASA related courses, excessive absence is defined as unexcused absence greater than 10%. The table below shows three different absence stages and the consequences of reaching each of them.

Academic Programmes

Per cent	Warning level	Remarks
0%-5%	Written warning	Attendance Notified to Sponsor and Monitored on Daily/Weekly basis
5%-10%	Final written warning	Sponsor Notified for every 1% increase in absence. Possible exclusion from assessment when 10% is reached
≥ 15%	Exclusion from assessment	Sponsor Notified of every unapproved absence up to limit of 15%. Exclusion from assessment and Fail due to Absence (FA) grade.

Students enrolled in EASA approved courses should note that minimum attendance requirements are strictly monitored and subject to audit by EASA. Students on any approved EASA course must demonstrate 95% attendance over the period of the whole course to receive full EASA recognition. Individual modules require a minimum of 90% attendance. Modules are EASA based and are of varying lengths, depending on complexity and content. Each day consists of a maximum of 7 learning periods totalling 35 periods per week. One period is 50 minutes.

EASA Approved Programmes

Per cent	Effect
≥ 5% of overall Approved Course	Student will be issued with an EASA 'Examinations Only' Certificate. Pt 66 Maintenance Experience requirements becomes **5 years** instead of 2 years
≥ 10% of Module	Student will be issued with an EASA 'Examinations Only' Certificate. Pt 66 Maintenance Experience requirements becomes **5 years** instead of 2 years

Absences within the above reflected percentages must be covered under mitigating circumstances. Some examples of acceptable mitigating circumstances are shown below. For absence to be excused on medical grounds, the student must produce a certified medical certificate **on return** to instruction/lessons.

Other reasons for absence must be approved immediately on return to the Institute. Examples of reasons would include:

- *Death of an immediate family member (mother, father, brother, sister, son, daughter or grandparents)*
- *Other reasons at Abu Dhabi Polytechnic Director's discretion. Abu Dhabi Polytechnic Director reserves the right to require documentation upon request*

Students should be aware that examples of absence that are not acceptable are:

- *Late night socialising*
- *Headache/ Slight cold / cough*
- *Speeding / stopped by Police / attendance at Court*
- *Examination nerves/stress*
- *Not enough time to study*
- *Loss of training notes*
- *Loss of electronic data (PC or flash drive failure)*
- *Attendance at a non-First Degree family members wedding / party etc.*
- *Visit to Bank / Insurance Broker etc.*

Students should not arrange medical / banking or other similar appointments during training time. Every effort should be made to arrange such appointments at the end of the day so as to avoid disruption to training. Students who cannot arrange appointments outside of the training day should consult with the training manager. Repeated appointments within the training day will have to be justified by the student concerned, may be investigated and may not be accepted in mitigation.

Lateness for Class

Students who arrive late for class cause considerable disruption to the learning of other students. Student that are late more than five minutes will be recorded as absent.

Lateness for an Assessment

Students are expected to be on time for all types of assessments. Student will be refused entry to the examination room and receive a mark of zero when they are reporting late for an examination. Students enrolled on EASA or GCAA approved modules will not be permitted entry to the exam room once the exam has commenced.

6. Policy on the Submission of Coursework

Definition of "Coursework"

"Coursework" shall be defined as:

> "any work, in any medium, which is not undertaken in an examination room under supervision, but which is submitted by a student for formal assessment during their programme of study."

Examples of coursework include, but are not limited to, reports (formal and informal), case studies, presentations, group work, interviews, in-class tests or quizzes, and role play.

Quizzes formally fall within the definition of coursework, but are governed by separate regulations.

Authorship and the Use of Previously Submitted Material

Regulations to be Followed by Students

Students must cite sources to indicate material that is not their own work. All written coursework must be written by the students themselves and in their own words, except for quotations from published and unpublished sources which shall be clearly indicated and acknowledged as such. Similarly, any non-written coursework must be entirely the student's own work.

Avoidance of Plagiarism

No student shall submit plagiarized work, defined by ABU DHABI POLYTECHNIC as:

• the use, intentional or otherwise, of material whose source is not acknowledged; or

• the direct use of material, referenced or unreferenced, without a clear indication that the material is taken verbatim from its source.

Avoidance of Collusion

No student shall submit work based upon collusion, defined by ABU DHABI POLYTECHNIC as the use by one student, intentional or otherwise, of material produced by one or more other students, without specifying the authorship of that material.

The Normal Avoidance of Material that has been Previously Submitted

A student shall not be permitted to incorporate material that has been submitted by the student or any other person in support of a successful application for a qualification of this or any other education establishment or any other qualification-awarding body, except for the purpose of drawing attention, for reference purposes only, to such material, including calculations or the results of experimental work. Where such material is incorporated, the fact shall be recorded together with the title of the thesis or other work, the date of the award of the qualification and the name of the institution or other qualification awarding body making the award.

Guidance to be Provided by Departments

All Sections are expected to provide guidance to students specifying, in the context of their subjects, that:

• quotations from published and unpublished sources must be indicated and acknowledged clearly;

• web-based materials must not be directly downloaded into an assignment and must be referenced fully like any other source material;

• students must not incorporate materials/assignments purchased or acquired from internet sites or commissioned from sources which write assignments for payment (paper-mill sites);

• paraphrasing of material from others must be referenced clearly;

• students should not normally incorporate materials previously submitted at this or any other institution towards the completion of an award, and any such inclusion must have been approved by a member of academic staff, and be referenced fully;

• sources of illustrations, photographs maps and statistics must be acknowledged clearly;

• (unless students have been instructed to produce a group assignment), students must produce work

which is uniquely their own;
• where work is done as part of a group, the submission sheet must include a list of all students who have contributed to this work;
• reference to appropriate sources of information on plagiarism and good practice in the production of assignments.

Submission Dates and Extensions

Publication of Submission Dates

All course instructors should clearly publish the submission dates for all coursework assignments; and, the procedures by which coursework must be submitted.

The submission dates and procedures should normally be published no later than the first teaching week for the course.

Granting of Extensions
The granting of extensions is at the discretion of the relevant instructor.

Any student who believes that they have genuine grounds for submitting coursework later than the published submission date should, before the published submission date, seek an extension from the course instructor. Where a student does not seek an extension until on or after the published submission date, the request will only be granted by the course instructor, in addition to there being genuine grounds for submitting the work after the published deadline, there are also genuine grounds to explain the student's failure to seek an extension earlier.

Extended submission deadlines should normally allow for work to be marked before the deadline for the submission of grades.

All instructors should establish a formal mechanism for recording extensions granted, so that an agreed record exists, and should operate a formal process for recording receipt of coursework.

The instructors should make it clear to students that if they are in genuine difficulties they should discuss an extension if appropriate.

Conduct of In-Class Tests

Status
In-class tests are formally regarded as coursework assessments, and are administered by teaching staff.

Extensions
Students who are unable to complete an in-class test at the scheduled time shall be entitled to seek an extension in accordance with the Policy on Special Assessment Arrangements. In exercising their discretion about whether to grant a request, the course instructor shall be entitled to take into account the practicability of arranging a further sitting of a suitable in-class test before the meeting of the relevant examining body. If setting an alternative class test is not practicable, students may be given an alternative type of assessment to undertake by the extended deadline.

Special Arrangements for Students with a Disability, Illness, Injury or Adverse Personal Circumstances

Where it has been agreed that a student is entitled to special arrangements for formal examinations, it shall be assumed that, unless the student is informed in writing to the contrary, such arrangements also apply to In-Class Tests.

7. Policy on the Conduct of Exams

General Regulations

Arrivals and Departures

Arrivals

No student shall be permitted to enter the examination room after the lapse of 10 minutes (20 minutes for Final Exams) from the start of the examination.

No additional time will be allowed to students who arrive at the examination room after the start of the examination. There will be no late entry for GCAA/EASA exams. All GCAA/EASA and other standardized exams require adherence to strict prompt attendance of scheduled exams.

Departures

No student shall be permitted to leave the examination room either in the first 30 minutes from the start of the examination or in the last 15 minutes of the examination.

Students who complete their work during the last fifteen minutes shall remain quietly seated until the proctor announces the end of the examination.

Irrespective of their departure time, students must not (a) leave the examination room until all their written work has been handed in or (b) remove from the examination room any answer books whether used or unused, mathematical tables or other data provided for use or other items of examination stationery except for non-returnable question papers.

Cheating and Other Examples of Academic Misconduct during an Exam

Unless otherwise indicated by the Course Instructor or Invigilators, students are forbidden to:

- Take to their desk in the examination room neither any unauthorized book, manuscript, papers or other articles nor any case, bag or other container in which books, manuscripts, papers or other unauthorized articles can be carried
- Make use of any of the types of material referred to above that were introduced into the examination room by another student
- Obtain, or endeavor to obtain, directly or indirectly, assistance in their work
- Give or endeavor to give, directly or indirectly, assistance to any other student
- Impersonate an examination student
- Allow themselves to be impersonated
- Write notes or rough work on any paper other than the answer books or question papers provided

Where an invigilator suspects a student of academic misconduct, the following procedure shall be followed:

(a) The senior invigilator shall be informed. If the senior invigilator shares the suspicion, they shall remove and retain any unauthorized material; and, report the matter to the course instructor, who shall have power either to exclude the student from the examination room or permit the student to finish the paper.

(b) The student shall be informed before they leave the room that they are not required to admit to a breach of the regulations but they may submit a written statement if they so wish, to be forwarded to the Academic Affairs Committee.

(c) At the conclusion of the examination, the invigilator shall prepare a joint report of all the circumstances, and forward this report to the course instructor. Based on the report, the relevant academic office shall

be responsible for determining the consequences for the student of the regulatory breach. The consequences shall be within the following guidelines:

- For an initial offense, the maximum penalty shall be that the student is awarded a Fail grade, without the right to reassessment, for the module or subject overall, but retains the right to redeem credits by retaking the module subject to the constraint that the overall mark for the retaken module/subject would be capped at Pass.
- For a second or subsequent offence, the maximum penalty shall be that the student's studies are terminated, and the student is required to leave Abu Dhabi Polytechnic.

In the event that an instructor, when marking examination scripts, suspects a student of academic misconduct, they shall consult the invigilators or other instructors. If the course instructor considers that such a breach has occurred, they shall make a full report to the administration and shall warn the student that this report is being made. The course instructor shall inform the student that they are not required to admit a breach of the regulations but they may submit a written statement if they so wish, to be forwarded to the Academic Affairs Committee.

Disruptive Behavior

Students are forbidden to:

- Communicate with each other in the examination room
- Address enquiries to anyone other than an invigilator
- Smoke or consume alcohol in the examination room
- Leave mobile telephones switched on in the examination room
- Place mobile telephones on their desks
- Indulge in any behavior which, in the opinion of the invigilator, may disturb other students
- Indulge in any other form of conduct which may disrupt the smooth progress of an examination

(a) Where an invigilator suspects a student of breaching these regulations the following procedure will be applied:

- The invigilator will normally order the student to discontinue the forbidden behavior. If the student does so, no further action will be taken. If, however, the student, in the same examination, subsequently engages in any of the behaviors listed above. The senior invigilator will order the student to leave the room.
- When the student has left the room, they will be informed by the senior invigilator that a full report will be made to the course instructor.
- The senior invigilator will inform the student that they may submit a written statement if they so wish, to be forwarded to Academic Affairs Committee.
- At the conclusion of the examination, the invigilator will prepare a joint report of all the circumstances, and forward this report to the course instructor, who will treat the matter according to the Policy on Student Discipline.

(b) Notwithstanding clause (a) above, the senior invigilator is empowered to judge that the behavior is sufficiently disruptive to warrant the immediate removal of the student from the examination room. In these circumstances, when the student has left the room, they will be informed by the senior invigilator that a full report will be made to the Academic Affairs Committee.

- The senior invigilator will inform the student that they may submit a written statement if they so wish, to be forwarded to the course instructor.
- At the conclusion of the examination, the invigilators shall prepare a joint report of all the circumstances, and forward this report to the Student Affairs Committee, who will treat the matter according to the Policy on Student Discipline.

Illness during an Examination

Inability to Complete an Examination

In cases where a student complains of feeling unwell in a scheduled room, leaves the examination, and is

unable to return to complete the examination, they will be required to submit a medical certificate to the instructor, normally within three working days.

The invigilator should record the circumstances surrounding the student's withdrawal from the examination on the front cover of the examination book, and the internal examiner responsible for marking the script shall inform the course instructor.

The course instructor shall be entitled to determine either that the student should be treated in the same way as a student who was absent from the examination, or that the student should be awarded a mark based on the work that had been completed.

Open Book Examinations

For all "Open Book" examinations, the relevant Head of Programme or representative shall ensure that the students are informed, in writing, of the following:

- The title of the "Open Book" examination paper
- The precise nature of the material which can be taken into the examination
- That the material is for the students' personal use
- That, apart from the students being allowed the use of certain specified material, the examination will be conducted in all other respects in accordance with the normal rules governing the conduct of examinations

Use of Electronic Calculators in Examinations

Students are permitted to use their own "pocket size" electronic calculators, provided that they are silent in operation, and unless expressly disallowed from using them for specific examinations. Abu Dhabi Polytechnic shall not be responsible for the provision of (i) calculators in the event of a breakdown, (ii) power for their operation, or (iii) spare batteries. Approved calculators for use in Aviation Programmes are: Casio models **FX83, FX85** Series (with any suffix), **FX115 MS**, **FX570 ES** and the **FX 991 ES**. Programmable calculators or smart devices are strictly forbidden from all exam rooms.

The Role of Academic Staff in the Running of Examinations

A member of academic staff (preferably the course instructor) who is knowledgeable about the contents of the examination should arrive in the examination room at least 15 minutes before the scheduled start of the examination and remains for the first 15 minutes to:

- Ensure that the correct examination is being taken, and check the examination for any errors;
- Inform the proctors of any amendments to be made;
- Ensure that, where required, specialized stationery and supporting papers are provided;
- Answer any queries about the question paper, and, before leaving the examination room, inform an invigilator where they may be contacted in the Abu Dhabi Polytechnic for the duration of the examination, in the event of questions from a student on the examination.

It is desirable that the course instructor be able to be contacted by telephone throughout the duration of the examination.

In a team teaching situation where different instructors contribute to assessment in a course, the Course Leader is responsible for ensuring that appropriate moderation processes are in place.

Examinations

Final Examinations

(a) The last or final examination in a course must be given during scheduled final exams week; exceptions must be approved by the HoP of the course. Designated faculty will administer the final examinations according to the schedule for final examinations as printed in the Schedule of Classes publication.

(b) Students with two final examinations scheduled for the same day may request the instructor of the course to postpone one scheduled examination. Evidence for their request must be verified by the instructor prior to consideration. Faculty will give every consideration to the student's request.

(c) If a student is absent from a scheduled final examination, the notation "X" is assigned. An advance authorization for deferring the taking of a final examination may be given, but only rarely and for serious reasons (e.g., medical or religious). The student must request the deferral in writing in advance of the final exam date and receive permission from the Head of Department. The Director's office must also be notified.

EASA Courses, Final Examinations will take place within one week of completing the particular module and will encompass all the subjects in the syllabi of the module.

Mid-semester (Intermediate) Examinations

Mid semester examinations or intermediate tests are conducted in most courses taken at the Al Ain campus. Absence from mid- semester or other intermediate examinations may, at the discretion of the instructor, require special resit examinations.

Credits and the Semester Hour

One credit or semester hour of credit is defined as one lecture, recitation or class exercise fifty minutes per week for one full semester Two weekly hours of laboratory, demonstration, etc., are equivalent to one lecture hour. Each course offered is designated tutorial hours and these hours scheduled during the semester for students to improve their subject knowledge with the assistance of their teacher. The number in parentheses after a course title listed in the "Course Descriptions" section of this catalog indicates the semester hours of credit of the course.

Class Ranking

Classified students are ranked on the basis of completed quarter hours accepted for credit. Year one students have 1 to 60 quarter credit hours, Year two 61 to 120 quarter credit hours, and year three 121 to 180 quarter credit hours.

Grade Reports

Midterm Grades

All instructors of courses must submit midterm grades for all students at the prescribed time and based on the work done at that point. Students may also access their midterm grades via Abu Dhabi Polytechnic SELF-SERVE Banner. Exceptions are short week's courses that do not issue midterm grades.

Final Grades

Final grades are available for students to access via Abu Dhabi Polytechnic-SELF-SERVE Banner. Students may also request an official copy of their final grades from the office of Student Services. The official copy can be retrieved in person or by mail to the addresses provided by the student.

Grade Point Average (GPA)

The cumulative grade point average (GPA) is determined by dividing the total quality points earned by the total GPA hours attempted. All grades received during a student's enrollment, for which quality points are indicated in the "Grading System" table below, are included in the cumulative GPA. Grades for courses transferred from other institutions are excluded.

8. Academic Standing, Progression, and Exclusion

Introduction

This policy applies to all students undertaking diploma studies. The policy comes into effect once a student has undertaken at least two semester of study.

In order to be deemed to be in good academic standing, a student undertaking diploma studies must achieve a grade of at least a D (60%) in all classes taken and an overall average of a C (cGPA of 2.0) across all study in all semester. There are four progressive levels of academic status:

Good Standing

Students are in Good Standing at Abu Dhabi Polytechnic unless placed on Academic Warning, Academic Probation or Academic Suspension.

Academic Standing of Probation

A student whose cumulative grade point average (cGPA) falls below 2.0 is placed on academic probation for the following semester.

A student who is placed on probation is advised to seek assistance in order to improve their academic performance. Sources of assistance include Abu Dhabi Polytechnic's Learning Resource Center staff, the Counseling Service, Student Support Services, the Tutoring Center, and the academic staff responsible for the programme and courses that the student is undertaking.

Academic Standing of Excluded

A student is eligible for exclusion if the student has been on academic probation for two consecutive semester with a GPA< 2.00. If a student increases the GPA > 2.00 then the student can have the academic probation removed.

Notwithstanding the above provisions, if the student has passed all courses in the most recent semester, the student will not be excluded but will be placed on a further period of probation.

A student may be eligible for exclusion on the basis of failure in one or more designated courses. The designated courses are required to be specified in the programme requirements and advised to students.

At the end of each semester, the Student Services Office will review all students who are eligible for exclusion. A student's Division Head may recommend to the Manager Students and Support Services that a student eligible for exclusion should not be excluded where the head is of the view that exceptional or compassionate circumstances have been the cause of the student's poor academic performance.

The Manager Students and Support Services shall determine all students who are to be excluded from further study on the aforementioned basis and taking into account the recommendations of an Academic Review Board established by the Academic Affairs Committee. Where a student is eligible for exclusion, but is permitted to continue study, the student has an academic status of probation for the following semester and may be required to undertake a specified programme of study.

A student who is excluded is not permitted to attend classes or undertake study in the programme from which they were excluded or in any other programme or to take study on a non-award basis within the Abu Dhabi Polytechnic.

Appeal against Exclusion

A student who is excluded may lodge an appeal against exclusion. Under the Policy on Student Grievances and Appeals, the appeal must be in writing and be lodged with the Academic Affairs Committee and must set out the grounds of the appeal, and be accompanied by supporting documentation where relevant. The appeal must be lodged by the date specified in the notification of exclusion in order for the student to continue to study in the next semester in the event of a successful appeal.

The student will be given the opportunity to present their case with the Manager Students and Support Services and the course instructor; if the student is still dissatisfied the student can lodge an appeal with the Abu Dhabi Polytechnic Appeals Committee. The appeal may be lodged after the specified date up to six months from the date of the exclusion notification, in which case, if the appeal is successful, the student will have necessarily been prevented from studying for at least one semester.

Readmission following Exclusion

A student who is excluded may apply for re-admission to the programme from which they were excluded or for admission into a new programme. An application for readmission following exclusion or for admission to a new programme is not automatically approved.

An application for readmission, following exclusion, or for admission into a new programme will be assessed by the course instructor. The course instructor will consider factors such as changed circumstances, academic and/or vocational performance since exclusion, maturity and motivation in order to be satisfied that the person concerned has a reasonable chance of success in the programme. All recommendations are to be approved by the Chief Academic Officer.

A student who has been excluded may not recommence study until at least one standard semester has elapsed since exclusion was imposed.

An application for readmission or for admission into a new programme should be made at least three months prior to the commencement of the semester in which the student seeks to resume study.

Where an application for readmission following exclusion is not approved, the student may lodge an appeal. Under the Policy on Student Grievances and Appeals, such an appeal is treated as an appeal against an admission decision.

Warning to Students at Risk

Abu Dhabi Polytechnic may provide a warning to students whose performance in a semester is such that their performance is at a level inappropriate to good academic standing, the student is at risk of being given an academic standing of probation or excluded if their academic performance fails to improve. The record of the warning is not reported in the student's official academic transcript.

9. Counselling Policy

Introduction

The Abu Dhabi Polytechnic is committed to supporting and promoting all aspects of student well-being, and the counseling service is one way in which the Abu Dhabi Polytechnic seeks to enable all students to develop their full potential.

Purpose of Policy

The purpose of this policy is:

- To document the counseling provision at Abu Dhabi Polytechnic for students.
- To provide guidance to students and explain the circumstances and situations where counseling may be appropriate.
- To identify and provide conditions that will facilitate the well-being and personal development of students.
- To provide counseling service as an integral support mechanism for students' learning.
- To enable individual students to be more effective in their lives within and outside Abu Dhabi Polytechnic.
- To help students make optimum use of the choices facing them in their academic, work, social and personal lives through individual counseling and group work with other students.

The Counseling Process

A student can approach the counselor through any staff member or by themself.

The counselor approaches the student in a non-threatening way and explains to them the benefit from seeing the counselor.

The student should be assured that it is normal to seek help and that counseling is confidential.

The counselor shall conduct initial sessions, give information on confidentially.

Initial sessions will be used to agree with the students the recording of statistical data, the keeping of working notes and the return of monitoring and feedback sheets.

Initial sessions will be used to make a counseling contract with the student, to allay students' fears, clarify the student's understanding of counseling, and explain counselor's method of counseling.

All forms associated with the counseling process will be securely kept and computerized and data is accessed only through the counselor and protected by a password known only to the counselor.

Counseling sessions will be conducted in a confidential and respectful manner.

Any break in confidence will be minimized by restricting information to only those people who can provide the required help.

Students will be clearly informed at the onset of the counseling contract what conditions could lead to confidentiality being broken.

In order to obtain support for students, therefore, there may be a break in confidence in the following exceptional circumstances. The student's consent will be obtained wherever possible (and the issue explored beforehand with the students unless time/circumstances do not permit) e.g. of such situations are:

- The student gives the counselor good grounds for believing that they will cause serious physical

harm to others or themselves.

- The counselor has reason to believe that a student is in possession of or supplying illegal drugs on Abu Dhabi Polytechnic premises.
- A student has a severe alcohol/drug problem which is interfering with their Abu Dhabi Polytechnic work.

Monitoring

A report of the Counseling Service will be presented to the Abu Dhabi Polytechnic Director annually through the Chief Academic Officer.

Record Keeping

All counseling reports and interactions between the counselor and student are stored on the counselor's computer. No information is recorded on any central student records. The data will be kept for three years and disposed of in an appropriate method.

10. Academic Programmes at Abu Dhabi Polytechnic

Career-Based Curriculum
Abu Dhabi Polytechnic offers a structured academic and training path to a career by providing students with an education that cultivates multiple awards. Al Ain graduates earn academic awards for their achievements as well as professional licenses. Academic awards provide students a continued education pathway, while a professional license gives the tools for practicing what they have learned in real world situations. Students enrolled in engineering or maintenance higher diploma programmes, 3rd year students, have the choice to select from different specializations, avionics, aeromechanical, air traffic management, etc.

Basic Instructions
All Abu Dhabi Polytechnic students in all programmes share a common educational experience. This common educational experience is of duration of three complete semesters. During this common experience students with different backgrounds undergo the same initial education, training and assessment. This period of instruction is used to select students' pathways based on their performance. Upon fulfilling the entry requirements, students are enrolled in Basic Instructions (BI) that amounts for two academic semesters At the end of the second BI semester, an academic review is conducted to assess and direct each of the students onto the next stage of training.
The academic review assessment is based on the student's successes and achievements during the BI period. all students continue to a third BI semester that will decide a final pathway of training leading to an academic diploma, higher diploma, applied bachelor and/or a professional license. Student with a GPA for the three BI semesters exceeding 3.00 are given the opportunity to continue on the Higher Diploma Programme in Aircraft Engineering Technology and qualifying for GCAA/ EASA Cat B1 or B2 licenses. Students with a GPA between 2.00 and 3.00 for the three BI semesters are set on the Diploma in Aircraft Maintenance Technology programme and can qualify for GCAA/EASA's Cat A license with an opportunity to continue a Higher Diploma with GCAA/EASA Cat B option.

	GPA at end of 2nd semester	**Progress towards Academic Qualification**	**Progress towards Professional Qualification**
1	Less than 2.00 at end of 2nd semester	Certificate-GSE - MoHESR	None
2	Between 2.00 and 3.00 at end of semester	Diploma/Higher Diploma in AM	GCAA-CAR/EASA part 66 Cat A
3	Above 3.00 with recommendations	Higher Diploma AET	GCAA-CAR/EASA part 66 Cat B

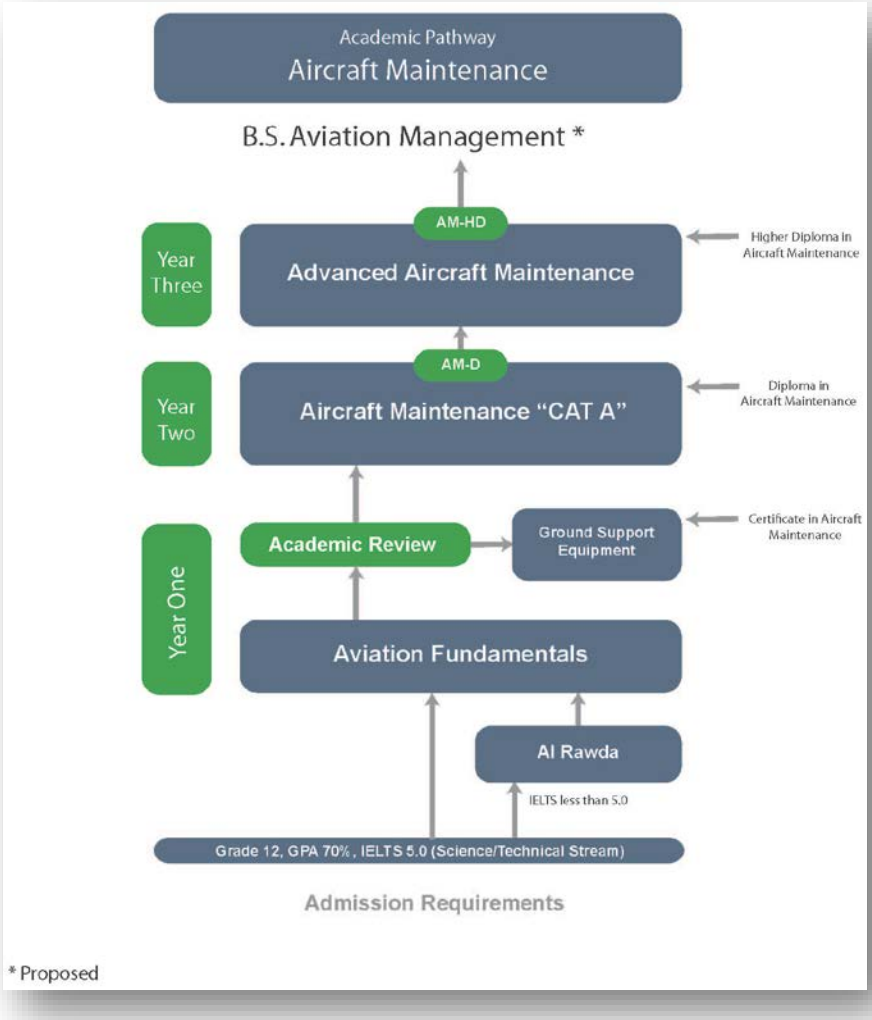
The Aviation Programmes

Aircraft Maintenance-Diploma and Higher Diploma Programmes

Students enrolled in Aircraft Maintenance (AM) have the option of pursing a two years Diploma or a three years Higher Diploma programme. The Diploma programme also leads to an EASA Certificate awarded to those completing successfully the CAT 'A' programme. Following the completion of EASA's CAT 'A' programme, a one year maintenance experience is required by the student to become eligible for an EASA

CAT 'A' or a "Maintenance Certifying Mechanic" license. This license is mandatory for all aircraft mechanics working on civil aviation aircraft in approved maintenance facilities worldwide.

After finishing the Diploma programme, students have the option to continue their training/education for one more year to earn a Higher Diploma in aircraft maintenance. The Higher Diploma programme encompasses advanced topics in maintenance technologies taught at the EASA CAT 'B' level in one of two concentration/specialization areas, Aeromechanical and Avionics. Successful completion of this one year stage leads to the award of a Higher Diploma in Aircraft Maintenance. In addition, a student has the opportunity to pursue an EASA CAT 'B' License.



AVIATION DIPLOMA PROGRAMME GOALS

The goals of the Diploma programme are to:

- Provide quality technical education based on national and international standards.
- Prepare students to engage Aviation related Technologies.
- Prepare students for employment as Aircraft Maintenance Technician.
- Provide a route to earn further education in Aircraft Maintenance Technologies and other related fields.
- Provide a combination of academic study and work based learning which will equip students with the knowledge and practical skills necessary for them to become proficient Aircraft Maintenance Technicians.

- Prepare students for continuous personal and professional development.

Programme Structure

The programme is delivered on full-time basis over two (Diploma) and three (Higher Diploma) years. Each academic year consists of four quarters (Autumn, Winter, Spring and Summer.) Students are engaged in the class room and in the workshops/laboratories for 7 periods per day for a total of 35 hours a week. This lengthy day of training is necessary in order to satisfy EASA and GCAA training time requirements that are embedded in the academic programme.

Generally courses are delivered by a combination of instructional lectures, practical workshops/laboratories, and tutorials; workshop and work-based activities, such as internships, integrate different disciplines and provide an opportunity to apply the knowledge gained in lectures on realistic work related activities or in the workplace. In addition, maintenance experience elements of courses are conducted in conjunction with an EASA / GCAA Part 145 organization or a licensed repair and overhaul facility. The duration of this portion of the training falls within the 800 hours required by EASA/GCAA part 147 approved embedded programme.

Career Opportunities

There has been exponential growth in the air transport industry and the need for aircraft maintenance technicians and engineers. As a result, the employment opportunities for Aircraft Maintenance graduates are excellent, especially those who complete the Diploma or Higher Diploma in Aircraft Maintenance Technologies and at an EASA / GCAA 147 approved maintenance training organization.

Programme Layout

The Diploma and Higher Diploma programmes are developed to fit the newly adopted quarter calendar system. The duration of the Diploma programme is two years and the Higher Diploma can be earned one year after the Diploma programme is completed. The following is a programme layout of the three years constituting both degree programmes.

DIPLOMA/HIGHER DIPLOMA PROGRAM - AIRCRAFT MAINTENANCE

First Year-common year for D and HD

Qtr-1	Qtr-2	Qtr-3	Qtr-4
MATH1011 6 Mathematics - 1	MATH 1012 6 Mathematics -2	ENGL 1003 5 Intro. To Aviation	ENGL 1004 3 Technical Writing
ENGL 1001 5 English Composition -I	ENGL 1002 5 English Composition -II	AVSC 1093 7 Human Factors	AME 1064 11 MAT. Hardware -I
PHY 1021 7 Physics -I	PHY 1022 7 Physics -II	AVSC 1103 8 Aviation Legislation	AME 1074 11 MAT. Hardware -II
AME 1001 9 Workshop/Orientation	AVN 1232 15 Electrical Engg. - I	AVN 1233 9 Electrical Engg. - II	AVN 1404 5 Electronics
AVSC 1001 8 IT Applications	ISL 1000 2 Islamic Studies	PHY 1033 6 Engineering Mechanics	

Second Year- common year for D and HD

Qtr-1	Qtr-2	Qtr-3	Qtr-4
AME 2081 5 Basic Aerodynamics (8A)	AME 2072 12 Maintenance Practice - II	AME 2003 40 OJT/Internship	AME 2114 13 Air. Struc. & Sys. -II
AVN 2051 13 Fund. Digital Techniques	AME 2112 5 Air. Struc. & Sys. -I		AME 2173 8 Maintenance Practice - III
AME 2071 12 Maintenance Practice - I	AME 2152 8 Turbine Engines		AME 2374 8 Maintenance Practice - IV
AVSC 3411 5 Quality Assurance	AME 2172 5 Propellers		AME 3011 6 Thermodynamics
	ENGL 2004 5 Technical Presentation		

Third Year-HIGHER DIPLOMA Aeromechancial only

Qtr-1	Qtr-2	Qtr-3	Qtr-4
AVN 3043 9 Electronic Comm.	AVN 3252 10 Digital Techniques -I	AME 3252 12 Digital Techniques -II	AME 3274 13 Maintenance Practice - II
AME 3261 12 Materials & Hardware -I	AME 3262 12 Materials & Hardware -II	AME 3273 11 Maintenance Practice - I	AME 3474 12 Propellers
AME 1284 14 Aerodynamics	AME 3213 13 AC Struct. Sys - I	AME 3214 * 12 Air. Struc. & Systems - I	AVSC 3004 * 12 Technology Project Management
		AVNSC 3402* 8 Eng. Business Management	5 Elective

Third Year-HIGHER DIPLOMA Avionics only

Qtr-1	Qtr-2	Qtr-3	Qtr-4
AVN 3043 9 Electronic Comm	AVN 3252 10 Digital Techniques -I	AVM 3253 7 Digital Techniques -II	AME 3274 13 Maintenance Practice - II
AME 3261 12 Materials & Hardware -I	AME 3262 12 Materials & Hardware -II	AME 3273 11 Maintenance Practice - I	AME 3474 10 Propellers (17B)
AME 1284 14 Aerodynamics	AVN 3142 13 PROPS AND FADEC	AME 3402 8 Eng. Business Management	AVSL 3004 5 Technology Project Management
		AVN 3223 * 14 Avionics - I	5 Elective

Assessment of Diploma and Higher Diploma in Aircraft Maintenance

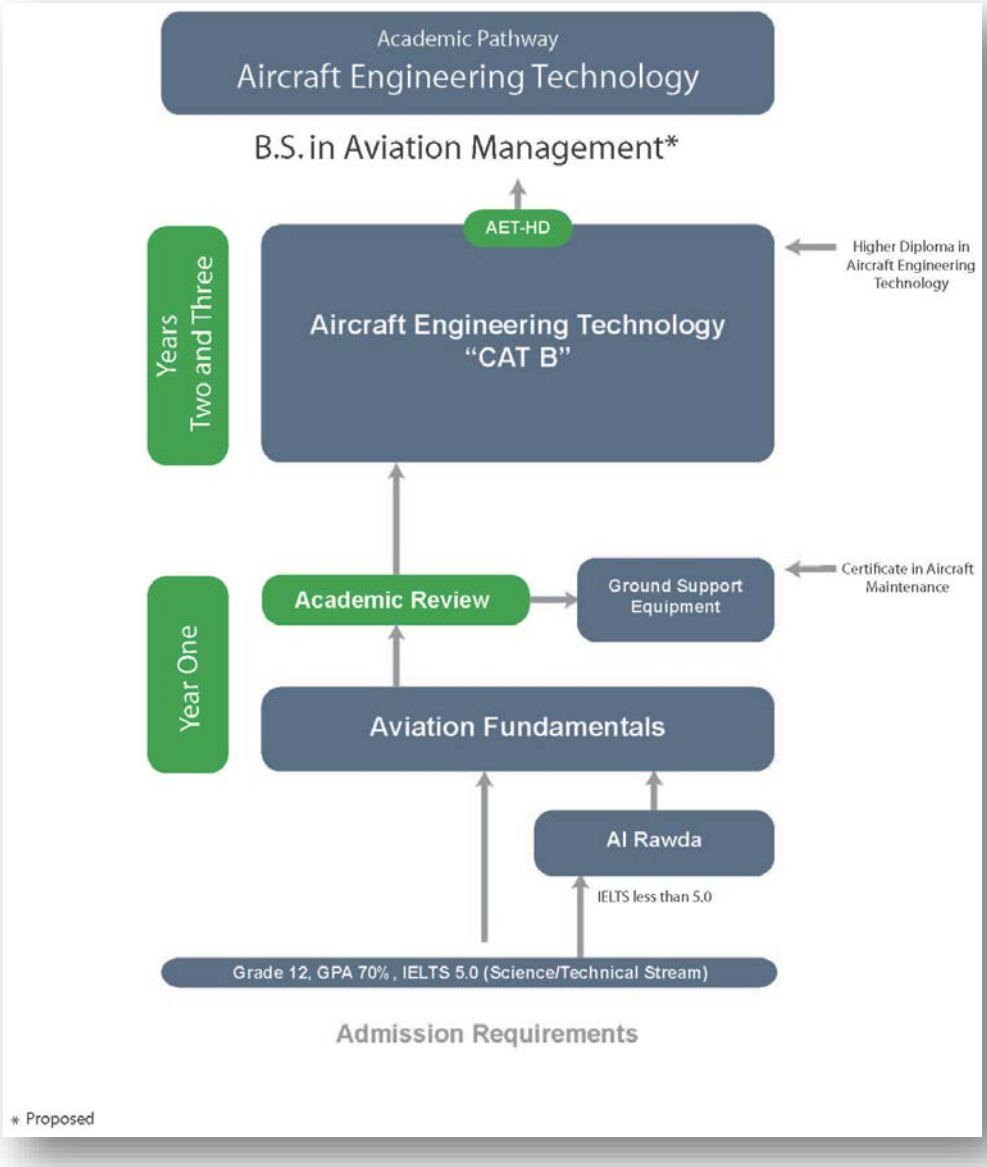
ABU DHABI POLYTECHNIC programmes assessment addresses the theoretical and practical aspects of the programme and work-based learning that are acquired by the students during their study.
The assessment strategy for the purpose of the EASA award is largely limited to achieving 75% (basic pass mark as dictated by EASA) in the theoretical final examination. This is applicable to each individual EASA module and is not aggregated between theory and practice. However, some of the modules do require practical assessment as well, and have a passing mark of 75%.
Assessment for each degree course or module is contained in the Complete Assessment Schedule published and distributed to instructors at the start of each academic year and supplied to students in the Student Handbook.
The programme is intended to satisfy the requirements of an EASA/GCAA approved Category A license, therefore students enrolled of a course being delivered under an EASA/GCAA Part 147 approval must attempt the EASA/GCAA assessment associated with each EASA/GCAA module. The EASA/GCAA assessment comprises a multi-choice question (MCQ) examination paper for each module, four 20 minute essay questions related to EASA/GCAA modules 7, 9 and 10 and practical exercises related to the overall course. The format of each EASA/GCAA assessment is in accordance with EASA/ GCAA Part 66 so as to ensure compliance with EASA/GCAA Part 147 requirements. These are illustrated in the Curriculum Manual.
Student maintained Logbooks form part of the overall assessment plan for the Diploma in Aircraft Engineering Technologies course. Satisfactory completion of logbooks forms part of the EASA / GCAA practical assessment.

EASA / GCAA Part 147 approved maintenance training organizations are approved to set, mark and grade EASA / GCAA Part 66 multi-choice examinations, essay examinations and practical assessments.

There will however, be progressive assessments which are a requirement to be fulfilled by the MoHESR for the award of the Higher Diploma in AET. These are based upon assessments performed in quizzes (20%), intermediate tests (30%), and final examination (50%).

Aircraft Engineering Technology-Higher Diploma Programme

This three years programme leads to the completion of training requirements of an EASA CAT B1.1-Aeromechanical technologies or the EASA CAT B2-Avionics License programme in addition to the completion of the academic requirements of a Higher Diploma in Aircraft Engineering Technology. Having the training requirements for the EASA CAT B programme, two years of industrial experience thereafter will make graduates eligible to apply for an EASA CAT 'B' Maintenance Certifying Technician License. This license is the key for work in civil aviation on commercial aircraft at any recognized or approved maintenance facility worldwide.



The Higher Diploma programme is approved by the Ministry of Higher Education and Scientific Research (MoHESR), U.A.E. since 2011.

EDUCATIONAL AIMS OF THE PROGRAMME

The Aims of the programme are:

- Provide intermediate level courses that fulfill the requirements of higher education, whilst at the same time satisfying the knowledge requirements of the EASA / GCAA Part 66 Category B license syllabi.
- To provide an opportunity for students to obtain an academic award and a vocational qualification from a single course of study (when the Higher Diploma in Aircraft Engineering Technology is delivered by an EASA / GCAA 147 approved organisation), or to complete an academic course that also provides the knowledge base for the vocational qualifications in aircraft maintenance.
- Provide a combination of academic study and work based learning which will equip students with the knowledge and practical skills necessary for them to obtain an EASA / GCAA category B license and become proficient aircraft maintenance engineers.

- To provide students with the opportunity to develop their written and oral communications skills, and prepare them for further study at honors degree level
- To prepare students for employment as licensed aircraft maintenance engineers.
- To prepare students for continuous professional development by encouraging the use of personal development plans and introducing them to professional institutions

PROGRAMME STRUCTURE

The programme is made up of courses that are delivered by a quarter calendar system. The programme is tailored to qualify students for a higher diploma in the aircraft engineering field. The programme requires practical work, on the job training (OJT) and Internship with relevant industries to enhance the learning of students.

The programme provides two distinct pathways, one in mechanical and the other in electronics fields. The mechanical pathway leads to an aeromechanical CAT B 1.1 license and the electronic pathway leads to CAT B 2- Avionics license. Each license is part of the Higher Diploma programme that is accredited by the MOHESR. The programmes are delivered on a full-time basis over three academic years.

To satisfy EASA and GCAA requirements, the programme must provide a minimum of 2400 hours of direct contact. Full details of module sequence, course duration and start and finish dates are issued at the commencement of each course.

CAREER OPPORTUNITIES

There has been exponential growth in the air transport industry and the need for aircraft maintenance engineers. The outcome is an unsatisfied demand of unprecedented proportions for graduate calibre aircraft maintenance engineers.

Over the last 10 years there have been a several reports, including ICAO and governmental papers highlighting the shortage of aircraft maintenance engineers. One, in January 2006 states "The recruitment of Licensed Engineers (Part 66, Category B and above) will become increasingly difficult over the next 3 years. It is clear from other studies that the situation remains the same today.

As a result, the employment opportunities for Aircraft Engineering graduates are excellent, especially those who complete the Diploma in Aircraft Engineering Technologies style course and at an EASA / GCAA 147 approved maintenance training organization.

AIRCRAFT ENGINEERING TECHNOLOGIES
HIGHER DIPLOMA PROGRAM - AEROMECHANICAL

First Year

Qtr-1		Qtr-2		Qtr-3		Qtr-4	
MATH1011	6	MATH 1012	6	ENGL 1003	5	ENGL 1004	5
Mathematics -I		Mathematics -II		Intro. To Aviation		Technical Writing	
ENGL 1001	5	ENGL 1002	5	AVSC 1093	7	AME 1264	8
English Composition -II		English Composition -II		Human Factors		Adv. Materials & Hardware - I	
PHY 1021	7	PHY 1022	7	AVSC 1103	8	AVN 1234	8
Physics I		Physics -II		Aviation Legislation		Electrical Engg. - III	
AME 1001	9	AVN 1232	15	AVN 1233	9	AME 1284	14
Workshop/Orientation		Electrical Engg. - I		Electrical Engg. - II		Aerodynamics	
AVSC 1001	8	ISL 1000	2	PHY 1033	6		
IT Applications		Islamic Studies		Engineering Mechanics			

Second Year

Qtr-1	Qtr-2	Qtr-3	Qtr-4
AME 2261 (7) Adv. MAT & Hardware - II	AME 2272 (10) Adv. Maintenance Practice III	AVN 2053 (6) Digital Techniques I	AME 2254 (17) Turbine Engines I
AME 2271 (14) Adv. Maintenance Practice I	AME 2472 (10) Adv. Maintenance Practice IV	AVN 2253 (10) Digital Techniques II	AME 2214 (13) Air. Struc. & Systems I
AME 2471 (14) Adv. Maintenance Practice II	AME 2672 (10) Adv. Maintenance Practice V	AVN 2043 (14) Electronics I	ENGL 2004 (5) Technical Presentation
	AME 2872 (10) Adv. Maintenance Practice VI	(5) Elective	

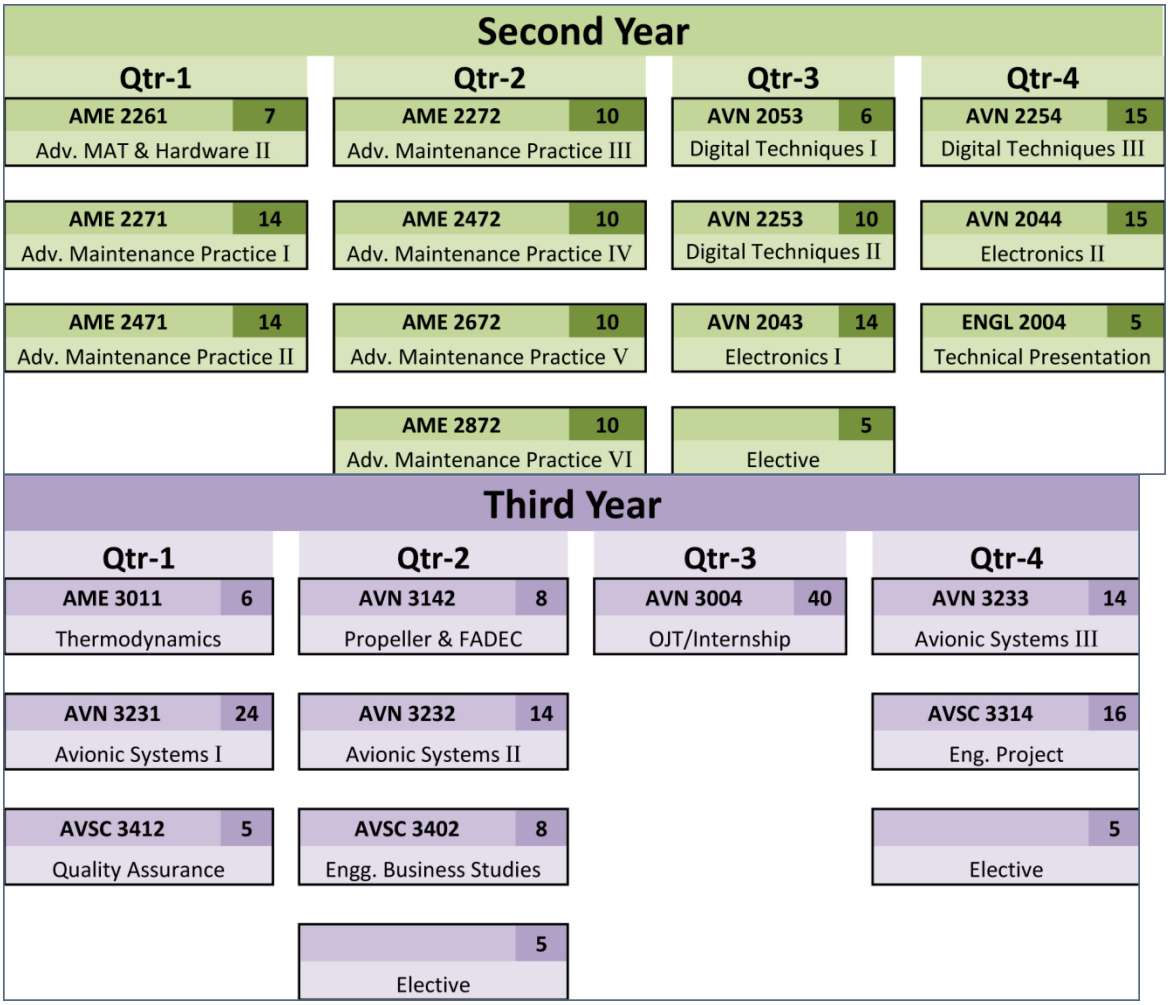
Third Year

Qtr-1	Qtr-2	Qtr-3	Qtr-4
AME 3011 (6) Thermodynamics	AME 3212 (12) A/C Structure & Systems III	AME 3004 (40) OJT/Internship	AME 3214 (14) A/C Structure & Systems IV
AME 3251 (11) Turbine Engines II	AME 3272 (10) Propellers		AVSC 3313 (16) Eng. Project
AVSC 3412 (5) Quality Assurance	AVSC 3402 (8) Engg. Business Studies		(5) Elective
AME 3211 (13) Air. Struc. & Systems II	(5) Elective		

AIRCRAFT ENGINEERING TECHNOLOGIES
HIGHER DIPLOMA PROGRAM - AVIONICS

First Year

Qtr-1	Qtr-2	Qtr-3	Qtr-4
MATH1011 (6) Mathematics – I	MATH 1012 (6) Mathematics -I	ENGL 1003 (5) Intro. To Aviation	ENGL 1004 (5) Technical Writing
ENGL 1001 (5) English Composition -I	ENGL 1002 (5) English Composition -II	AVSC 1093 (7) Human Factors (9B)	AME 1264 (8) Adv. Materials & Hardware - I
PHY 1021 (7) Physics I	PHY 1022 (7) Physics -II	AVSC 1103 (8) Aviation Legislation	AVN 1234 (8) Electrical Engg. - III
AME 1001 (9) Workshop/Orientation	AVN 1232 (15) Electrical Engg. - I	AVN 1233 (9) Electrical Engg. - II	AME 1284 (14) Adv. Aerodynamics
AVSC 1001 (8) IT Applications	ISL 1000 (2) Islamic Studies	PHY 1033 (6) Engineering Mechanics	



Assessment of Higher Diploma in Aircraft Engineering Technologies

The assessment strategy is designed to assess the theoretical aspects of the course and the workshop and work-based learning that are acquired by the students during the course of study. The method of assessment is related to the learning outcome being assessed, and therefore in any one module a range of assessment methods may be used.

The assessment strategy for the purpose of the GCAA/EASA award is largely limited to achieving 75% (basic pass mark as dictated by the GCAA/EASA) in the theoretical final examination. This is applicable to each individual module and cannot be aggregated between theory and practice. However, some of the modules do require practical assessment mandatorily.

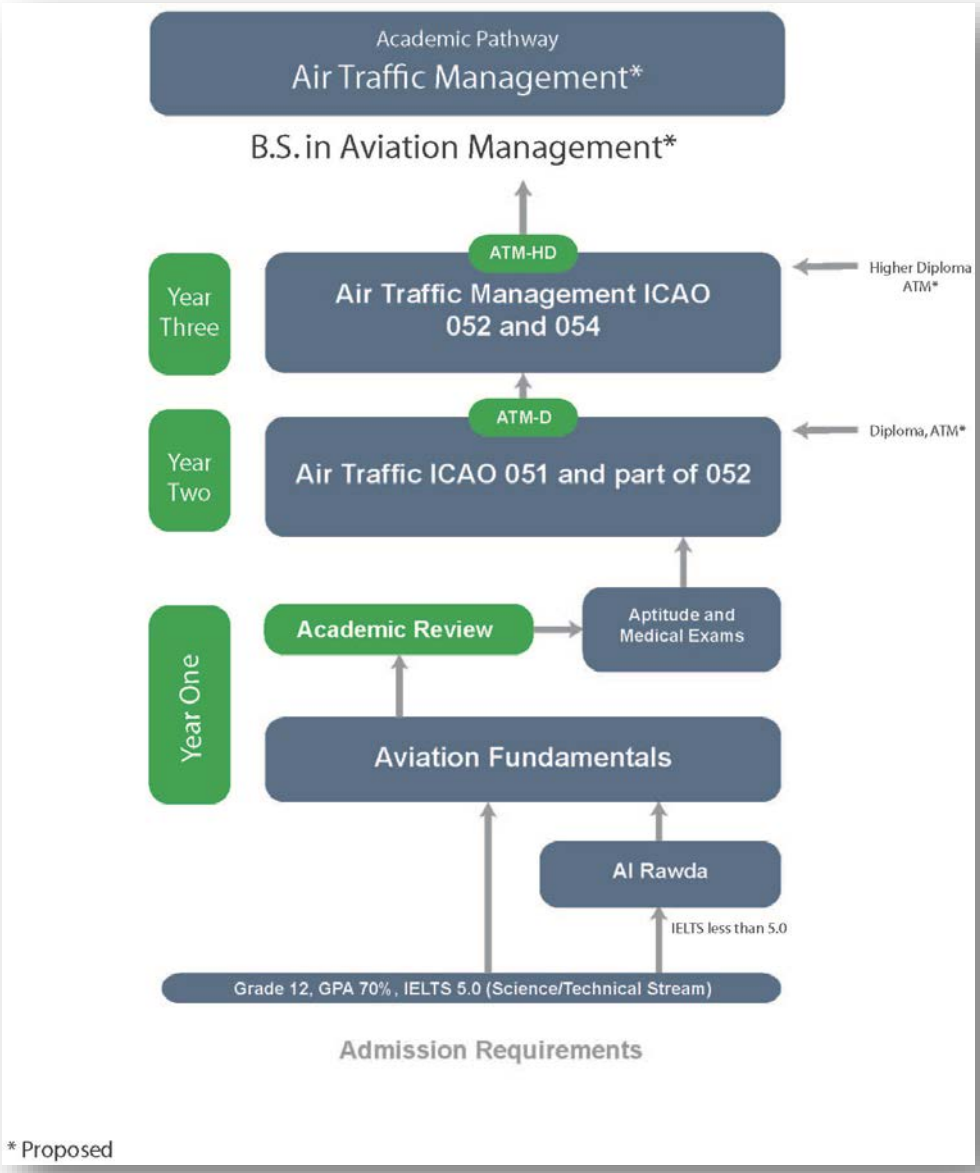
There will however, be progressive assessments which are a requirement to be fulfilled by the MoHESR for the award of the Higher Diploma in AET. These are based upon assessments performed in quizzes (20%), intermediate tests (30%), and final examination (50%). An element of record keeping is also induced into the course assessment strategy. Thus, the upkeep of a portfolio of records of research, assignments and other tasks given, helps the students inculcate the good practice of record keeping which is very common and vital in the aviation industry.

Full details of the assessment for each GCAA/EASA module are contained in the Complete Assessment Schedule published and distributed to staff at the start of each academic year and supplied to students in the Student Handbook.

Students must pass all elements of assessment associated with each module in order to obtain a pass grade for that module. The weighting of individual elements of assessment within a module are detailed in the module descriptions and module guides. For a module to be compensated by an examination board, all major elements of assessment within the module must satisfy any compensation regulations.
Student maintained Logbooks form part of the overall assessment plan for the course. In addition to the Aircraft Engineering Higher Diploma assessments, all students on EASA / GCAA Part 147 approved courses, who wish to obtain an EASA / GCAA Training Certificate, will be subject to EASA / GCAA Part 66 examinations and practical assessments in accordance with the requirements of EASA / GCAA and the approved organizations MTOE.

Certificate in Aircraft Maintenance (GSE)

The one year programme leads to a Certificate in Aircraft Maintenance (Ground Support Equipment) issued by the Ministry of Higher Education and Scientific Research (MoHESR) U.A.E. This will enable the graduate to undertake aviation related maintenance job pertaining to the ground support equipment.



FEATURES OF THE PROGRAMME

The programme is a full-time programme and is offered over a period of one year. The programme follows same course as the Diploma and Higher Diploma programmes for the first two quarters. However, for students who find it difficult to continue the academic path, this programme gives them the opportunity to forge a less challenging aviation maintenance career.

EDUCATIONAL AIMS OF THE PROGRAMME

The aims of the Programme are to:

- Provide students with more vocational rather than academic qualifications,
- Prepare students for employment as Ground Support staff in an aircraft maintenance environment
- prepare students for continuous personal and professional development

PROGRAMME STRUCTURE

The course is delivered full-time over one academic year. Full details of module sequence, course duration and start and finish dates are issued at the commencement of each course.

CERTIFICATE PROGRAM - AIRCRAFT MAINTENANCE
Ground Support Equipment

First Year

Qtr-1		Qtr-2		Qtr-3		Qtr-4	
MATH1011	6	MATH 1012	6	ENGL 1004	4	ENGL 2004	4
Mathematics - I		Mathematics -II		Technical Writing		Technical Presentation	
ENGL 1001	5	ENGL 1002	5	FLM 1013	10	FLM 1044	10
English Composition -I		English Composition -II		Gen Safety, HF, Fire Protect.		Fund. of Turbine & Piston Eng.	
PHY 1021	7	PHY 1022	7	FLM 1023	11	FLM 1054	11
Physics I		Physics -II		W/shop prac., QA, GSE Maint.		A/C Fuel & Lub., Grd. Pow. Sup.	
AME 1001	9	AVN 1232	15	FLM 1033	10	FLM 1064	10
Workshop/Orientation		Electrical Engg. - I		Elect., Hyd & Pneum., P/Gen.		Flt. Line Ops., A/C Doc.	
AVSC 1001	8	ISL 1000	2				
IT Applications		Islamic Studies					

Certificate /Ground Support Equipment Course

The assessment strategy is designed to assess the theoretical and practical aspects of the course and the workshop and work-based learning that are acquired by the students during the course of study. The method of assessment is related to the learning outcome being assessed.

There will be progressive assessments which are a requirement to be fulfilled as dictated by the MoHESR. These are based upon assessments done in assignments, intermediate tests, final examination and class performance. An element of record keeping is also induced into the course assessment strategy. Thus, the upkeep of a portfolio of records of research, assignments and other tasks given, helps the students inculcate the good practice of record keeping which is very common and vital in the aviation industry.

The assessment grading scheme is outlined below. Compulsory completion of logbooks will form part of the EASA / GCAA practical assessment plan.

Air Traffic Management (ATM)

The Air Traffic Management programme is a three-year programme comprising of a Basic Instruction and an ICAO standard training leading to academic qualifications and Air Traffic Controller certification.

Students must successfully complete the Basic Instruction and aptitude as well as medical testing before commencing training as Air Traffic Control Assistant (ATCA), first step in certification. After successfully completion of Basic Induction course, the students will be sent to an operational unit for On Job Training as ATCA.

Students' successful completion of a two year programme will be awarded a Diploma in ATM.

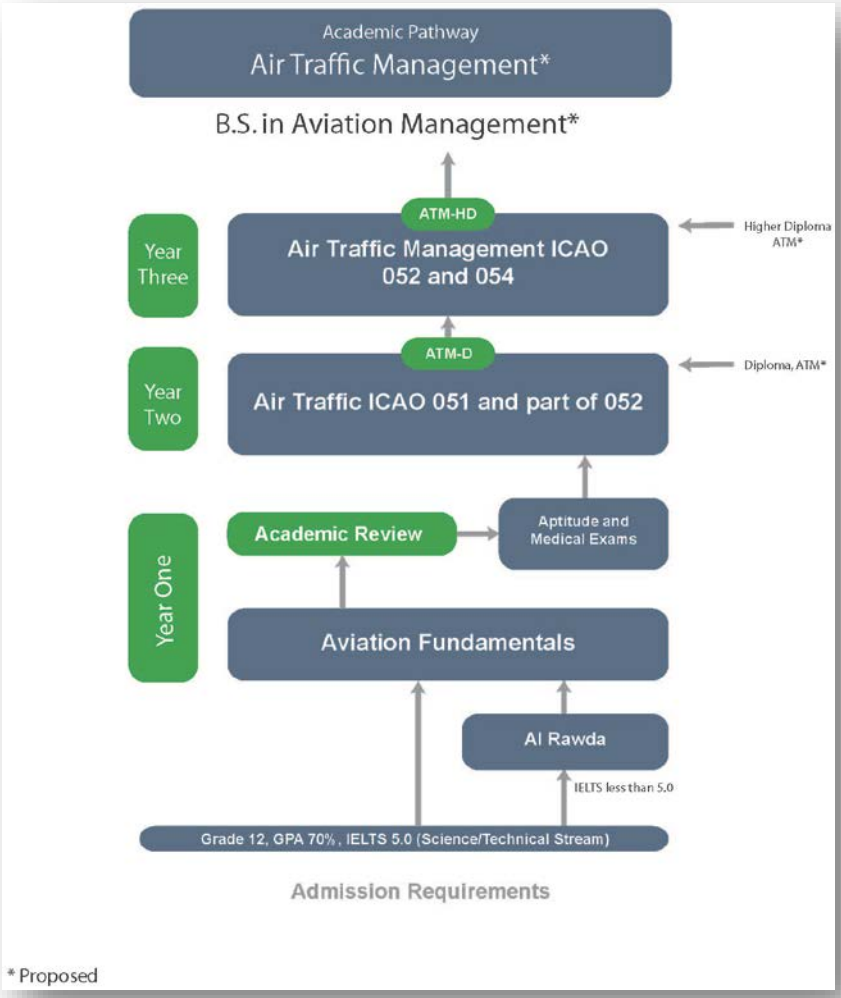
In the third year, students will be trained to become Air Traffic Controllers (ATCO). This training is a combination of classroom and simulator training at ABU DHABI POLYTECHNIC, after which students will be sent to an operational unit for On Job Training as ATCO. Student's successful completion of the third year will be awarded a Higher Diploma in ATM. Students may obtain Certificate as Air Traffic Controllers after successfully competing on the job training.

PROGRAMME STRUCTURE

The programme is delivered on full-time basis over two (Diploma) and Three (Higher Diploma) years. Students must successfully complete Basic Instruction and aptitude as well as medical testing, before commencing training to become Air Traffic Control Assistant (ATCA). After successfully completion of Basic Induction course, the students will be sent to an operational unit for On Job Training as ATCA.

Students will after successful completion of year 2 be awarded a Diploma in ATM. Third year, students will be trained to become Air Traffic Controllers (ATCO). This training is a combination of classroom and simulator training at ABU DHABI POLYTECHNIC, after which students will be sent to an operational unit for On Job Training as ATCO.
Students will after successful completion of year 3 be awarded a Higher Diploma in ATM.

Students may after successful On Job Training obtain Certificate as Air Traffic Controllers.
Successful students of the programme will have the opportunity to proceed to a Bachelor Degree in ATM.



CAREER OPPORTUNITIES

The Middle East has seen phenomenal growth of air traffic over the past years and all predictions are talking about further increase in the Middle East area over the years to come.

This is causing significant pressure on the region's air traffic control operations and is especially putting pressure on regional authorities to increase the capacity and efficiency of air traffic operations. To cope with the growth, air traffic control operators and authorities have to train and employ more and more Air Traffic Controllers for the civil airports as well as for the military airports in UAE. Graduates will leave ABU DHABI POLYTECHNIC with a Higher Diploma in ATM and a GCAA approved rating as Air Traffic Controllers.

Diploma, Higher Diploma, Bachelor of Science and Applied Bachelor Programme Descriptions

The academic programmes at Abu Dhabi Polytechnic: Abu Dhabi Campus consist of the following programmes:

- Certificate /Diploma /Higher Diploma/ Applied Bachelor in Aircraft Maintenance
- Diploma /Higher Diploma/ Applied Bachelor in Aircraft Engineering Technology
- Diploma /Higher Diploma in Air Traffic Management
- Higher Diploma/ Applied Bachelor in Nuclear Technology
- Diploma* /Higher Diploma / Applied Bachelor in Electromechanical Engineering Technology
- Higher Diploma / Applied Bachelor in Information Security Engineering Technology
- Higher Diploma / Applied Bachelor in Petroleum Engineering Technology
- Higher Diploma / Applied Bachelor* in Autonomous Systems
- Higher Diploma / Applied Bachelor in Metrology
  *Currently under consideration

These programmes aim to provide the necessary balance of knowledge and practical skills to prepare students for a career in high tech industries. Graduates from the programme will be able to:

- Assume technical positions to apply current technologies
- Make technical judgments
- Assist professional engineers to transfer and to develop new technologies
- Communicate clearly both in writing and orally in supervisory positions

To achieve these aims, the Abu Dhabi Polytechnic academic programmes consist of a balance (consistent with international technical standards) of lectures, tutorials, and laboratory work, and On-the-Job Training (OJT) and On-the-Job Performance (OJP) at related industrial centers. The curriculum includes general and specialized studies. Specializations vary depending on programme as given below.

The Higher Diploma in Nuclear Technology (HDNT) includes the following six specializations:

- Nuclear power plant operation
- Mechanical systems
- Electrical systems
- Instrumentation and control
- Chemistry
- Radiation protection

The Higher Diploma in Electromechanical Engineering Technology (HDET) includes the following four specializations;

- Mechatronics
- Mechanical
- Electrical
- Instrumentation and control

The Higher Diploma of Information Security Engineering Technology (HDISET) includes the following three specializations:

- Secure software/applications development
- Network and cyber security
- Systems/servers security administration

The Petroleum Engineering Technology programme awards Higher Diploma and Applied Bachelor and includes the following two specializations:

- Oil and gas process engineering technology

- Petroleum engineering technology

The Meteorology Programme will graduate Diploma, Higher Diploma and Bachelor of Science in Meteorology.

Diploma Certificate, Higher Diploma and Applied Bachelor in Autonomous Systems Engineering Technology (ASET) Degree Requirements - Under Development

Purpose

Autonomous Systems Engineering Technology (ASET) program aims to provide UAE national candidates with the knowledge, skills and competencies needed to operate and maintain Autonomous Systems. The program is structured to award qualified candidates with an Applied Bachelor (AB) degree or a Higher Diploma Certificate (HD) or a Diploma Certificate (D) in one of the following three tracks:

1. **UAV Remote Piloting**
   Diploma: UAV Piloting
   Higher Diploma: UAV Controller
   Applied Bachelor: UAV Pilot-in-Command/Aeronautics Management

2. **UAS Mechanical Engineering Maintenance**
   Diploma: Mechanical Maintenance Technician (MMT)/Airframe or Power Plant
   Higher Diploma: Mechanical Maintenance Specialist (MMS)/Airframe or Power Plant
   Applied Bachelor: Mechanical Maintenance Engineer (MME)/ A&P Double Rating

3. **UAS Avionics Engineering Maintenance**
   Diploma: Avionics Maintenance Technician (AMT)
   Higher Diploma: Avionics Maintenance Specialist (AMS)
   Applied Bachelor: Avionics Maintenance Engineer (AME)

4. **UAS Data-Link Technology**
   Diploma: Data-Link Technician (DLT)
   Higher Diploma: Data-Link Specialist (DLS)
   Applied Bachelor: Data-Link Engineer (DLE)

5. **UAS Ground Control Station Specialist (GCSS)**
   Diploma: GCSS

6. **UAS Payload Operation Specialist (POS)**
   Diploma: POS

The program requires students to be comfortable utilizing complex science, physics, technology, engineering and mathematics principles. In addition, students must possess strong critical thinking, problem-solving, team working skills. Students wishing to pursue this degree program must be a citizen of UAE. There are no exceptions to this policy. The students will be granted with full sponsorship and employment by the government of Abu Dhabi.

Manned Aircraft Pilots often progress from being involved only in flying to performing piloting management functions of manned aircrafts. This qualification aims to qualify Unmanned Aerial Vehicles (UAV) Remote Pilots who employ a solid knowledge, skills and competencies gained by study, research, experience and practice. Qualified candidates are required to apply their competencies with imagination, intuition, good judgment, reason, ethics, integrity and responsibility to the management, operation and development of safe, efficient and comprehensive national and international aviation and aerospace systems.

The qualification has been designed to allow for full personal professional development of the remote UAV

pilot and forms part of a learning and career pathway towards obtaining endorsements, licensing and unmanned aerospace management and command. This qualification, therefore, provides the opportunity through which competencies and provision could be standardized. The way in which the pathway can be navigated is through the achievement of clusters of unit standards that facilitate various military and civilian endorsements or licenses such as the UAV Pilot, UAV Pilot Controller and Pilot-in-Command UAV pilot.

Upon graduation, qualified candidates will be able to:

1. Communicate using standardized unmanned aviation language.
2. Apply principles of safety, risk management and response to emergency situations
3. Apply mathematics and flight science in real life situations.
4. Recognize the systems of unmanned aerial vehicles including the unmanned aircraft, airframe, powerplant, avionics systems, data-link, and autopilot.
5. Analyze and apply knowledge of the physical environment, flight dynamics and instruments to optimize and navigate UAV operations within the aviation context.
6. Plan a UAV flight operation that will consistently achieve stated objectives in accordance with national and international aviation standards and laws.
7. Operate an unmanned aircraft to deliver a service or a mission.
8. Display airmanship that results in unmanned flight operations that comply with the requirements of national and international aviation standards and law.
9. Apply consistently aviation resource management in the context of UAV operations.
10. Provide consistently leadership to a team in the context of UAV operations and use standardized aviation language and manage human factors in UAV aircraft flight.

Rationale

Unmanned Aerial Systems (UAS) today play an increasing role in many public missions such as border surveillance, wildlife surveys, agricultural monitoring, weather monitoring, local crime scene investigations, search and rescue missions, disaster response such as wildfires and floods, local law enforcement and military training. UAVs are better suited for dull or dangerous missions than manned aircraft. UAS are mainly used for intelligence, surveillance and reconnaissance (ISR), border security, counter insurgency, attack and strike, target identification and designation, communications relay, electronic attack, law enforcement and security applications, environmental monitoring, remote sensing, aerial mapping and meteorology. UAS provide a wide variety of operational, societal, and economic benefits to its diverse group of users. It is forecasted that the worldwide expenditures on UAS and related research could be as much as $89 billion in aggregate over the next decade. However, as the demand for UAS increases, concerns regarding how UAS will impact existing aviation grow stronger, in terms of safety, privacy, frequency crowding, and airspace congestion.

This qualification reflects the need from the national aviation sector for UAV remote pilots who are pursuing operational and management careers within the unmanned aerospace (UAS) industry. It provides learners with opportunities for career development and advancement within the broader context of the unmanned aerospace (UAS) community so contributing to the provision of a safe, secure and viable unmanned aerospace (UAS) environment.

Remote UAV pilots contribute in the management side of operations and work within a complex, highly stressful, time-critical environment that demands rapid application of acquired competencies. This qualification, therefore, reflects the need and demand within the unmanned aerospace (UAS) environment for career pilots who will be able to perform operational, managerial and leadership functions involving complex skills and the application of national and international processes, procedures and legislation contextualized within the unmanned aerospace environment. Qualified candidates who have achieved this qualification will contribute to reduction of risk in the unmanned aerospace (UAS) industry.

This qualification has been developed in accordance with the international legal framework and aligns UAE piloting standards with the international best practice. The occupations, jobs or areas of activity in which

the qualified candidates will typically operate are: remote UAV pilots, UAV-flight operations and control, aviation safety, aviation regulation, airspace control, accident investigations and leadership in unmanned aviation contexts.

Higher Diploma in Nuclear Technology Degree Requirements

A total of 120 credit hours is required for the HDNT. These 120 credit hours are fully prescribed under the following academic areas:

	Credit Hours
Humanities	15
Mathematics and Sciences	18
Engineering Fundamentals	21
Nuclear Technology	22
On-the-Job Training	44
	Total 120

The academic areas are further described by the following course titles and credit hours:

Humanities (HUM)

First Year	**Credit Hours**
English	6
Humanities	6
Second Year	
Islamic Civilization	3
	Total 15

Mathematics and Sciences

First Year	**Credit Hours**
Precalculus	4
Chemistry	7
Physics I	4
Intro to Programming and Logic	3
	Total 18

Engineering Fundamentals

First Year	**Credit Hours**
Industrial Safety and Professional Ethics	2
Engineering Drawing	2
Mechanical Workshop	1
Electrical Technology I	3
Second Year	
Electrical Technology II	3
Instrumentation and Control	3
Mechanical Technology	4
Thermal Sciences	3
	Total 21

Nuclear Engineering Technology

First Year	**Credit Hours**
Intro to Nuclear Technology	3
Second Year	
Nuclear Reactor Technology	4
Nuclear Safety and Regulations	3
Radiation Measurement and Protection	4
Nuclear Materials	2
Graduation Project	4
Work-based Learning	2
	Total 22

On-the-Job Training

Third Year	
On-the-Job Training	44
	Total 44

HDNT On-the-Job Training components:

- *Nuclear Power Plant Systems and Operation*
- *Nuclear Power Plant Familiarization*
- *Specialization Training*

Students must complete all coursework before starting their on-the-job training. The content and duration of OJT is determined by the industrial training provider Nawah. The total number of credits for this requirement will be 44 and will be distributed based on the duration of the OJT components.

Students will be assigned to one of six specializations (Operator, Mechanical, Electrical, Instrumentation and Control, Chemistry, or Radiation Protection) by the time they are to start Specialization Training.

Policy for Assignment of Student Specializations

The Abu Dhabi Polytechnic will use the following process to assign specializations to each student:

1. Students will be informed before their On-the-Job training commences of the policy for assignment of specializations and the constraints on size and schedule for each specialization based on Nawah workforce needs.

2. By the end of a student's On-the-Job Training 1 and 2 (NPP Systems and Operation and Familiarization), they will rank from 1 (highest) to 6 (lowest) their preference for their HDNT specialization and provide this to Nawah.

3. If Nawah determines that there is an even distribution of specializations fitting the workforce plan and the training schedule, then students will be assigned to their highest preference. If the distribution does not meet these criteria, then a student's second choice is used to even out the distribution. If an even distribution is still not produced, then third choices or further are considered until an even distribution is established.

HDNT Program Completion Requirements

After all 120 credit hours in the prescribed courses have been completed with a satisfactory grade, the student will have completed the program requirements and be eligible for conferral of the Higher Diploma in Nuclear Technology.

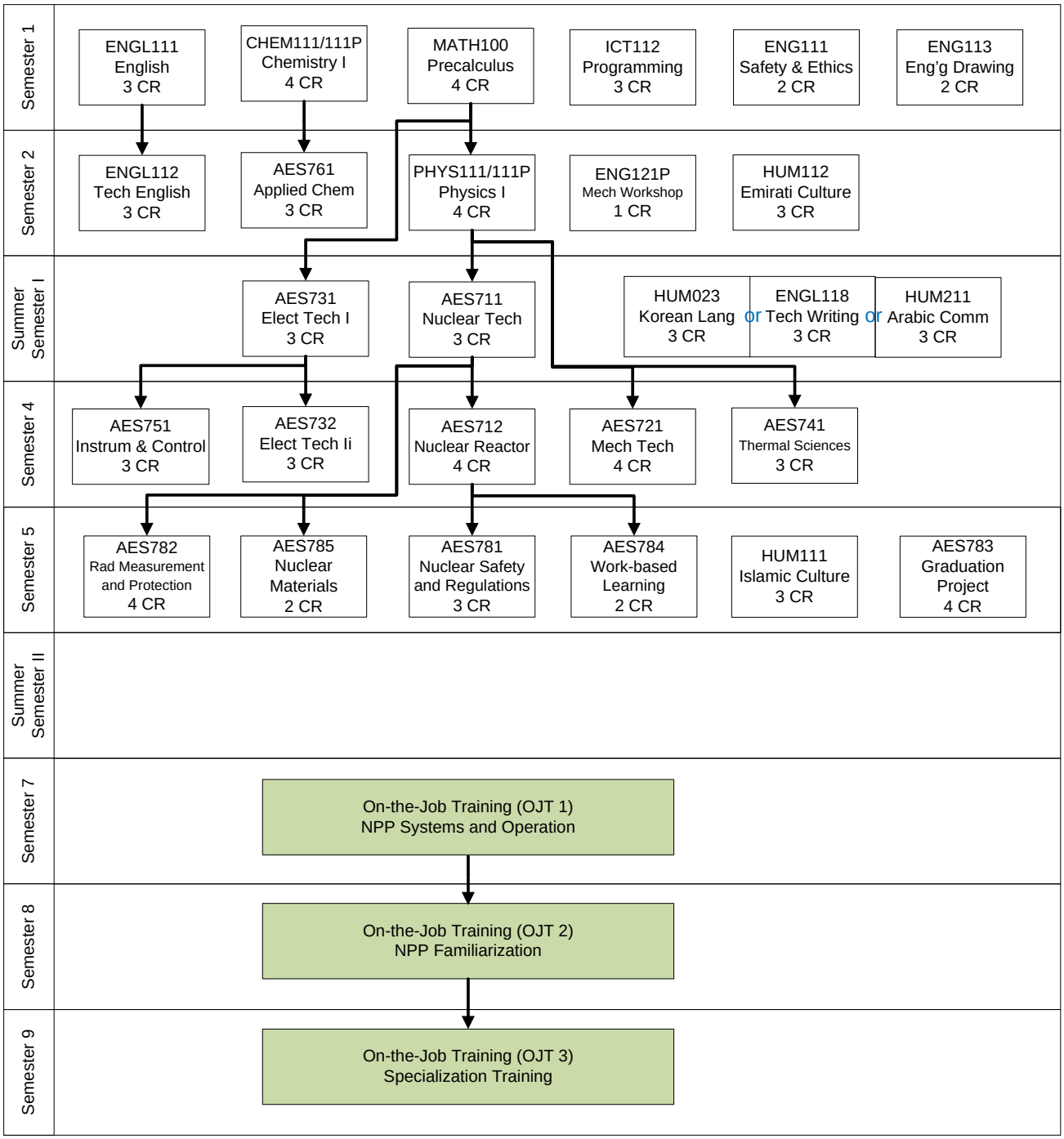


Figure 3: Flow sheet of Higher Diploma in Nuclear Technology degree requirements. On-the-Job Training conducted by Nawah takes place at the Barakah Nuclear Power Plant and the duration and content is determined by Nawah's training schedule considering facility and personnel availability. OJT in the above flowsheet only indicates likely progression, not actual duration.

Diploma, Higher Diploma and Applied Bachelor in Electromechanical Engineering Technology (EMET) Degree Requirements

Electromechanical Engineering Technology Programme (EMET) offers four specializations at the level of Bachelor of Applied Engineering (AB) over four years with an exit option of Higher Diploma (HD) at the third year and a Diploma (D) after the second year which have the following credit hours details:

1. Mechatronics Engineering Technology:
   AB: 152 Cr. Hr.; HD: 117 Cr. Hr: D: 80 Cr. Hr:
2. Mechanical Engineering Technology:
3. AB: 152 Cr. Hr.; HD: 117 Cr. Hr: D: 80 Cr. Hr:
4. Instrumentation and Control Eng. Tech.:
   AB: 152 Cr. Hr.; HD: 117 Cr. Hr: D: 80 Cr. Hr:
5. Electrical Engineering Technology:
   AB: 152 Cr. Hr.; HD: 117 Cr. Hr: D: 80 Cr. Hr:

These credit hours are fully prescribed under the following academic areas:

Mechanical Engineering Technology

D Credit Hours

Humanities	15
Mathematics and Sciences	19
ICT/Programing	05
Engineering Technology	31
On Campus Training	10
*Total 80	

HD Credit Hours

Humanities	15
Mathematics and Sciences	24
ICT/Programing	05
Engineering Technology	57
On Campus Training	10
On-the-Job Performance	03
Graduation Projects	03
**Total 117	

AB Credit Hours

Humanities	20
Mathematics and Sciences	28
ICT/Programing	05
Engineering Technology	77
On Campus Training	10
On-the-Job Performance	06
Graduation Projects	06
***Total 152	

The academic areas are further described by the following course titles and credit hours:

Electrical Engineering Technology

D Credit Hours

Humanities	15
Mathematics and Sciences	16
ICT/Programing	05
Engineering Technology	34
On Campus Training	10
*Total 80	

HD Credit Hours

Humanities	17
Mathematics and Sciences	25
ICT/Programing	05
Engineering Technology	54
On Campus Training	10
On-the-Job Performance	03
Graduation Projects	03
**Total 117	

AB Credit Hours

Humanities	20
Mathematics and Sciences	28
ICT/Programing	05
Engineering Technology	77
On Campus Training	10
On-the-Job Performance	06
Graduation Projects	06
***Total 152	

Mechatronics Engineering Technology

D Credit Hours

Humanities	15
Mathematics and Sciences	16
ICT/Programing	05
Engineering Technology	34
On Campus Training	10
*Total 80	

HD Credit Hours

Humanities	17
Mathematics and Sciences	22
ICT/Programing	05
Engineering Technology	57
On Campus Training	10
On-the-Job Performance	03
Graduation Projects	03
**Total 117	

AB Credit Hours

Humanities	20
Mathematics and Sciences	28
ICT/Programing	05
Engineering Technology	77
On Campus Training	10

On-the-Job Performance	06
Graduation Projects	06
***Total 152	

Instrumentation & Control Engineering Technology

D Credit Hours	
Humanities	15
Mathematics and Sciences	16
ICT/Programing	05
Engineering Technology	34
On Campus Training	10
*Total 80	

HD Credit Hours	
Humanities	17
Mathematics and Sciences	22
ICT/Programing	05
Engineering Technology	57
On Campus Training	10
On-the-Job Performance	03
Graduation Projects	03
**Total 117	

AB Credit Hours	
Humanities	20
Mathematics and Sciences	28
ICT/Programing	05
Engineering Technology	77
On Campus Training	10
On-the-Job Performance	06
Graduation Projects	06
***Total 152	

Mechanical Engineering Technology Curriculum

Diploma

First Year	**Credit Hours**
Physics I	3
Physics Lab	1
Eng. Safety and Professional Ethics	2
Mech. Workshop	1
Introduction to Programming and Prob. Solv.	3
English Comms. Skills	3
Precalculus	4
Chemistry I	3
Chemistry I Lab	1
Physics II	3
Technical English	3
Physics II Lab	1
Statics	3
Islamic Culture	3
English for Engineering	3

Second Year	**Credit Hours**
Materials Science	3
Engineering Drawings	2
Instr. & Measurement	2
Electric Circuits	3
Thermodynamics	3
Emiratis Society and Culture	3
Intr. to Programming: C++	2
Control System Technologies I	3
Fluid Mechanics	3
CAD/CAM Technologies	3
Pneumatics and Hydraulics Systems	3
Electrical Machines	3
Electromechanical Systems I	1
Electromechanical Systems II	1
Electromechanical Systems III	1
Electromechanical Systems IV	1
Electromechanical Systems V	1
Electromechanical Systems VI	1
Electromechanical Systems VII	1
Electromechanical Systems VIII	1
Electromechanical Systems IX	1
Electromechanical Systems X	1

Higher Diploma

In addition to all diploma courses:

Third Year	**Credit Hours**
Calculus I	3
Calculus II	3
Dynamics	3
Adv. Eng. Math	3
Health Safety and Environment	3
Kinematics of Machinery	3
Manufacturing Processes	3
Heat Transfer	3
Strength of Materials	3
Applied Industrial Maintenance	3
Quality Management	2
Graduation Project I	3
OJP 1	3

Applied Bachelor

In additional to all higher diploma courses:

Fourth Year	**Credit Hours**
Personal Development Planning	2
HVAC	3
Machine Design I	3
Engineering Economics	2
Machine Design II	3
Thermodynamics II	3
Vibration and Noise Control	3
Graduation Project II	3
Creativity and Innovation	3
Technical Elective 1	3
Science Elective	3

OJP 2 3

Electrical Engineering Technology Curriculum

Diploma

First Year	**Credit Hours**
Physics I	3
Physics Lab	1
Eng. Safety and Professional Ethics	2
Mech. Workshop	1
Introduction to Programming and Prob. Solv.	3
English Comms. Skills	3
Precalculus	4
Chemistry I	3
Chemistry I Lab	1
Physics II	3
Technical English	3
Physics II Lab	1
Statics	3
Islamic Culture	3
English for Engineering	3

Second Year	**Credit Hours**
Introduction to Circuit Simulation	3
Digital Logic Design	3
Instr. & Measurement	2
Electric Circuits	3
Engineering Drawings	2
Emiratis Society and Culture	3
Intr. to Programming: C++	2
Control System Technologies I	3
Embedded Systems	3
Programmable Logic Controllers	3
Electrical Machines	3
Electronic Devices	3
Electromechanical Systems I	1
Electromechanical Systems II	1
Electromechanical Systems III	1
Electromechanical Systems IV	1
Electromechanical Systems V	1
Electromechanical Systems VI	1
Electromechanical Systems VII	1
Electromechanical Systems VIII	1
Electromechanical Systems IX	1
Electromechanical Systems X	1

Higher Diploma

In addition to all diploma courses:

Third Year	**Credit Hours**
Calculus I	3
Calculus II	3
Introduction to Linear Algebra	3
Power Electronics I	3
Signal and Systems	3
Introduction to Power Systems	3
Health Safety and Environment	3
Personal Development Planning	2
Control System Technologies II	3
Power Transmission	3
Quality Management	2
Graduation Project I	3
OJP 1	3

Applied Bachelor

In additional to all higher diploma courses:

Fourth Year	**Credit Hours**
Communications	3
Adv. Eng. Math	3
Power Systems Protection	3
Power Systems Operation and Control	3
Engineering Economics	2
Electronic Devices II	3
Motor Drives and Control	3
Creativity and Innovation	3
Graduation Project II	3
Technical Elective 1	3
Technical Elective 2	3
OJP 2	3

Mechatronics Engineering Technology Curriculum

Diploma

First Year	**Credit Hours**
Physics I	3
Physics Lab	1
Eng. Safety and Professional Ethics	2
Mech. Workshop	1
Introduction to Programming and Prob. Solv.	3
English Comms. Skills	3
Precalculus	4
Chemistry I	3
Chemistry I Lab	1
Physics II	3
Technical English	3
Physics II Lab	1
Statics	3
Islamic Culture	3
English for Engineering	3

Second Year	**Credit Hours**
Digital Logic Design	3
Instr. & Measurement	2
Electric Circuits	3
Introduction to Mechatronics	3
Emiratis Society and Culture	3
Engineering Drawings	2
Intr. to Programming: C++	2
Control System Technologies I	3

Electronic Devices 3
Pneumatics and Hydraulics Systems 3
Programmable Logic Controllers 3
Electrical Machines 3
Electromechanical Systems I 1
Electromechanical Systems II 1
Electromechanical Systems III 1
Electromechanical Systems IV 1
Electromechanical Systems V 1
Electromechanical Systems VI 1
Electromechanical Systems VII 1
Electromechanical Systems VIII 1
Electromechanical Systems IX 1
Electromechanical Systems X 1

Higher Diploma

In addition to all diploma courses:

Third Year **Credit Hours**

Calculus I 3
Calculus II 3
Embedded Systems 3
CAD/CAM Technologies 3
Strength of Materials 3
Thermodynamics 3
Dynamics 3
Control System Technologies II 3
Personal Development Planning 2
Graduation Project I 3
Kinematics of Machinery 3
Quality Management 2
OJP 1 3

Applied Bachelor

In additional to all higher diploma courses:

Fourth Year **Credit Hours**

Adv. Eng. Math 3
Health Safety and Environment 3
Integrated Automation 3
Mechatronics System Design 3
Robotics 3
Machine Design I 3
Engineering Economics 2
Creativity and Innovation 3
Graduation Project II 3
Science Elective 3
Technical Elective 1 3
OJP 2 3

Instrumentation and Control Engineering Technology Curriculum

Diploma

First Year **Credit Hours**

Physics I 3
Physics Lab 1
Eng. Safety and Professional Ethics 2
Mech. Workshop 1
Introduction to Programming and Prob. Solv. 3
English Comms. Skills 3
Precalculus 4
Chemistry I 3
Chemistry I Lab 1
Physics II 3
Technical English 3
Physics II Lab 1
Statics 3
Islamic Culture 3
English for Engineering 3

Second Year **Credit Hours**

Introduction to Circuit Simulation 3
Digital Logic Design 3
Instr. & Measurement 2
Electric Circuits 3
Engineering Drawings 2
Intr. to Programming: C++ 2
Control System Technologies I 3
Electronic Devices 3
Programmable Logic Controllers 3
Electrical Machines 3
Pneumatics and Hydraulics Systems 3
Emiratis Society and Culture 3
Electromechanical Systems I 1
Electromechanical Systems II 1
Electromechanical Systems III 1
Electromechanical Systems IV 1
Electromechanical Systems V 1
Electromechanical Systems VI 1
Electromechanical Systems VII 1
Electromechanical Systems VIII 1
Electromechanical Systems IX 1
Electromechanical Systems X 1

Higher Diploma

In addition to all diploma courses:

Third Year **Credit Hours**

Calculus I 3
Calculus II 3
Dynamics 3
Health Safety and Environment 3
Motor Drives and Control 3
CAD/CAM Technologies 3
Quality Management 2
Control System Technologies II 3
Personal Development Planning 2
Graduation Project I 3
Embedded Systems 3
Digital Control System 3
OJP 1 3

Applied Bachelor

In additional to all higher diploma courses:

Fourth Year **Credit Hours**

Adv. Eng. Math 3

Oil and Gas Metering Systems 3
Creativity and Innovation.....3
Feedback Control Systems 3
Engineering Economics.....2
Graduation Project II 3
Distributed Control System 3
Scada.....3
Science Elective.....3
Technical Elective 1.....3
Technical Elective 2.....3
OJP 2.....3

D EMET Programme Completion Requirements

After all 80 credit hours in the prescribed courses have been completed with a passing grade, the student will complete the programme requirements and will be eligible for conferral of the Diploma in Electromechanical Engineering Technology.

HD EMET On-the-Job Performance

Students must select one of four electromechanical engineering technology specializations (mechatronics, mechanical, electrical, instrumentation and control) at the end of their first year of their programme and complete 10 credit hours of On campus training as well as 3 credit hours of On-the-Job Performance in an industrial setting.

HD EMET Programme Completion Requirements

After all 117 credit hours in the prescribed courses have been completed with a passing/ satisfactory grade; the student will complete the programme requirements and will be eligible for conferral of the Higher Diploma in Electromechanical Engineering Technology.

AB EMET On-the-Job Performance

In addition to the HD programme completion requirements, students must complete 6 credit hours of On-the-Job Performance in an industrial setting.

AB EMET Programme Completion Requirements

After all 152 credit hours in the prescribed courses have been completed with a passing/satisfactory grade; the student will complete the programme requirements and will be eligible for conferral of the Applied Bachelor in Electromechanical Engineering Technology.

Industrial Certification Requirements

Abu Dhabi Polytechnic has been communicating with several strategic industrial partners in order to secure training arrangements so that EMET students receive industrial certification. Abu Dhabi Polytechnic in collaboration with the respective industrial partners successfully offers the following certifications:

- Siemens Certificate in Mechatronics, SMCP
- FESTO Certificate in Pneumatics, Hydraulics and Automation
- NEEBOSH

Higher Diploma and Applied Bachelor in Information Security Engineering Technology Degree Requirements

In the first year of the programme, general mathematics, science, English language, humanities, engineering fundamentals, and an introduction to information technology and security industry courses will be offered to prepare solid ground for the students for their subsequent years of study that involve both On-the-Job Training (OJT) and On-the-Job Performance (OJP). The Higher Diploma programme, starting the second year, is designed to develop the basic principles of three information security specializations, namely, software security, network and cyber security, and systems/servers security administration. The third and fourth quarters of the second year are handled by the On-the-Job Training (In-House Training) to engage the students in theoretical and on-campus training on secure software development, network security, and servers security administration. At the first quarter of the third year, graduation project selection and preparation will take place. All students are required to complete a third year graduation project based on their selection on one of the offered topics of specializations. The second and third quarters of the third year is devoted to the On-the-Job Performance (Field training) based on their selected specialization. Abu Dhabi Polytechnic will host specialized training labs. By the last quarter of this year, students will use the experience gained at the OJT and OJP to finish their third year graduation project. Students who finish all requirements will receive their higher diploma certificate along with their professional licenses. Students can perform degree articulation to obtain the bachelor of engineering technology for students with high achievements in the higher diploma. A total of 180 credit hours is required for the Higher Diploma in Information Security Engineering Technology (HDISET). These 180 credit hours are fully prescribed under the following academic areas:

Information Technology and Security Fundamentals

Year 1 Semester 1	**Credit Hours**
Calculus I	3
Intro to Programming & Problem Solving	3
Emirates Culture and Society	3
English Communication skills	3
Year1 Semester 2	
Islamic Culture	2
Calculus II	3
Object Oriented Programming	3
Intro to Computer Electronics	3
Technical English	3
Introduction to Computer Networks	3
Year 1 Summer 1	
Discrete Maths	3
Logic Design and Computer Organization	3
English for ICT	3
Fundamentals of Information Security	3
Year 2 Semester 3	**Credit Hours**
Probability and Statistics	3
Data structure and Algorithm	3
Intro to Database Systems	3
Network Security	3
Intro to Software Security	3
Year 2 Semester 4	
Web Programming and Security	3
Information Systems Security	3
Ethical Hacking and Digital Forensics	3
Operating System Security	3
Introduction to Applied Cryptography	3

Network and Cyber Security

Year 2 Summer II	**Credit Hours**
Secure Network Design	2
Network Security	2
Ethical Hacking and Dig. Forensics	1
Mobile Programming and Security	1
Routing and Switching	2
Penetration Testing in Depth	1
Year 3 Semester 5	
Cloud and Critical Infrastructure Security	3
Humanities Elective	3
Wireless Network Security	3
Client/Server Security Admin	3
Fundamentals of Storage Networking	3
Year 3 Semester 6	
Advanced Web Security	3
Perimeter Protection	3
Advanced Network Security	3
Malware Analysis Tools and Techniques	3
InfoSec Project Management	3
Year 3 Summer III	
Linux-Unix Administration	2
MS Window server Security Administration	2
Advanced Routing and Switching	2
Network Border Control	2
Intrusion Detection and Response	1
Database Server Security	1

Year 4 Semester 7

Graduation Project I* 2
Advanced Cryptography 2
Firewall and Intrusion Analysis 3
Adv Pen Testing & Ethical Hacking 3
Risk Analysis and Management 2
Tech Elective course I* 3

Year 4 Semester 8

Information Assurance & Security Management 3
Ethics, Law and Policy in Cyberspace 3
Incident handling and Response 2
Technical Elective -II* 3
Graduation Project II 2

Year 4 Summer IV

Field Training III 3

Systems and Servers Security Administration

Year 2 Summer II **Credit Hours**

Microsoft Window Server Security 2
MS Share Point Server Security 1
MS Exchange Server Security 2
Physical Security and Biometrics 1
Linux/UNIX Operating Systems Security 2
Ethical Hacking 1

Year 3 Semester 5

Cloud and Critical Infrastructure Security 3
Client Server Security Admn 3
Securing Linux/ Unix Server 3
Humanities Elective 3
Virtualization Technology and Security 3

Year 3 Semester 6

InfoSec Project Management 3
Penetration and Vulnerability Analysis 3
Security Tools & Technologies: Windows 3
Malware Analysis: Tools & Techniques 3
Database Server Security 3

Year 3 Summer III

MS Windows Server Security Administration 2
Linux/Unix Security Administration SSA-333 2
MS Share point Server Security Administration. 2
Database Server Security 2
Exchange Server Security 1
Mobile Programming and Security 1

Year 4 Semester 7

Tech. Elective course I * 2
Advanced Cryptography 2
Advanced Web Security 3
Identity Management 3
Risk Analysis and Management 2
Graduation Project I * 3

Year 4 Semester 8

Information Assurance & Security Management 3
Ethics, Law and Policy in Cyberspace 3
Incident handling and Response 2
Technical Elective -II* 3
Graduation Project II 2

Year 4 Summer IV

Field Training III 3

Software Security

Year 2 Semester II **Credit Hours**

Secure Mobile Application Development I 3
Web Application Security 3
Ethical Hacking and Digital Forensics 3
Secure Windows/ Linux Operating System 3
Secure Web-Applications Development 3
Mobile Forensics and Investigation 3

Year 3 Semester 5

Mobile Programming and Security 3
Embedded Systems Secure Development 3
Cloud and Infrastructure Security 3
Humanities Elective 3
Object Oriented Analysis and Design 3

Year 3 Semester 6

Secure Database Development 3
Multi-Language Secure Coding 3
Software Vulnerabilities Testing 3
Malware Analysis Tools and Techniques 3
InfoSec Project Management 3

Year 3 Summer III

Practical Requirement Engineering 2
Client Server Security Admin 2
Software Vulnerability Assessment 2
Database Programming and Security 2
Secure Software Design and Implementation 1
Software Verification & Validation 1

Year 4 Semester 7

Graduation project I 2
Enterprise Software Arch. and Design 2
Advanced Web Security 3
Risk Analysis and Management 3
Tech. Elective course 1 2
Advanced Cryptography 3

Year 4 Semester 8

Information Assurance & Security Management 3
Ethics, Law and Policy in Cyber Space 3
Incident Handling and Response 2

Elective course II 3
Graduation Project II* 2

Year 4 Summer IV
Field Training III 3

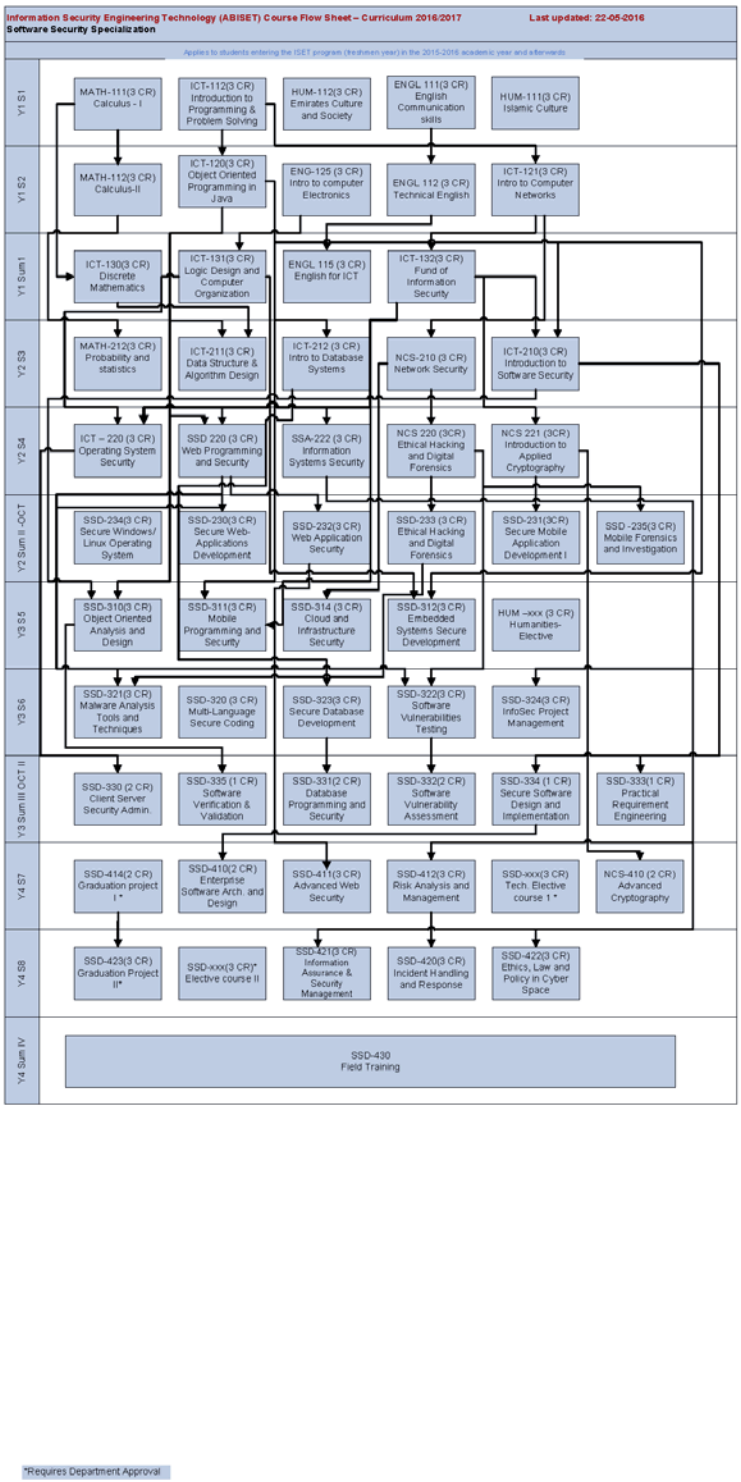


Figure 4: Flow sheet of ABISET Software Security specialization requirements.

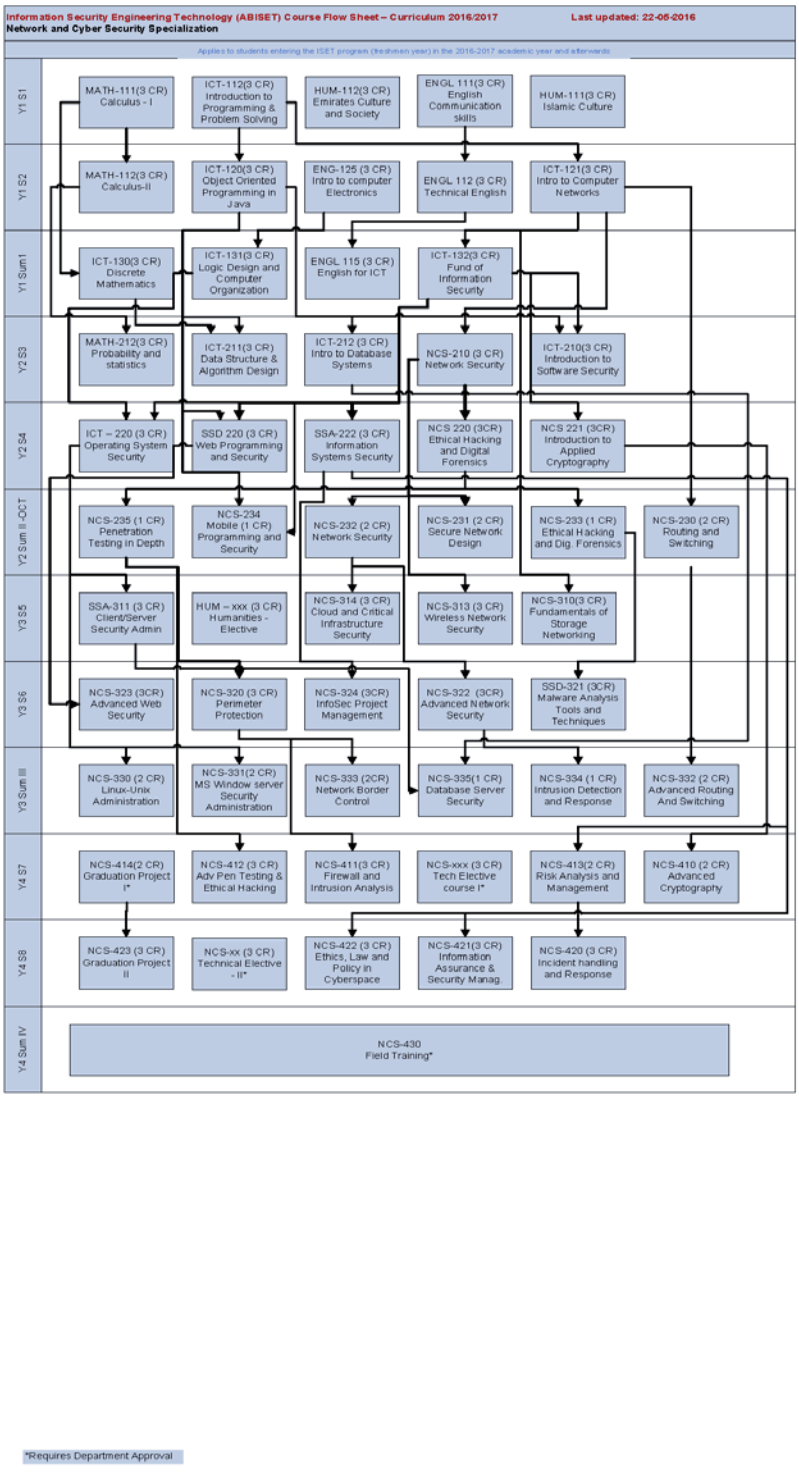


Figure 5: Flow sheet of ABISET Network Security specialization requirements.

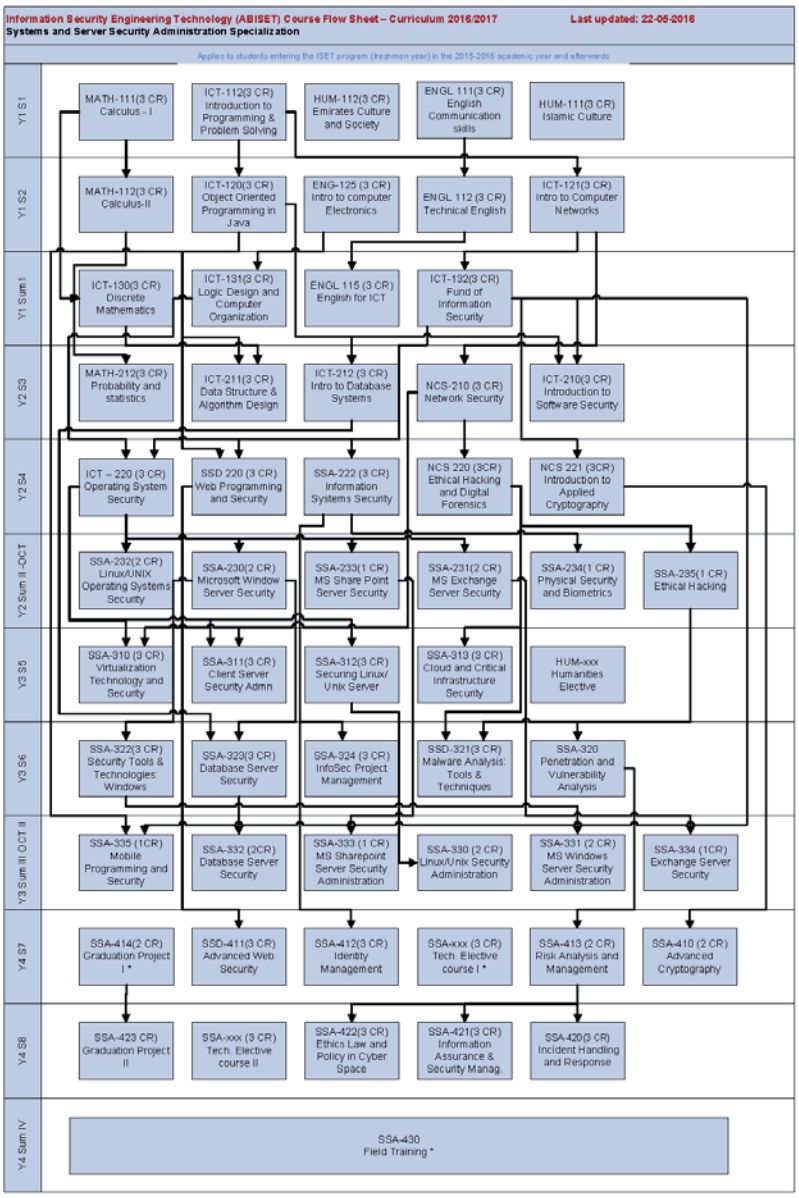


Figure 6: Flow sheet of HDISET System/Server Security specialization requirements

Higher Diploma and Applied Bachelor in Petroleum Engineering Technology Degree Requirements

In order to reach petroleum engineering technology (PET) objectives, the students must receive the best possible preparation to enter petroleum industry. PET programme curriculum gives every student a solid foundation in petroleum and oil and gas process engineering fundamentals, and also insists on experience in the industry. As a result, PET graduates will enter the industry ready to be productive contributors, but they also will understand the need to continue to learn and improve their skills throughout their careers. Petroleum Engineering Technology, at Abu Dhabi Polytechnic, offers the following specializations and awards the corresponding degrees:

No	Specialization	Degree		
		Diploma (2 Years)	Higher Diploma (3 Years)	Applied Bachelor (4 Years)
1	Petroleum Engineering Technology	NO	YES	YES
2	Oil and Gas Process Engineering Technology	YES	YES	YES
3	Petroleum Engineering Technology with a minor in Oil and Gas Process Engineering	NO	NO	YES

A total of 126 credit hours are required for the Higher Diploma in Petroleum Engineering Technology (HDPET) specialization, 152 credit hours for the Applied Bachelor in Petroleum Engineering Technology (ABPET) and 175 credit hours for the Applied Bachelor in Petroleum Engineering Technology (ABPET) with a minor in Oil and Gas Process Engineering specialization. For Oil and Gas Process Engineering specialization, a total of 125 credit hours are required for the Higher Diploma and 86 credit hours for Diploma of a total of 152 credit hours for the Applied Bachelor. These credit hours are fully prescribed under the following academic areas:

Subject	Credit Hours					
	Petroleum Engineering Technology		Petroleum Engineering Technology with a minor in "Oil and Gas Process Engineering"	Oil and Gas Process Engineering technology		
MATH, CHEM, PHYS, HUM, ENG, PET, OGP	Higher Diploma (HD)	Applied Bachelor (AB)	Applied Bachelor (AB)	Diploma (D)	Higher Diploma (HD)	Applied Bachelor (AB)
Mathematics, Chemistry & Physics	31	31	31	20	31	31
English & Humanities	15	18	18	15	15	18
Engineering Fundamentals	14	14	14	14	11	11
ICT	3	3	3	3	3	3
Training (OCT & OJP)	18	21	21	7	18	21
Specialization Depth	45	65	88	27	47	68
Total	**126**	**152**	**175**	**86**	**125**	**152**

The academic areas are further described by the following course titles and credit hours:

Mathematics (MATH), Chemistry (CHEM) and Physics (PHYS)

Subject	Credit Hours			
	Diploma (D)	**Higher Diploma (HD)**	**Applied Bachelor (AB)**	**Applied Bachelor with a minor (AB)**
Pre-Calculus	4	-	-	-
Calculus I & II, Differential Equations, Linear Algebra, and Probability & Statistics	-	15	15	15
Chemistry I & II	8	8	8	8
Physics I & II	8	8	8	8
Total	**20**	**31**	**31**	**31**

English (ENGL) and Humanities (HUM)

Subject	Credit Hours			
	Diploma (D)	**Higher Diploma (HD)**	**Applied Bachelor (AB)**	**Applied Bachelor with a minor (AB)**
English Communication Skills	3	3	3	3
Technical English Skills	3	3	3	3
Emirates Society & Culture	3	3	3	3
Islamic Culture	3	3	3	3
English for Oil and Gas	3	3	3	3
HUM Elective	-	-	3	3
Total	**15**	**15**	**18**	**18**

Information and Communication Technology (ICT)

Year	Subject	Credit Hours			
		Diploma (D)*	**Higher Diploma (HD)**	**Higher Diploma (HD)**	**Applied Bachelor (AB)**
First Year	Introduction to Programming & Problem Solving	3	3	3	3
	Total	**3**	**3**	**3**	**3**

In the first year, mathematics, science, English language, national culture, engineering fundamentals, an introduction to petroleum industry and one or two specialization courses are offered to prepare solid ground for the students for their subsequent years of study (second, third and fourth) that involves both On-Campus Training (OCT) and On-the-Job Training (OJT). Supplementary courses of basic engineering and non-fundamental engineering materials along with basic principles of statics and strength of materials are offered during the first and second years to provide materials in the main fields of electrical, mechanical and thermal engineering.

Engineering Fundamentals (ENG)

Year	Subject	Credit Hours					
		Petroleum Engineering			**Oil and Gas Process Eng**		
		HD	**AB**	**AB with a Minor**	**D**	**HD**	**AB**
First Year	Mechanical Workshop	1	1	1	1	1	1
	Industrial Safety and Pro. Ethics	2	2	2	2	2	2
	Engineering Drawing	2	2	2	2	2	2
	Thermodynamics	3	3	3	3	3	3
	Applied Electrical Technology	-	-	-	3	-	-
	Applied Instrumentation and Control	-	-	-	3	-	-
Secon	Statics and Strength of Materials	3	3	3	-	3	3

d Year	Heat Transfer & Fluid Flow	3	3	3	-	-	-
	Total	**14**	**14**	**14**	**14**	**11**	**11**

Specialization Depth (PET & OGP)

Year	PET OGP	Subject	Credit Hours					
			Petroleum Engineering			Oil and Gas Process Eng		
			HD	AB	AB with a Minor	D	HD	AB
1	PET-110	Introduction to Petroleum Eng.	3	3	3	3	3	3
1	PET111	Introduction to Gas Production	-	-	-	3	-	-
1	PET120	Petroleum Geology	3	3	3	-	-	-
1	PET120P	Petroleum Geology Lab	1	1	1	-	-	-
1	OGP120	Organic Chemistry	-	-	-	-	2	2
2	OGP211	Fundamentals of Pipelines Eng.				3	-	-
2	OGP213	Intro to Surface Prod. Operations	-	-	-	2	-	-
2	OGP218	Fluid Mechanics	-	-	-	2	-	-
2	OGP228	Heat Transfer	-	-	-	2	-	-
2	OGP222	Elementary Principles of Process Eng				2	-	-
2	PET-330	Health & safety at Work (HSW)	-	-	-	2	-	-
2	OGP216	Into to Gas Processing & Treatment	-	-	-	3	-	-
2	OGP224	Pipelines Instal & Operation Manag.	-	-	-	3	-	-
2	PET209	Reservoir Rock Properties	2	2	2	-	-	-
2	PET209P	Reservoir Rock Properties Lab	1	1	1	-	-	-
2	PET216	Reservoir Fluid Properties	2	2	2	-	-	-
2	PET216P	Reservoir Fluid Properties Lab	1	1	1	-	-	-
2	PET225	Drilling Technology I	3	3	3	-	-	-
2	PET225P	Drilling Technology I Lab	1	1	1	-	-	-
2	PET217	Reservoir Engineering I	3	3	3	-	-	-
2	OGP215	Equilibrium thermodynamics	-	-	-	-	2	2
2	OGP218	Fluid Mechanics & Lab	-	-	-	-	3	3
2	OGP220	Mass Transfer	-	-	-	-	2	2
2	OGP222	Elementary Principles of Process Eng	-	-	-	-	2	2
2	OGP223	Physical Chemistry & Lab	-	-	-	-	3	3
2	OGP228	Heat Transfer & Lab	-	-	-	-	3	3
2	PET271	Pumps & Valves	1	1	1	1	1	1
	PET272	Heat Exchangers & Steam Traps	1	1	1	1	1	1
2	PET273	Air Compressors	1	1	1	1	1	1
2	PET274	Experimental Fluid Mechanics	1	1	1	1	-	1
2	PET275	Oil and Gas Testing	1	1	1	1	1	1
2	PET276	DC Machines	1	1	1	1	-	1
2	PET277	AC Machines	1	1	1	1	-	1
2	PET278	Intrumentation & Control	1	1	1	1	-	1
2	PET279	Process Fundamentals Simulation	1	1	1	1	-	1
2	OGP295	Internship	-	-	-	3	-	-
3	PET319	Well Testing	2	2	2	-	-	-
3	PET305	Petroleum Production	3	3	3	-	-	-
3	PET314	Well Logging	4	4	4	-	-	-
3	PET314B	Well Logging Lab	1	1	1	-	-	-
3	PET335	Drilling Technology II	2	2	2	-	-	-

3	PET-330	Health & safety at Work (HSW)	2	2	2	-	2	2
3	PET317	Reservoir Engineering II	-	3	3	-	-	-
3	PET425	Water Treatment and Injection	-	2	-	-	-	2
3	PET425P	Water Treatment and Injection Lab	-	1	-	-	-	1
3	PET345	Well Completion & Workover	3	3	3	-	-	-
3	PET394	Graduation Project	2	2	2	-	-	-
3	PETxxx	PET Technical Elective	3	3	3	-	3	3
3	PET326	Numerical Methods	-	-	-	-	3	3
3	OGP314	Analytical Chemistry	-	-	-	-	3	3
3	OGP313	Surface Production Operations	-	-	-	-	2	2
3	OGP316	Gas Processing & Treatment	-	-	-	-	3	3
3	OGP-225	Chemical Reactors and Mixing	-	-	3	-	3	3
3	OGP-225P	Chemical Reactors and Mixing Lab	-	-	1	-	3	3
3	OGP-215	Equilibrium Thermodynamics	-	-	2	-	-	-
3	OGP-345	Petroleum Refining & Processing	-	-	-	-	2	2
3	OGP-345P	Petro. Refining & Processing Lab	-	-	-	-	1	1
3	OGPxxx	OGP Technical Elective	-	-	-	-	3	3
3	OGP394	Graduation Project	-	-	-	-	2	2
3	OGP371	Process Engineering Drawing	-	-	-	-	1	1
3	OGP372	Oil Handling Systems and Faclities	-	-	-	-	1	1
3	OGP373	Gas Handling Systems and Faclities	-	-	-	-	1	1
3	OGP374	Separation Processes	-	-	-	-	1	1
3	OGP375	Oil and Gas Distillation	-	-	-	-	1	1
3	OGP376	Reactors Engineering	-	-	-	-	1	1
3	OGP377	Pipeline Pigging & Inspection	-	-	-	-	1	1
3	OGP378	Tank Farm Operations	-	-	-	-	1	1
3	OGP379	Control Room Operations	-	-	-	-	1	1
3	PET371	Rig Safety	1	1	1	-	-	-
3	PET372	Drilling	1	1	1	-	-	-
3	PET373	Well Control	1	1	1	-	-	-
3	PET374	Stuck Pipe Prevention	1	1	1	-	-	-
3	PET375	Cementing	1	1	1	-	-	-
3	PET376	Well Head / Christmas Tree	1	1	1	-	-	-
3	PET377	Workover	1	1	1	-	-	-
3	PET378	Formation Evaluation	1	1	1	-	-	-
3	PET379	Matrix Acidization	1	1	1	-	-	-
4	OGP-464	Process Dynamics & Control	-	-	3	-	-	3
4	PET409	Equipment Design and Selection	-	3	3	-	-	-
4	PET417	Reservoir Simulation	-	3	3	-	-	-
4	PET411	Petroleum Economics	-	2	2	-	-	2
4	PET420	Artificial Lift & Prod. Enhancement	-	3	3	-	-	-
4	PETxxx	PET Technical Elective	-	3	3	-	-	-
4	PET425	Water Treatment and Injection	-	-	2	-	-	-
4	PET425P	Water Treatment and Injection Lab	-	-	1	-	-	-
4	OGPxxx	Technical Elective	-	-	3	-	-	3
4	OGP-345	Petroleum Refining & Processing	-	-	2	-	-	-
4	OGP-345P	Petroleum Refining & Processes Lab	-	-	1	-	-	-
4	OGP-316	Gas Processing & Treatment	-	-	3	-	-	-
4	OGP465	Plant and Equipment Design	-	-	-	-	-	4
4	PET494	Graduation Project	-	3	3	-	-	-
4	OGP494	Graduation Project	-	-	-	-	-	3
4	PET495	Internship	-	3	3	-	-	-

4	OGP495	Internship	-	-	-	-	-	3
		Total	**63**	**86**	**109**	**34**	**65**	**89**

Major (PET-xxx) Technical Electives (6 credits)	
Code	***Course Title (credit hours)***
PET-326	*Numerical Methods (3 cr.)*
PET-315	*Geomechanics (2 cr.)*
PET-310	*Project Management (2 cr.)*
PET-340	*Unconventional Resources Completion & Stimulation (3 cr.)*
PET-410	*Gas Production Engineering (3 cr.)*
PET-415	*Enhanced Oil Recovery (3 cr.)*
PET-422	*Applied Water technology and Corrosion (2 cr.)*
PET-435	*Applied Environment (2 cr.)*
PET-450	*Special Topics in Petroleum Engineering Technology (3 cr.)*

Minor (OGP-xxx) Technical Electives (5 credits)	
Code	***Course Title (credit hours)***
OGP-222	*Elementary Principles of Process Engineering (2 cr.)*
OGP-340	*Petroleum Storage and Loading (2 cr.)*
OGP-371	*Process Equipment Drawing (1 cr.)*
OGP-415	*Chemical Reactor Design (L+Lab) (4 cr.)*
OGP-417	*Process Modeling & Simulation (L+Lab) (3 cr.)*
OGP-430	*Petrochemicals (3 cr.)*
OGP-465	*Plant and Equipment Design (L+Lab) (4 cr.)*

Humanities (HUM-xxx) Elective (3 credits)	
Code	***Course Title (credit hours)***
HUM-110	*Life-Long Learning Skills (3 cr.)*
HUM-211	*Arabic Communication Skills (3 cr.)*
HUM-212	*Applied Research & Development Skills (3 cr.)*
HUM-402	*Creativity, Innovation & Entrepreneurship(3cr.)*

(OGP-xxx) Technical Electives (6 credits)	
Code	***Course Title (credit hours)***
OGP-340	*Petroleum Storage and Loading (2 cr.)*
OGP-415	*Chemical Reactor Design (L+Lab) (4 cr.)*
OGP-417	*Process Modeling & Simulation (L+Lab) (3 cr.)*
OGP-430	*Petrochemicals (3 cr.)*

The Higher Diploma and Applied Bachelor programme, at the first and second semesters of the second year of PET programme are designed to develop the basic principles of specializations knowledge namely "petroleum engineering technology without/with a minor in Oil and Gas Process Engineering" and "oil and gas process engineering technology" as well as integrating the related topics of fundamental subjects. All courses offered up to this point are designed to provide students with solid ground for the On-Campus Training that will be conducted during the summer semester of the second year.

The summer semester of the second year is handled by the on-campus Petroleum Engineering Training

programme to engage the students in theoretical and on-campus training on Petroleum Engineering operation units. The second year subjects are designed to support the following parts of the programme in the third year and to establish foundations from which Higher Diploma graduates can build a range of evolving knowledge and skills. The subjects in year three are designed to provide both further consolidation and specialized knowledge suitable to higher technician and applied engineers levels. At this year, first and second semester offer advanced topics of Petroleum Engineering and specializations. All students are required to complete a third year graduation project based on their selection on one of the offered topics of specializations. The summer semester of the third year is devoted to the specialized On-the-Campus training. Based on their selected specialization, students spend summer semester of the fourth year in specialized Abu Dhabi National Oil Company (ADNOC) training or any other operating or Service Company training that is called on-the-job training (OJT). During the OCT and OJT, students' performance is assessed and accordingly they receive their professional technical license to such as NEBOSH Health and Safety at Work (HSW) and Welcap level one certificate. Students who finish all requirements receive their higher diploma certificate along with their professional licenses if they were admitted to higher diploma program and decide to do so or if required by their sponsorship.

Students admitted for the Applied Bachelor and those who obtained a Higher Diploma with high achievements who are interested (or required by their sponsors) to pursue their studies will continue studying for one more year (fourth year) to obtain an Applied Bachelor in Petroleum Engineering Technology. Senior level (fourth year) subjects include advanced classes in engineering disciplines and specializations along with some approved elective courses. Approved elective courses may be chosen from a variety of subjects to suit each student disciplinary background, oil and gas industry interests, and professional project area. A graduation design project has to be completed by the end of the first/second semester of fourth year. The last semester in the programme is allocated for the internship (on-the-job training).

Policy for Assignment of Student Specializations

The PET programme at Abu Dhabi Polytechnic uses the following process to assign specializations to each student:

1. Students will be informed in semester 2 of year 1, right after taking PET-110 (Introduction to Petroleum Engineering) course of the policy for assignment of specializations and the constraints on size and schedule for each specialization.
2. Students have to fill out Specialization Selection Form by the end of year 1 and submit it to the head of department.
3. Division Head or the programme determines whether the distribution of specializations fits the students sponsorships, workforce plan and the training schedule, then students will be informed about their specialization preference approval.
4. Students can change their selected specialization during the second and/or third year based on sponsor need and approval.

The above policy does not apply to Dolphin Energy sponsored students. They have no other choice but to go for Oil and Gas Processing Technology and graduate with a 2-years diploma. Their specialization in Oil and Gas Processing Technology is decided for them by Dolphin Energy and that they have no choice but to comply with their sponsor's decisions and needs.

PET Programme Completion Requirements

The technical content of Diploma, HD and AB in PET programme focuses on the applied aspects of science and engineering in that portion of the technological spectrum closest to technician and engineering operational functions. The technical content develops the skills, knowledge, methods, procedures, and techniques associated with the technical specializations and are appropriate to the goals of the programme. Using credit hours to evaluate technical content, the breakdown of the credit hours required for Diploma, HD and AB in PET is given in the following table:

Subject	Credit Hours											
	Petroleum Engineering						Oil and Gas Process Engineering					
MATH, PHYS, CHEM, HUM, ICT, ENG, PET, OGP	**Higher Diploma (HD)**	**%**	**Applied Bachelor (AB)**	**%**	**Applied Bachelor with a Minor (AB)**	**%**	**Diploma (D)**	**%**	**Higher Diploma (HD)**	**%**	**Applied Bachelor (AB)**	**%**
Math, Chemistry & Physics	31	25	31	20	31	18	20	23	31	25	31	20
English & Humanities	15	12	18	12	18	10	15	17	15	12	18	12
Engineering Fundamentals	14	11	14	9	14	8	14	16	11	9	11	7
ICT	3	2	3	2	3	2	3	4	3	2	3	2
Specialization Depth (PET & OGP)	63	50	86	57	109	52	34	40	65	52	89	59
Total	**126**	**100**	**152**	**100**	**175**	**100**	**86**	**100**	**125**	**100**	**152**	**100**

Diploma:
Almost 40% of the credit hours are devoted to the student's technical programme and specialization, while the other 60% are general (humanities, mathematics and sciences, and engineering fundamentals).

Higher Diploma:
Almost 52 to 57% of the credit hours are devoted to the student's technical programme and specialization. Just less than 48% of the credit hours are general to both specializations (humanities, mathematics and sciences, and engineering fundamentals).

Applied Bachelor:
Just above 52% of the credit hours are devoted to the student's technical programme and specialization. Just below 48% of the credit hours are general to both specializations (humanities, mathematics and sciences, and engineering fundamentals).

The technical content of the curriculum consists of a technical core and the increasingly complex technical specialties found later in the curriculum culminating in a one 8-weeks internship at a petroleum facility for AB degree students. Using ADNOC competency assurance management system (CAMS) as a guide, the technical content was developed to provide the prerequisite foundation of knowledge necessary for the technical specialties according to the petroleum industry standards.
Laboratory activities are an integral part of the sciences, engineering fundamentals, and specialization courses and are used to develop student competence in the use of analytical and measurement equipment common to the discipline and appropriate to the goals of the programme.
Technical courses are meant to develop student knowledge and competence in the use of standard design practices, tools, techniques, and computer software appropriate to the oil and gas upstream and downstream processes maintenance and operation.
After all credit hours in the prescribed courses have been completed for Diploma, HD or AB degrees, respectively, with a satisfactory grade, the student will have completed the programme requirements and be eligible for conferral of the Diploma or Higher Diploma or Applied Bachelor in Petroleum Engineering Technology. The Job Qualification Certificate is not a requirement for graduation.

Diploma

Oil and Gas Process Technology

Applies to students entering the PET program (freshmen year) in the **2016-2017** academic year

Year 1

Fall Semester — MATH, CHEM, ICT, PHYS & ENGL

No.	Course	LT	Lb	TT	CH	CR
MATH100	Precalculus	4		2	6	4
CHEM111	Chemistry I	3		2	5	3
CHEM111P	Chemistry I Lab		3		3	1
ICT112	Intro to Progr. & Probl. Solving (+La	2	2		4	3
PHYS111	Physics I	3		2	5	3
PHYS111P	Physics I Lab		3		3	1
ENGL111	English Communication Skills	3			3	3
Total		15	8	6	29	**18**

Spring Semester — MATH, CHEM, PHYS, ENGL & PET

No.	Course	LT	Lb	TT	CH	CR
HUM111	Islamic Culture	3			3	3
PHYS102	Physics II	3		2	5	3
PHYS102B	Physics II Lab		3		3	1
CHEM112	Chemistry II	3		2	5	3
CHEM112P	Chemistry II Lab		3		3	1
ENGL112	Technical English Skills	3			3	3
PET110	Introduction to Petroleum Eng.	3			3	3
Total		15	6	4	25	**17**

Summer Semester — ENG & PET

No.	Course	LT	Lb	TT	CH	CR
ENG121	Mech. Workshop		3		3	1
ENG111	Indust'l Safety and Pro Ethics	2		1	3	2
ENG113	Engineering Drawing	1	2		3	2
ENGL113	English for Oil and Gas	3		2	5	3
PET111	Introduction to Gas Production	3			3	3
Total		9	5	3	17	**11**

Year 2

Fall Semester — ENGL, HUM & OGP

No.	Course	LT	Lb	TT	CH	CR
HUM112	Emirates Society & Culture	3			3	3
OGP211	Fundamentals of Pipelines Eng.	3			3	3
OGP213	Intro to Surface Production Operat	2			2	2
OGP218	Fluid Mechanics	2	3		5	3
ENG133	Applied Electrical Technology	2	2		4	3
ENG124	Thermodynamics	2	2		4	3
Total		14	7	0	21	**17**

Spring Semester — OGP & PET

No.	Course	LT	Lb	TT	CH	CR
OGP228	Heat Transfer	2	2		4	3
OGP222	Elementary Principles of Process E	2			2	2
PET-330	Health & safety at Work (HSW)	2			2	2
OGP216	Into to Gas Processing & Treatment	3			3	3
OGP224	Pipelines Instal & Operation Mana	3			3	3
ENG124	Applied Instrumentation and Contr	2	2		4	3
Total		14	4	0	18	**16**

Summer Semester I — On-Campus Training (OCT)

No.	Course	LT	PT	Wks	CH	CR
PET271	Pumps & Valves	1	6	1	7	1
PET272	Heat Exchangers & Steam Traps	1	6	1	7	1
PET273	Air Compressors	1	6	1	7	1
PET275	Oil and Gas Testing	1	6	1	7	1
Total		5	30		35	**4**

Summer Semester II — On-the-Job-Training

No.	Course	LT	PT	Wks	CH	CR
OGP295	Internship	3	30	10	33	3
Total		3	30		33	**3**

Total	Diploma
Lecture hours	70
Laboratory hours	30
Practical Training hours	7
Tutorial hours	13
Contact hours	110
Credit hours	86

MATH, CHEM, PHYS, ENGL, HUM, ENG, PET, OGP	Diploma	
Disciplines	hrs	%
Mathematics, Chemistry & Physics	20	23
English & Humanities	15	17
Engineering Fundamentals	14	16
ICT	3	3.5
Training (OCT + OJP)	7	8.1
PET Courses (PET)	8	9.3
Oil & Gas Process Technology Depth (OGP)	19	22
Total	**86**	100

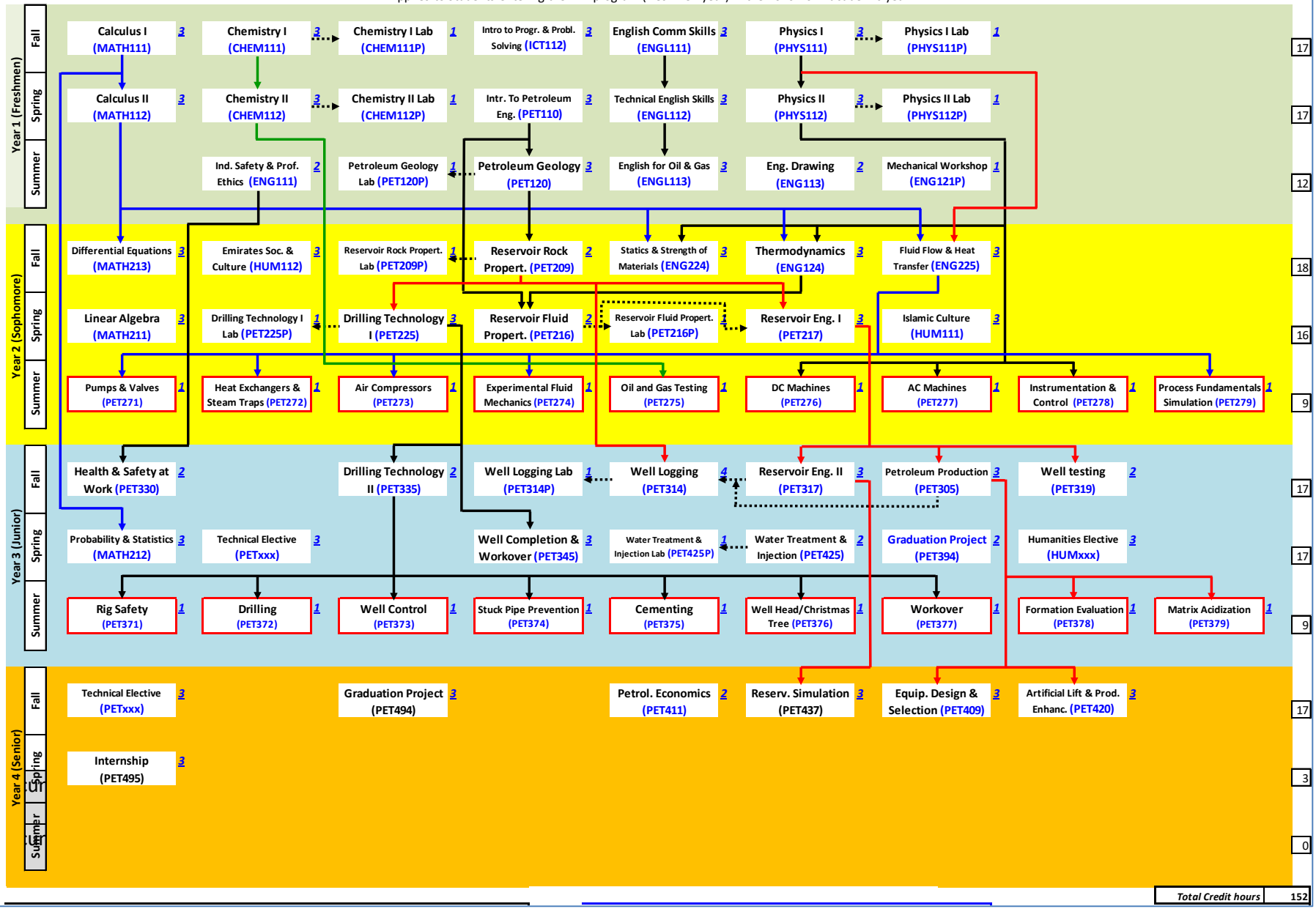
NOTES:

Pre-requisitse for OGP-295 are: Completion of 60 credits and cGPA ≥ 2.0

APPLIED BACHELOR

Petroleum Engineering Technology

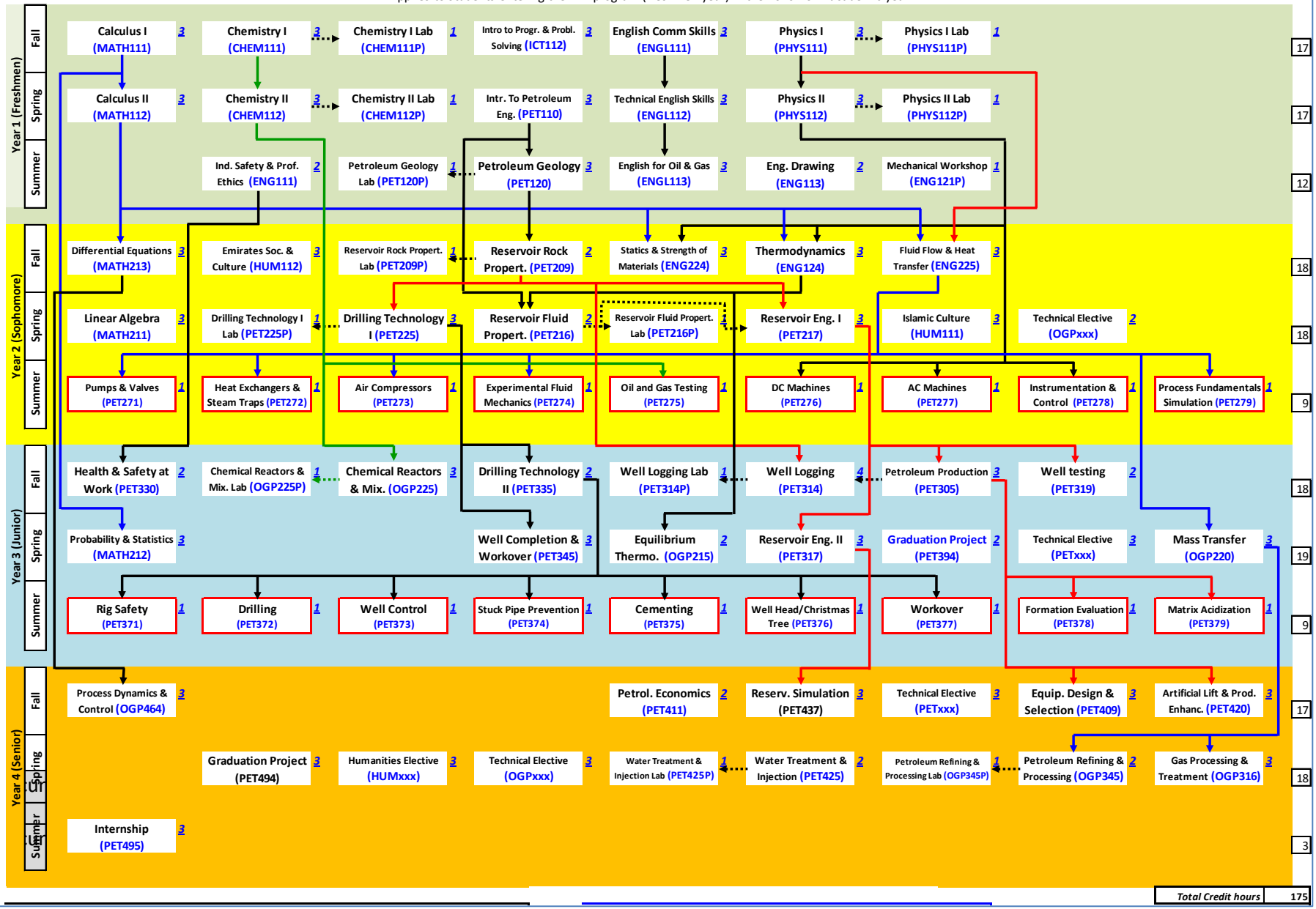
Applies to students entering the PET program (freshmen year) in the 2016-2017 academic year



APPLIED BACHELOR

Petroleum Engineering Technology with a minor in Oil and Gas Process Engineering

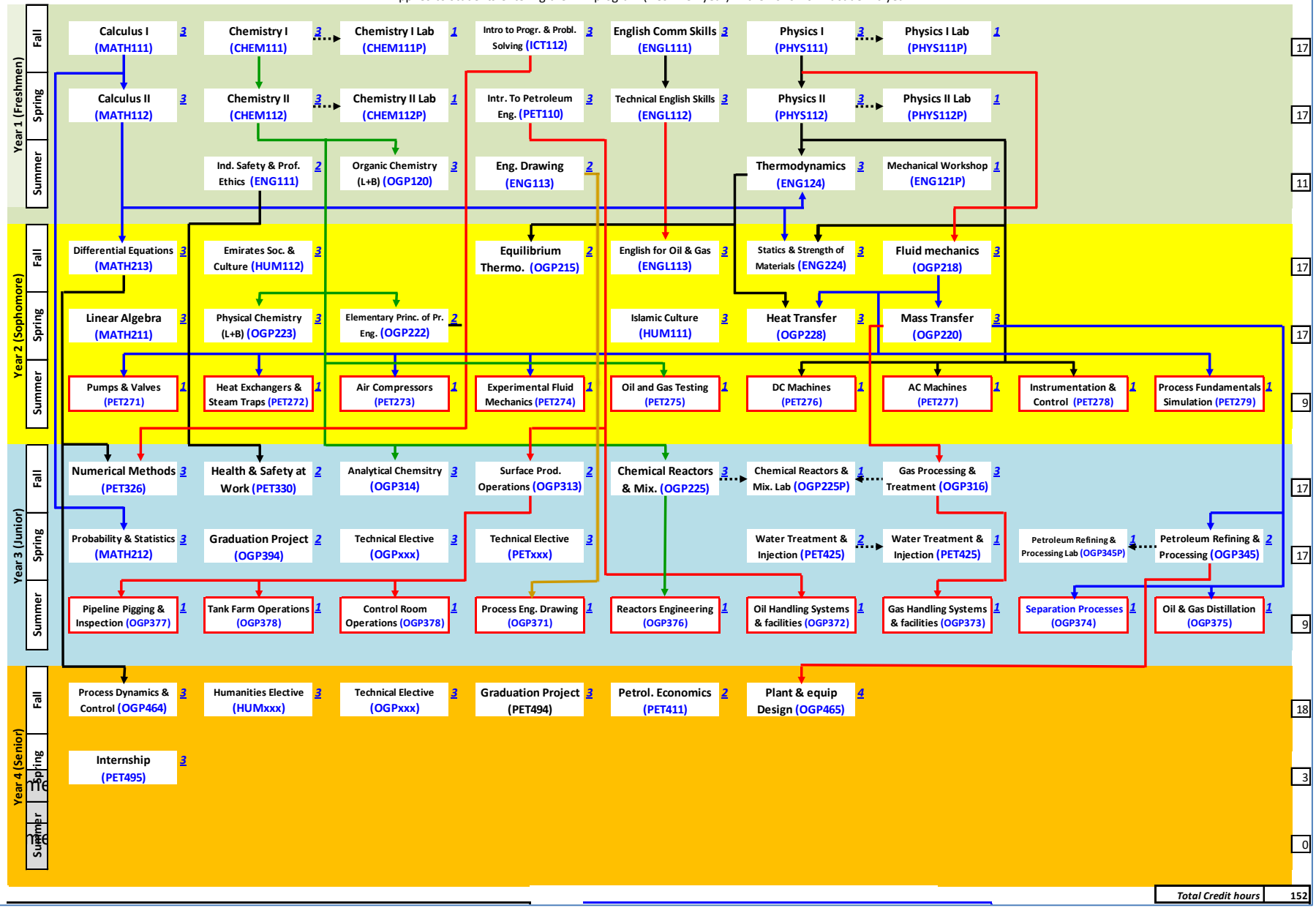
Applies to students entering the PET program (freshmen year) in the 2016-2017 academic year



APPLIED BACHELOR

Oil and Gas Process Engineering Technology

Applies to students entering the PET program (freshmen year) in the 2016-2017 academic year



Diploma, Higher Diploma and Bachelor of Science Degrees in Meteorology Program Requirements

In order to achieve Meteorology (MET) program objectives, the students must receive the best preparation to enter their future job. MET curriculum gives students a solid knowledge of theory and required skills for working in meteorological fields. As a result, MET graduates will be ready to enter the real-life job with required solid knowledge of theory and practice to be productive contributors, but they also will understand the need to continue to learn and improve their skills throughout their careers.

MET at Abu Dhabi Polytechnic offers the specialization of Meteorology for Diploma, Higher Diploma and Bachelor Degrees.
A total of 120 are required for Diploma, 181 credit hours are required for the Higher Diploma and 243 credit hours for the Bachelor of Science in Meteorology. These credit hours are fully prescribed under the following academic areas:

Subject		Meteorology		
		Diploma (D)	Higher Diploma (HD)	Bachelor of Science (B.Sc.)
Humanities		16	16	16
Math & Science		32	35	35
Engineering Fundamentals		2	2	2
ICT		5	7	7
Meteorology Depth		51	92	118
Elective		3	3	6
OCT and OJT		15	30	60
Total		**124**	**185**	**244**

The academic areas are further described by the following course titles and credit hours:

Humanities (HUM)

Mathematics and Sciences (MAS)

Year	Subject	Credit Hours		
		Diploma (D)	Higher Diploma (HD)	Bachelor of Science (BSc.)
First Year	Mathematics Physics I & II Chemistry I & II Statistics	15 8 6 3	15 8 6 3	15 8 6 3
Second Year		-	-	-
Third Year	Ordinary differential Equations	-	3	3
Total		**32**	**35**	**35**

Information and Communication Technology (ICT)

Year	Subject	Credit Hours		
		Diploma (D)	Higher Diploma (HD)	Bachelor of Science (B.Sc.)
First Year	Introduction to Programming & Problem Solving	3	3	3
Second	Modeling and Simulations I	2	2	2

Year				
Third Year	Modeling and Simulations II	-	2	2
Total		**5**	**7**	**7**

In addition to humanities, mathematics and science and computing courses, in the first two years of their study students will study principles of meteorology, physics of the atmosphere, and the basics courses of weather observations. In the first four quarters of the first year, general mathematics, science, English language, national culture, engineering fundamentals, fundamentals and physics of meteorology and two specialization courses for weather observations are offered to prepare solid ground for the students for their subsequent years of study (second, third and fourth) that involves both On-Campus Training (OCT) and On-the-Job Training (OJT). In the second year, the students will continue studying weather observation courses for preparing meteorological technicians, who will finish his/her study at the end of the second year. The third quarter will be on-the-job training, which is focusing on sharpening their skills as a meteorological technician. On the third year, the focus will be on further development of their knowledge and skills on weather forecasting. In the third quarter of this year, the students will have on-campus-training which will give them practical skills by reviewing the weather observer topics and introduce them with knowledge and skills of weather forecasting assistants. At the end of the third year, the student will have the opportunity to finish his/her study and get a higher diploma and works as a weather forecaster assistant.

Advanced courses in meteorology, one on-campus training and one on-job-training are offered for students proceeding their education for achieving the bachelor degree in meteorology. For successfully finishing their undergraduate education, students shall complete a directed research project in their senior year. The following table shows the detailed specialization depth for the Diploma, Higher Diploma and Bachelor Degrees of Meteorology.

Meteorology Depth

Year	Subject	Credit Hours		
		Diploma (D)	**Higher Diploma (HD)**	**Bachelor of Science (B.Sc.)**
First Year	Introduction to Meteorology	3	3	3
	Meteorological Instruments and Weather Observations	3	3	3
	Maps & GIS	3	3	3
Second Year	Radiation	3	3	3
	Atmospheric Thermodynamics	4	4	4
	Intern'l Meteorological Code	3	3	3
	Cloud Physics	3	3	3
	Meteorology and Computing	2	2	2
	Climatology	3	3	3
	Aviation Meteorology	3	3	3
	Agrometeorology	3	3	3
	Atmospheric Dynamics I	4	4	4
	Introduction to Weather Analysis	2	2	2
	Hydrology	3	3	3
	Basic Electronics for Meteorology	3	3	3
	Oceanography	3	3	3
	Synoptic Meteorology I	3	3	3
	On-the-Job Training	15	15	15
Third Year	Atmospheric Remote Sensing	-	3	3
	Atmospheric Dynamics II	-	4	4
	Weather Charts Analysis I	-	3	3
	Synoptic Meteorology II	-	3	3
	Numerical Weather Prediction	-	4	4

	Environmental Issues	-	3	3
	Marine Meteorology	-	3	3
	Weather Charts Analysis II	-	3	3
	Air Pollution	-	3	3
	Numerical Weather Analysis	-	3	3
	Satellite Meteorology	-	3	3
	Radar Meteorology	-	3	3
	Atmospheric Waves	-	3	3
	On-the-Campus Training	-	15	15
Fourth Year	Regional Synoptic Meteorology	-	-	3
	Tropical Meteorology	-	-	3
	Mesometeorology	-	-	3
	Global Climate Changes	-	-	3
	Water Resources Management	-	-	3
	Climate Data Management	-	-	3
	Long range Weather Forecasts	-	-	2
	Boundary layer Meteorology	-	-	3
	Project	-	-	3
	On-the-Campus Training	-	-	15
	On-the-Job Training	-	-	15
Total		**66**	**122**	**178**

MET Programme Completion Requirements

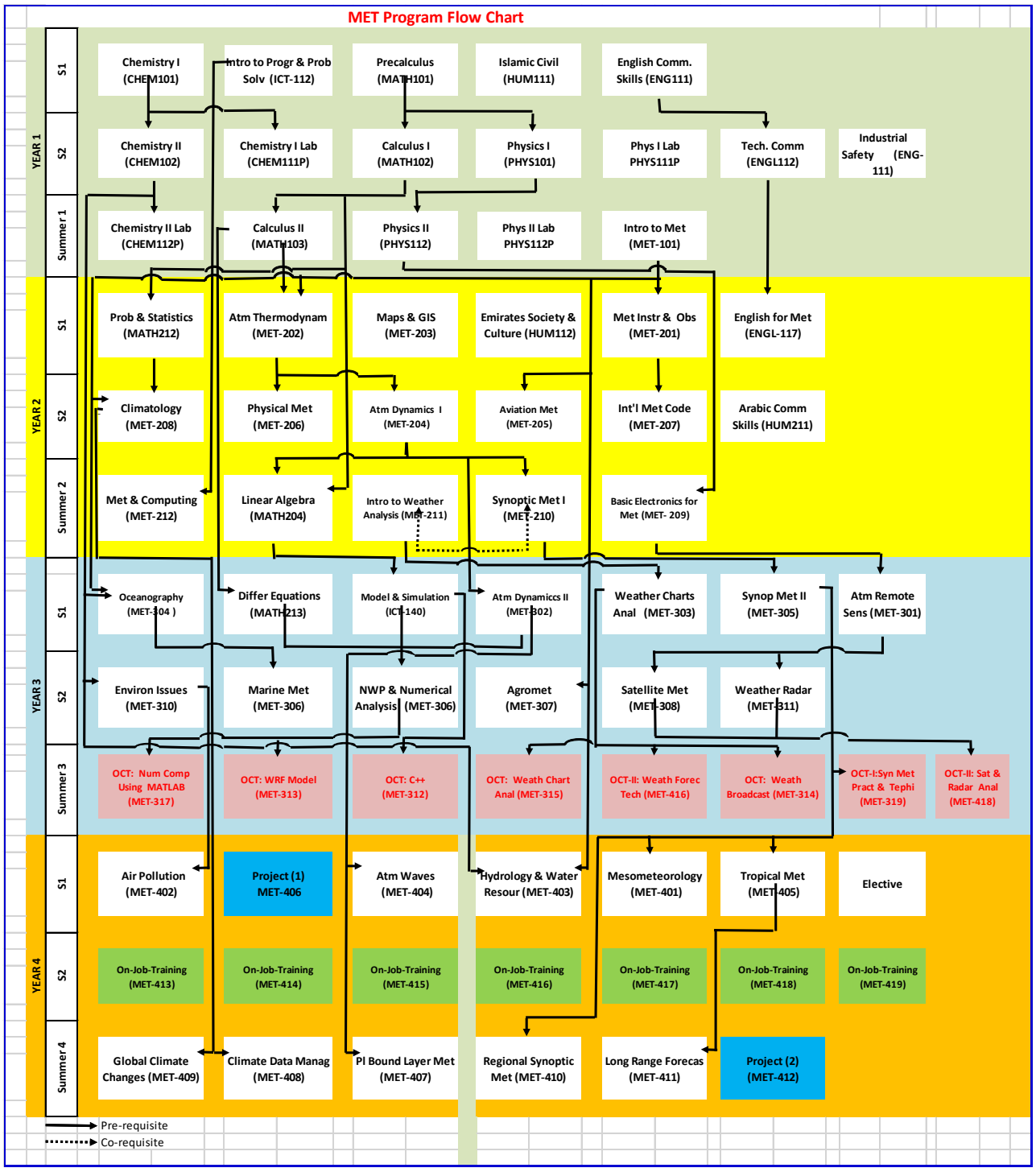
The technical content of the D, HD and B.Sc. in MET programme focuses on the applied aspects of meteorology in that portion of the technological spectrum closest to practical functions. The practical content develops the skills, knowledge, methods, procedures, and techniques associated with the meteorology specialization and are appropriate to the goals of the programme.
Using credit hours to evaluate practical content, the breakdown of the credit hours required for the D, HD and B.Sc. in MET is given in the following table:

Subject	**Credit Hours**					
	Meteorology					
	Diploma (D)		**Higher Diploma (HD)**		**Bachelor of Science (B.Sc.)**	
	Credit Hours	**Percent** (%)	**Credit Hours**	**Percent** (%)	**Credit Hours**	**Percent** (%)
Humanities	16	12.9	16	8.7	16	6.6
Math & Science	32	25.8	35	18.9	35	14.3
Engineering Fundamentals	2	1.6	2	1.1	2	0.8
ICT	5	4.0	7	3.8	7	2.9
Meteorology Depth	51	41.1	92	49.7	118	48.4
OJT & OCT	15	12.2	30	16.2	60	24.5
Elective	3	2.4	3	1.6	6	2.5
Total	**124**	**100**	**185**	**100**	**244**	**100**

Laboratory and practical activities are an integral part of the sciences, engineering fundamentals, and

specialization courses and are used to develop student competence in the use of analytical methods and measurement equipment common to the discipline and appropriate to the goals of the programme.
Courses with laboratory and practical activities are meant to develop student knowledge and competence in the use of standard design practices, tools, techniques, and computer software appropriate to the development of their hand-on skills and understanding of the various topics of meteorology career.
After all credit hours in the prescribed courses have been completed for HD or AB degrees, respectively, with a satisfactory grade, the student will have completed the programme requirements and be eligible for conferral of the Diploma, Higher Diploma and/or Bachelor Degree in Meteorology.
The Flow sheet of Meteorology Specialization is shown in the following figure. The figure shows the Prerequisite and Co-requisite courses of the Meteorology Program.

Flow sheet of Meteorology Specialization



11.Academic Calendar for 2016-2017

Directive (02)/2016

AD Polytechnic Academic Calendar 2016/2017

First Semester (2016-2017)

Sun	21 Aug 2016	Staff report to work (previous and new)
Sun – Thurs	21 Aug – 1 Sep 2016	Skills for Life (S4L)
Sun	**28 Aug 2016**	**First Semester Classes Begin**
Mon	29 Aug 2016	New student orientation by Heads
Mon	29 Aug 2016	Registration of NEW STUDENTS
Thurs	1 Sep 2016	Registration; add and drop last day for returning students
Sat –Tue	**10 – 15 Sep 2016**	**Observing Arafat and Eid Al Adha (TBC)**
Sun	**02 Oct 2016**	**Hijri New Year (TBC)**
Thurs	13 Oct 2016	Last day for withdrawal without W
Sun-Thurs	16-27 Oct 16	Midterm Exam (Wk8,9)
Sun-Thurs	13– 17 Nov 2016	Early registration for Second Semester starts (Wk12)
Wed	**30 Nov. 2016**	**Martyrs Day**
Fri-Sat	**02-03 Dec 2016**	**NATIONAL DAY**
Sun	**11 Dec 2016**	**Prophet's Birthday (TBC)**
Sun – Thu	11 – 15 Dec 2016	Semester 1 Final Exams
Sun-Thu	**18 - 29 Dec 2016**	**Winter Break**

Second Semester (2016-2017)

Sun	**01 Jan 2017**	**New Year**
Mon	02 Jan 2017	Second Semester Classes Begin
Mon-Thurs	02 – 05 Jan 2017	Registration; Add and drop last day
Thurs	16 Feb 2017	Last day for withdrawal without W
Sun - Thurs	19 Feb – 2 March 2017	Mid QTR exams (Wk 8,9)
Sun - Thu	**26 March – 06 April '16**	**Spring Break**
Sun - Thurs	09-13 April 2017	Early registration for Summer semester
Monday	**24 April 2017**	**Israa & Miaraj (TBC)**
Sun – Thu	30 April – 04 May 2017	Second Semester Final Exams
Sun – Thu	**07 - 11 May 2017**	**Second Semester Break**
Sun – Thu	**07 - 11 May 2017**	**Academic Staff PD Week**

Summer Semester (2016-2017)

Sun	**14 May 2017**	**Summer Semester Classes Begin**
Thurs	18 May 2017	Registration; Add and drop last day
approx	25 May -24 Jun 2017	Ramada
Sun - Thurs	11 – 15 June 2017	Midterm Exams (Wk5)
Sun –Thurs	18 - 22 June 2017	Early registration for Semeser 4 starts
Sun–Tue	25 – 27 June 2017	Eid Al Fitr (TBC)
Thurs	29 June 2017	Last day for withdrawal without W
Sun – Thu	09 – 13 July 2017	Final Exams Summer Semester
Sun - Thu	16 – 20 July 2017	Summer Semester PD Week
Sun – Thu	**16 July - 17 Aug 2017**	**Summer Break (5 weeks)**
Sun	**20 Aug 2017**	**All faculty returns**

TBC: To be confirmed
V2 change to withdrawal re week 7

– End –

12.Course Descriptions

Course descriptions of programs, which are offered in AD Polytechnic, are listed below. The credit for each course is indicated after the title in the course description. A credit is mainly based on the number of lecture hours per week and is less affected by the number of laboratory or on-the-job experience hours per week.

Advanced Energy Systems (AES)

AES-711 Introduction to Nuclear Technology (3 CR)
This course covers the introduction to nuclear power technology, including nuclear technology history, current status, nuclear terminologies and radiation protection. This course also covers the fundamentals of atomic structure, mass defect, and binding energy; nuclear interactions and reactions; cross-sections; neutron activation; half-life determination; isotope identification methods; ionization (Bremsstrahlung, ionization and excitation);radiation interactions with matter (pair production, Compton scattering, photoelectric effect); and, neutron interactions (elastic and inelastic scattering, charged particle emission, fission, radioactive capture).
Lecture 2 hrs/wk, Laboratory/Tutorial 2 hrs/wk.

AES-712 Nuclear Reactor Theory (4 CR)
This course provides basic concepts and theories associated with the theory of the fission process; control of fission process; neutron flux effects on reactor power; neutron leakage; fission products; neutron sources; reactivity coefficients; changes in reactor operational parameters; radiation from fission and from fission products; residual heat/decay heat. This course also covers the introduction to nuclear reactor operation, including nuclear reactor kinetics, reactor control, and power operation.
Lecture 4 hrs/wk.

AES-721 Mechanical Technology for Nuclear Power Plant Operators (4 CR)
This course covers the operating principles and types of valves, pumps, heat exchangers, steam traps, filters and strainers, air compressors, refrigeration machines, heating, ventilation, and air conditioning systems, steam turbines, diesel engines, hangers and snubbers.
Lecture 3 hrs/wk, Laboratory/Tutorial 2 hrs/wk.

AES-731 Electrical Technology I for Nuclear Power Plant Operators (3 CR)
This course covers basic electrical concepts and theory relating to DC circuit analysis including Ohm's law, Kirchhoff laws, resistive networks, equivalent circuits, capacitance and inductance. It also covers the DC motors and DC generators. One weekly lab session will focus on gaining hands-on skills with electrical components, circuit diagrams, circuit assembly, instrumentation (oscilloscope, multimeters, function generators, power supply units, data acquisition), electrical safety, and DC circuit testing and measurement.
Lecture 2 hrs/wk, Laboratory/Tutorial 2 hrs/wk.

AES-732 Electrical Technology II for Nuclear Power Plant Operators (3 CR)
This course covers basic concepts relating to AC systems, including basic AC theory, AC reactive components, three phase power, AC machines, Electrical transmission and distribution, and rectification.
Lecture 2 hrs/wk, Laboratory/Tutorial 2 hrs/wk.

AES-741 Thermal Science for Nuclear Power Plant Operators (3 CR)
This course covers thermodynamics units, volumetric properties of pure fluids, important thermodynamics properties, mechanisms of heat transfer by conduction, convection, and radiation, heat exchanger design and sizing, fluid mechanics and fluid statics, and application of thermodynamics to flow systems, in particular the Rankine cycle in electric power production.
Lecture 2 hrs/wk, Laboratory/Tutorial 2 hrs/wk.

AES-751 Instrumentation and Control Technology (3 CR)

This course provides knowledge and skills of fundamental instrumentation and control principles and concepts. It includes demonstrated knowledge of systems and components associated with process control, valve actuators and position indicators, miscellaneous sensors and detectors, chemistry instrumentation, and radiation detectors. It encompasses demonstrating an understanding of concepts of instrumentation and control, temperature sensors and detectors, pressure sensors and detectors, level sensors and detectors, flow sensors and detectors, and measurement.
Lecture 2 hrs/wk, Laboratory/Tutorial 2 hrs/wk.

AES-761 Applied Chemistry (3 CR)
This course covers the principles of water treatment and corrosion protection applied to a nuclear power plant.
Lecture 3 hrs/wk.

The following courses (AES-771 through AES-773) are provided by Nawah at the Barakah Nuclear Power Plant in the western region of Abu Dhabi. A total of 44 CR of OJT is required for the HDNT. Duration and credits will be determined by Nawah's schedule including the availability of facilities and personnel.

AES-771 OJT 1 Nuclear Power Plant Systems and Operation
AES-772 OJT 2 Nuclear Power Plant Familiarization
AES-773 OJT 3 Specialization Training

AES-781 Nuclear Safety and Regulations (3 CR)
This course covers basic concepts of a Design Basis Accident (DBA), severe accidents, accident analysis, principles and methods for assessing risk and reliability for Nuclear Power Plants. The course also covers several safety parameters and safety analysis of NPPs and safety improvement, international cooperation, and trends.
Lecture 3 hrs/wk.

AES-782 Radiation Measurement and Protection (4 CR)
This course covers two main subjects: first to teach students how to measure radiation and understand the principle of radiation detection, and second to provide detailed radiological protection theory and techniques and develop student understanding and skills in radiation protection fundamentals needed to apply in the operation and maintenance of a nuclear power plant.
Lecture 3 hrs/wk, Laboratory/Tutorial 2 hrs/wk.

AES-783 Graduation Project (4 CR)
This course develops student understanding in broader issues in the commercial nuclear power industry and knowledge and investigative and hands-on skills in areas relevant to their future functional roles using a topic they research, select, and present.
Lecture/Tutorial 4 hrs/wk.

AES-784 Work-based Learning (2 CR)
This course provides practical experience at the workplace in a nuclear power plant, and covers the general system and component knowledge that is part of the Basic Systems Knowledge curriculum and focus on the in-depth knowledge required for the non-licensed operator discipline.
Lecture 2 hrs/wk.

AES-785 Materials Science for Nuclear Power Plant Operators (2 CR)
This course covers the introduction to material problems in a nuclear power plant, including basic material properties, brittle fracture characteristics, radiation-induced property changes, and temperature effects such as heat up and cool down rate limits.
Lecture 2 hrs/wk.

AEROMECHANICAL TECHNOLOGY-Course Description

AME 1001 – Workshop Practice/Orientation (1,6,2-3)

The course provides students with knowledge and skills to perform basic technical operations, handle hand and power tools to be used in sheet metal work, riveting, filing, as well as applying measuring tools, select and adjust test equipment used on aircraft.
Pre-requisite: Admission to ABU DHABI POLYTECHNIC
Co-requisite: None

AME 1064 - Materials and Hardware I (6A) (2,6,3-4)

This course introduces to the characteristics of ferrous, non-ferrous, non-metallic and composite material, describes the chemical structure, properties and application of sealant and bonding agents. States the difference between thermoplastics and thermosetting plastics; introduces to the procedures to manufacture wood and composite structure; describe properties and application of PrePregs.
Pre-requisite: None
Co-requisite: AME 1074

AME 1074 - Materials and Hardware II (6A) (2,6,3-4)

The course covers the fundamentals of corrosion, corrosion detection and corrosion treatment, defines types of aircraft fasteners like: bolts, studs and screws, locking devices and their application in aircraft technology; describe and apply the process of assembling aircraft parts.
Pre-requisite: None
Co-requisite: AME 1064

AME 1264 – Advanced Materials and Hardware I (6B1) (3,3,2-4)

This course is on Materials and Hardware used in aviation and covers an advanced level with emphasis placed on the characteristics and properties of ferrous, non-ferrous materials, composite material, sealants, bonding agents, thermoplastics and thermosetting plastics, types of corrosion and its repair procedures.
Pre-requisite: None
Co-requisite: None

AME 1284 – Advanced Aerodynamics (8B1) (4,3,3-5)

This course covers an advanced level with emphasis put on the International Standard Atmosphere (ISA), airflow around a body, boundary layer, laminar and turbulent airflow, generation of lift and drag, relationship between lift, drag, thrust and weight, glide ratio, influence of load factor, flight stability and dynamics.
Pre-requisite: PHY 1022
Co-requisite: None

AME 2003 – OJT in Maintenance Environment (A) (0,40,0 – 13)

The module provides the knowledge gained in previous modules within a hangar / operational aircraft environment. The aim is to familiarize the students with the procedures and facilities within a maintenance environment with emphasis on safety. It raises awareness on issues related to quality assurance, planning, record keeping, tool control, etc. It also exposes students to real time work experience, highlighting the demands of work patterns and human factor issues.
Pre-requisite: Second year student status
Co-requisite: None

AME 2071 - Maintenance Practices I – Safety Precautions and Testing (7A) (2,6,4-4)

This course covers safety precautions for aircraft and workshops, workshop practices, care and control of tools, dimensions, allowances and tolerances, standards of workmanship, calibration of tools and equipment.
Pre-requisite: AME 1074, AVSC 1093
Co-requisite: None

AME 2072 - Maintenance Practices II – Engineering Drawings (7A) (2,6,4-4)

This course provides an introduction to engineering drawings, diagrams and standards, ATA 100 specifications,

common systems of fits and clearances, electrical cables and connectors, standard methods for checking shafts, bearings and other parts.
Pre-requisite: AME 2071
Co-requisite: None

AME 2174 - Maintenance Practices III – Electrical Cables and Connectors (7A) (1,6,1- 3)

This course provides fundamental knowledge of electrical cables and connectors, wiring protection techniques, bonding practices and testing.
Pre-requisite: AME 2072
Co-requisite: AME 2374

AME 2374 - Maintenance Practices IV – Aircraft Parts Joining and Inspection (7A) (1,6,1-3)

This course covers riveting techniques, pipes bending and hoses, springs, bearings and transmissions testing, and control cables adjustment. It also covers aircraft handling and storage, jacking, inspection, effects of environmental conditions on aircraft handling, aircraft repair and assembly techniques, trouble shooting, abnormal events, maintenance procedures.
Pre-requisite: AME 2072
Co-requisite: AME 2174

AME 2081 - Basic Aerodynamics (7A) (2,3,0-3)

The course provides basic aerodynamic knowledge, physics of the atmosphere, airflow around a body, forces acting on aircraft, and theory of flight, flight stability and dynamics.
Pre-requisite: None
Co-requisite: None

AME 2112 – Aircraft Structure and Systems I (11A) (1,3,1-2)

The course provides fundamentals of aero plane aerodynamics and flight controls, high speed flight, airframe structures, general Air Transportation Association (ATA) concepts of aircraft structures, fuselage, wings, stabilizers, flight control surfaces and air-conditioning.
Pre-requisite: AME 2081, AVN 1404
Co-requisite: None

AME 2114 – Aircraft Structure and Systems II (11A) (3,3,7-4)

The course provides fundamentals of aircraft systems related to instruments/avionics systems, electrical power, and other electronic and instrument systems.
Pre-requisite: AME 2112
Co-requisite: None

AME 2152 - Turbine Engines (15A) (2,3,3-3)

The course provides an introduction to the fundamentals of gas turbine engines, including turbo-prop, and turbo-shaft engines, explains the various components of a Gas Turbine engine and their working principles, inlet, compressors, combustion section, turbine section, exhaust, lubricants and fuels and related systems. Auxiliary components are also covered in this course.
Pre-requisite: None
Co-requisite: None

AME 2172 - Propellers (17A) (1,3,1-2)

The module provides fundamentals about propeller fundamentals, propeller construction, propeller pitch control, ice protection, maintenance, and propeller storage and preservation.
Pre-requisite: None
Co-requisite: None

AME 2214 – Advanced Aircraft Structures and Systems I (11B) (3,3,7-4)

The course provides fundamentals of aero plane aerodynamics, flight controls, and high speed flight.
Pre-requisite: AME 2872, AVN 2043
Co-requisite: None

AME 2261 -Advanced Materials and Hardware II (6B1) (3,3,1-4)

This course covers the various types of fasteners, and other aircraft parts such as pipes, unions, springs, bearings, transmissions. The course describes procedures related to manufacturing composite materials, interpret and understand drawings and describe the process of aircraft parts assembly.
Pre-requisite: AME 1264
Co-requisite: None

AME 2271 – Advanced Maintenance Practices I – Safety Precautions and Testing (7B1) (3,6,5-5)

This course covers safety precautions for aircraft and workshop, workshop practices, calibration of tools and calibration standards, operation, function and use of common avionic general testing equipment.
Pre-requisite: AME 1264, AVSC 1093
Co-requisite: AME 2261, AME 2471

AME 2471 - Advanced Maintenance Practices II – Engineering Drawings (7B1) (3,6,5-5)

This course covers an advanced level with emphasis put on engineering drawings, diagrams and standards, ATA 100 specifications, common systems of fits and clearances, standard methods for checking shafts, bearings and other parts.
Pre-requisite: AME 1264, AVSC 1093
Co-requisite: AME 2271, AME 2261

AME 2272 – Advanced Maintenance Practices III – Bonding Techniques and Testing (7B1) (2,6,2-4)

This course covers an advanced level with emphasis put on electrical cables and connectors, wiring protection techniques, bonding practices and testing, riveting, pipes and hoses, springs, bearings, transmissions and control cables.
Pre-requisite: AME 2271, AME 2471
Co-requisite: AME 2472, AME 2672, AME 2872

AME 2472 – Advanced Maintenance Practices IV – Welding, Brazing and Soldering (7B1) (2,6,2-4)

This course covers an advanced level with emphasis put on welding, soldering, brazing, calculations of aircraft weight and balance, and centre of gravity/balance limits.
Pre-requisite: AME 2271, AME 2471
Co-requisite: AME 2272, AME 2672, AME 2872

AME 2672 – Advanced Maintenance Practices V – Aircraft Handling and Storage (7B1) (2,6,2-4)

This course covers an advanced level with emphasis put on Aircraft handling and storage, jacking, inspection, effects of environmental conditions on aircraft handling, aircraft repair and assembly techniques, trouble shooting.
Pre-requisite: AME 2271, AME 2471
Co-requisite: AME 2272, AME 2472, AME 2872

AME 2872 – Advanced Maintenance Practices VI – Maintenance Procedures (7B1) (2,6,2- 4)

This course covers an advanced level with emphasis put on abnormal events such as lightning strikes, heavy landings and flight through turbulences, and maintenance planning, modification procedures, inspections, quality assurance and quality control.
Pre-requisite: AME 2271, AME 2471
Co-requisite: AME 2272, AME 2472, AME 2672

AME 2254 - Turbine Engine I (15B1) (3,6,8-5)

This course covers principles and operation of Gas Turbine Engines with an emphasis put on the relationship between force, work, power, energy and acceleration, engine performance. Also covered are the various components of a Gas Turbine engine and their working principles.
Pre-requisite: None
Co-requisite: None

AME 3003 – OJT / Internship in a Maintenance Environment (B) (0,40,0-13)

The module is designed to bring together all knowledge learnt in previous modules within a hangar/ operational aircraft environment. The aim is to familiarize the students with the procedures and facilities within a maintenance environment with particular emphasis on safety. It is intended to help raise awareness on issues related to quality assurance, planning, record keeping, tool control, etc. It also exposes students to real time work experience, highlighting the demands of work patterns and human factor issues.
Pre-requisite: Third year student status
Co-requisite: None

AME 3011 - Thermodynamics (3,1,2-3)

The course presents concepts to understand the fundamentals of thermodynamics and heat transfer amongst fluids. It enables the understanding the basics of heat transfer related to various aspects of conduction, convection and radiation.
Pre-requisite: PHY 1022
Co-requisite: None

AME 3211 Advanced Aircraft Structures and Systems II (11B) (3,3,6-4)

This course covers airframe construction, General Air Transportation Association (ATA) concepts of aircraft fuselage, wings, stabilizers, flight control surfaces and air-conditioning.
Pre-requisite: AME 2214
Co-requisite: None

AME 3212 Advanced Aircraft Structures and Systems III (11B) (3,3,6-4)

This course covers General Air Transportation Association (ATA) concepts of aircraft instruments/avionics systems, electrical power, and other electronic and instrument systems.
Pre-requisite: AME 3211
Co-requisite: None

AME 3214 Advanced Aircraft Structures and Systems IV (11B) (3,3,8-4)

This course covers General Air Transportation Association (ATA) concepts of aircraft fire protection systems, flight controls, fuel systems, hydraulic power, landing gear and On Board Maintenance Systems.
Pre-requisite: AME 3212
Co-requisite: None

AME 3251 - Turbine Engine II (15B1) (3,3,5-4)

This course emphasizes construction and working principles of inlet, compressors, combustion section, turbine section, exhaust, lubricants and fuels and related systems, engine indication, and power augmentation. Auxiliary components and accessories are also covered in this course.
Pre-requisite: AME 2254
Co-requisite: none

AME 3213 – Aircraft Structures and Systems I (11B1) (2,6,6 – 4)

The course provides fundamentals of aero plane aerodynamics, flight controls, and high speed flight, airframe construction, General Air Transportation Association (ATA) concepts of aircraft fuselage, wings, stabilizers, flight control surfaces and air-conditioning systems.
Pre-requisite: None
Co-requisite: None

AME 3272 - Propellers (17B1) (3,3,4-4)

This course emphasizes blade element theory, propeller slip, torque, vibration and resonance, propeller pitch control, ice protection, maintenance, and propeller storage and preservation.
Pre-requisite: None
Co-requisite: None

AME 3474 - Propellers (3,3,6 – 4)

This course emphasizes blade element theory, propeller slip, torque, vibration and resonance, propeller pitch control, ice protection, maintenance, and propeller storage and preservation.
Pre-requisite: None
Co-requisite: None

AME 3313 -Aircraft Structures and Systems II (11B) (3,6,3-5)

This course covers General Air Transportation Association (ATA) concepts of aircraft instruments/avionics systems, electrical power, and other electronic and instrumentation/indication systems. Also covered are aircraft fire protection systems, flight controls, fuel systems, hydraulic power, landing gear and On Board Maintenance Systems (OBMS).
Pre-requisite: AME 3012
Co-requisite: None

AME 3252 - Turbine Engines (15B1) (2,6,4-4)

This course covers principles and operation of Gas Turbine Engines with an emphasis put on the relationship between force, work, power, energy and acceleration, engine performance and the various components of a Gas Turbine engine and their working principles. This course also emphasizes construction and working principles of inlet, compressors, combustion section, turbine section, exhaust, lubricants and fuels and related systems, engine indication, and power augmentation. Auxiliary components and accessories are also covered in this course.
Pre-requisite: None
Co-requisite: None

AME 3261 - Materials and Hardware I (3,3,3-4)

This course introduces Materials and Hardware used in aviation and covers an advanced level with emphasis put on the characteristics and properties of ferrous, non-ferrous materials, composite material, sealants, bonding agents, thermoplastics and thermosetting plastics, types of corrosion and its repair
procedures.
Pre-requisite: None
Co-requisite: None

AME 3262 - Materials and Hardware II (3,3,6-4)

This course covers the various types of fasteners, and other aircraft parts such as pipes, unions, springs, bearings, transmissions. The course describes procedures related to manufacturing composite materials, interpret and understand drawings and describe the process of aircraft parts assembly.
Pre-requisite: AME 3261
Co-requisite: None

AME 3273 – Maintenance Practices I (2,9,0-5)

This course covers safety precautions for aircraft and workshop, workshop practices, calibration of tools and calibration standards, operation, function and use of common avionic general testing equipment. This course emphasizes engineering drawings, diagrams and standards, ATA 100 specifications, common systems of fits and clearances, standard methods for checking shafts, bearings, as well as electrical cables and connectors, wiring protection techniques, bonding practices and testing, riveting, pipes and hoses, springs, bearings, transmissions and control cables.
Pre-requisite: AVSC 1093
Co-requisite: None

AME 3274 - Maintenance Practices II (2.9.2-5)

This course covers an has emphasis put on welding, soldering, brazing, calculations of aircraft weight and balance, and centre of gravity/balance limits, aircraft handling and storage, jacking, inspection, effects of environmental conditions on aircraft handling, aircraft repair and assembly techniques, trouble shooting. This course puts emphasis on abnormal events such as lightning strikes, heavy landings and flight through turbulences, and

maintenance planning, modification procedures, inspections, quality assurance and quality control.
Pre-requisite: AME 3273
Co-requisite: None

AIR TRAFFIC MANAGEMENT-Course Description

ATM 1114 - Aviation Law (4,0,6-4)
An introduction to aviation law. The module gives an introduction to national and international organizations, ATC licensing/certification and safety management /regulation. Rules and regulations are also examined in detail.
Prerequisites: None
Co-requisites: None

ATM 1124 Aircraft (3,0,6-3)
An introduction to the theory of flight and aircraft characteristics. The module presents the principles of flight, together with the operating principles of aircraft engines, systems and instruments; factors affecting aircraft performance are also explained.
Prerequisites: PHY 1022
Co-requisites: None

ATM 2014 ATM Project I (2,9,2-5)
This module provides students with the opportunity to show an appreciation of the information gained during the Basic (ICAO 051) course through the completion of an ATM-related project. Under the supervision of an instructor, students shall select and research a topic from a pre-determined list and produce a reasoned analysis of their work.
Prerequisites: Basic (ICAO 051) Course
Co-requisites: None

ATM 2131 Air Traffic Management (4,0,6-4)
Introduction to Air Traffic Management and its component parts, including the provision of Air Traffic Control, Flight Information and Advisory services. Students shall be introduced to the basic principles of radiotelephony, coordination, altimetry and level allocation.
Prerequisites: ATM 1114
Co-requisites: None

ATM 2141 Meteorology (3,0,5-3)
An introduction to meteorology. Students shall be introduced to the organization of the meteorological service, the atmosphere and atmospheric circulation, meteorological phenomena and the types of meteorological information available for aviation.
Prerequisites: None
Co-requisites: None

ATM 2151 Navigation (3,0,5-3)
An introduction to the purpose of navigation, as well as to the properties of the Earth. Students shall be introduced to the basic principles of navigation and the use of this knowledge in ATS operations.
Prerequisites: None
Co-requisites: None

ATM 2161 Equipment & Systems (4,0,5-4)
An introduction to equipment and systems. Radio theory and an introduction to RADAR comprise most of this course. Further topics discussed are automatic dependent surveillance, automation, and electronic communications. A brief lesson on working positions of an aerodrome, approach, and area controller are included.
Prerequisites: None
Co-requisites: None

ATM 2172 Human Factors (3,0,6-3)

An introduction to the human factors that affect performance, communication, teamwork, error, and the work environment of air traffic services personnel.
Prerequisites: None
Co-requisites: None

ATM 2182 Professional Environment (2,0,6-2)
Introduction to airports (civil or military), the surrounding environment and the essential areas that should be familiar to a student air traffic controller. Students shall recognise the need for close cooperation with other parties concerning ATM operations and aspects of environmental protection. Emphasis will be placed on the expectations and requirements of pilots.
Prerequisites: ATM 2131, ATM 2161.
Co-requisites: None

ATM 2214 Advanced Professional Environment (1,0,2-1)
An in-depth appreciation of contributors to ATS operations and their inter-relationship, including a Familiarisation visit to obtain an oversight of an operational unit.
Prerequisites: ATM 2182
Co-requisites: None

ATM 2224 Advanced Aviation Law (1,0,1-1)
An appreciation of the principles of ATC Licensing and Competence, together with an understanding and the application of ATS regulations.
Prerequisites: ATM 1114
Co-requisites: None

ATM 3044 ATM Project II (2,9,2-4)
This module provides students with the opportunity to show an appreciation of the information gained during the Tower (ICAO 052) and Radar (ICAO 054) courses, through the completion of an ATM-related project. Under the supervision of an instructor, students shall select and research a topic from a pre-determined list and produce a reasoned analysis of their work.
Prerequisites: ICAO 052**;** ICAO 054
Co-requisites: None

ATM 3202 Unusual/Degraded/Emergency Situations (2,3,3-4)
An in-depth appreciation of the types of unusual/degraded and emergency situations that might be encountered by a Tower controller in the course of his duties; and the actions to be taken in such an event. An appreciation of the ways in which pilots may be expected to react, is also covered.
Prerequisite: None
Co-requisite: ATM 3231, ATM3261, ATM 3282, ATM 3241

ATM 3231 Air Traffic Management – Tower (4,3,4-5)
An in-depth appreciation of all air traffic management subjects with particular respect to the provision of Aerodrome Control Service to both IFR and VFR aircraft; also the importance of maintaining the integrity operational environment.
Prerequisite: ATM 2131
Co-requisite: None

ATM 3241Adv. Equipment & Systems (3,3,3-4)
An in-depth view of equipment and systems, covering voice communications, automation, controller working position and equipment limitations and degradation.
Prerequisites: ATM 2161
Co-requisites: None

ATM 3251 Aerodromes (1,0,1-1)
This module is designed to give students an understanding of the design and layout of aerodromes and associated technical aids and equipment required to operate a safe and efficient flow of air traffic on the ground and in the vicinity of an aerodrome

Prerequisites: None
Co-requisites: None

ATM 3261 Advanced Aircraft (1,0,1-1)
An in-depth appreciation of aircraft instruments, data and categories, combined with knowledge of factors affecting aircraft performance in various stages of flight.
Prerequisites: ATM 1124
Co-requisites: None

ATM 3271 Advanced Meteorology (1,0,1-1)
An in-depth appreciation of the impact of meteorological phenomena and adverse weather on ATS operations. In addition, an appreciation of how to obtain, decode, use and relay meteorological information
Prerequisites: ATM 2141
Co-requisites: None

ATM 3282 Advanced Navigation (1,0,2-1)
An in-depth appreciation of maps and aeronautical charts and their use; also an appreciation of the effect of precision, limitations and change of the operational status of navigational systems, on ATS operations
Prerequisites: ATM 2151
Co-requisites: None

ATM 3292 Advanced Human Factors (2,0,2-2)
An in-depth study and analysis of the human factors that affect personal and team performance in ATS operations, including medical and psychological factors, social and organisational factors, stress and human error.
Prerequisites: ATM 2172
Co-requisites: None

ATM 3312 Air Traffic Management – Radar (4,6,3-6)
An in-depth appreciation of all air traffic management subjects with particular respect to the provision of Radar Control Service to both IFR and VFR aircraft; also the importance of maintaining the integrity of the operational environment.
Prerequisites: ATM 2131
Co-requisites: None

ATM 3322 Unusual/Degraded/Emergency Situations - Radar (2,3,2-3)
An in-depth appreciation of the types of unusual/degraded and emergency situations that might be encountered by a Radar controller in the course of his duties; and the actions to be taken in such an event. An appreciation of the ways in which pilots may be expected to react, is also covered.
Prerequisites: None
Co-requisites: None

ATM 2003 On Job Training – (0,40,0-13)
This module is provided in the form of On-the-job Training (OJT) and is to be undertaken following successful completion of the BASIC course. Students will undergo a short period of classroom/simulator Training, prior to gaining practical experience working as an Air Traffic Control Assistant at an operational ATC unit.
Prerequisites: ICAO 051 theory course
Co-requisites: None

ATM 2024 Radiotelephony & Phraseology Lab (1,3,1-2)
Language Training for Air Traffic Control Trainees
Prerequisites: ICAO 051 course
Co-requisites: ATM 2003)

ATM 3033 On Job Training – (0,40,0-13)
This module is provided in the form of On-the-job Training (OJT) and is to be undertaken following successful completion of the Tower and Approach radar courses. Students will undergo a short period of classroom/simulator Training, prior to gaining practical experience working as a trainee Air Traffic Controller at

an operational ATC unit.
Prerequisites: ICAO 052 course, ICAO 054 course.
Co-requisites: None

AVIATION SCIENCE-Course Description

AVSC 1001 - IT Applications (0,6,2-2)

The course provides advanced knowledge in information technology applications, understand operations related to various short-cuts and keys that are not frequently used, overview of file management, word processing, templates, spreadsheets, databases and electronic communications, able to prepare power-point slides and presentations.
Pre-requisite: None
Co-requisite: None

AVSC 1093 - Human Factors (3,0,4-3)

The course presents concepts to avoid human errors by considering human factors, human performance and limitations, social psychology and by studying of the various factors that play a key role in causing accidents.
Pre-requisite: None
Co-requisite: None

AVSC 1103 - Aviation Legislation (3,0,5-3)

The course provides understanding and overview of the aviation maintenance regulatory framework, understand the EASA part 66 and part 145, JAR-OPS and Part M regulations, aircraft certification, approved maintenance organizations, licensing procedures as well as applicable national and international requirements.
Pre-requisite: None
Co-requisite: None

AVSC 3314 - Engineering Project (3,4,9-4)

This module provides concepts and aspects to understand how to use and apply tools of proper research mechanisms, enable assessment of other vital characteristics such as team work, leadership, punctuality and professionalism.
Pre-requisite: Third year student status.
Co-requisite: None

AVSC 3402 - Engineering Business Management (3,0,1-3)

The course presents concepts and skills related to basic management, basic principles of management such as planning, organizing, coordinating and their important role in an effective organization, the importance of leadership, role-model and other virtues are covered in this module.
Pre-requisite: Third year student status
Co-requisite: None

AVSC 3411 - Quality Assurance (3,0,2-3)

The course provides fundamental knowledge of the various regulations with regards to aircraft quality assurance procedures, entities that will help to manage aviation quality assurance processes, including procedures in the aviation regulatory framework such as aircraft documentation, checks required at various stages, precautionary methods in place, control and feedback mechanisms.
Pre-requisite: None
Co-requisite: None

AVSC 3004 Technology Project Management (3,0,2-3)

This course provides the tools necessary for developing a project plan with goals and objectives and identifying tasks, time frames, and resources that will achieve these goals. Also covered is the management of the implementation of the project identifying performance indicators as continuous monitoring operations or controls

that ensure accurate information on relative to the plan.
Pre-requisite: None
Co-requisite: None

AVIONICS TECHNOLOGY-Course Description

AVN 1232 - Electrical Engineering I (3B) (3,3,9-4)

This course covers the basic principles of electricity like: electron theory, static electricity and conduction, electrical terminology, generation of electricity, DC sources of electricity, and DC theory.
Pre-requisite: MATHS 1011, PHY 1021
Co-requisite: None

AVN 1233 - Electrical Engineering II (3B) (3,3,3-4)

This course is a continuation of Electrical Fundamentals I and covers an advanced level with emphasis put to electrical terms such as resistance, power, capacitance, magnetism, inductance, AC theory, resistive, capacitive and inductive circuits, and transformers, filters, AC generators and motors.
Pre-requisite: AVN 1232
Co-requisite: None

AVN 1234 – Electrical Engineering III (3B) (1,3,4-2)

This course covers the applications of electrical engineering I and II as related to aviation topics.
Pre-requisite: AVN 1233
Co-requisite: None

AVN 1404 Electronics (2,3,3-3)

This course covers electronic fundamentals with emphasis on semiconductors such as the diode and the transistor. A fundamental characteristics, properties and uses of these devices are discussed. A brief into to integrated circuits, printed circuit board technology, and servo mechanisms are also covered.
Pre-requisite: AVN 1233
Co-requisite: None

AVN 2003 – OJT in Maintenance Environment (A) (0,40,0 – 13)

Required On the Job Training under the supervision of a faculty member at a Part 145 licensed establishment.
Pre-requisite: Second year student status
Co-requisite: None

AVN 2043 - Electronic I (4B1) (3,6,5-5)

This course introduces two basic electronic semiconductors devices, the diode and the transistor. Various diode types and their applications and various transistors types and applications are discussed. Types of diodes covered include the PN junction, Zener, Shottky with applications extended to rectifier circuits. BJTs and MOSFETs and their applications are also covered.
Pre-requisite: AVN 1234
Co-requisite: None

AVN 2044 - Electronics II (4B2) (3,6,6-5)

This course builds on top of AVN 2043 Electronics I by addressing Integrated Circuits (ICs) and applications with emphasis on operational amplifiers and their applications. Printed circuit boards (PCB's) and servo mechanisms are also covered.
Pre-requisite: AVN 2043
Co-requisite: None

AVN 2051 – Fundamentals of Digital Techniques (5A) (2,3,8-3)

The course covers the electronic instrument systems, basic computer structure and electrostatic sensitive devices,

typical systems arrangements and cockpit layout of electronic instrument systems, computer terminology, special handling of components sensitive to electrostatic discharges.
Pre-requisite: AVN 1404
Co-requisite: None

AVN 2053 - Digital Techniques I (5B1) (1,3,2-2)

This course covers an advanced level of digital systems with emphasis put on electronic instrument systems, numbering systems, data buses and data conversion.
Pre-requisite: AVN 1234
Co-requisite: AVN 2253

AVN 2253 - Digital Techniques II (5B1) (2,6,2-4)

This course is a continuation of Digital Techniques I covering an advanced level with emphasis put on logic circuits, computer technology as applied in aircraft, microprocessors, fiber optics, electronic displays, electrostatic sensitive devices, software management control, electromagnetic environment, and typical electronic/digital aircraft systems layout.
Pre-requisite: AVN 1234
Co-requisite: AVN 2053

AVN 2254 – Digital Techniques III (5B2) (3,6,6-5)

This course covers materials required for avionics specialization as an in depth continuation to the materials covered Digital Techniques I and II. Covered topics include digital Radar systems, and other digital navigation and communications systems.
Pre-requisite: AVN 1234, AVN 2253
Co-requisite: None

AVN 3043 Electronic Communication Techniques (2,3,3-3)

This course covers the basic principles of electronic communication techniques and radio principles. AM, FM and other modulation techniques are discussed and the principles of a super-heterodyne receiver are learned.
Pre-requisite: AVN 1404
Co-requisite: None

AVN 3142 – Propulsion and FADEC (14B2) (3,3,2-4)

The course introduces to the constructional arrangement and operation of turbojet, turbofan, turbo shaft, and turbo prop engines, electronic engine control and fuel metering system (FADEC), and covers engine indication systems, their components and their principles of operation.
Pre-requisite: AVN 2044, AVN 1234
Co-requisite: None

AVN 3223 - Avionics I (13 B2) (2,6,6-4)

This is the first course in a series of two of a condensed version of Module 13-Cat B2. This course covers flight theory, general concepts of aero-structures, auto-flight principles, comm. And nav. Systems, and Electrical power generation and regulations.
Pre-requisite: AVN 3252
Co-requisite: None

AVN 3224 - Avionics II (13B2) (3,6,3-5)

This course is a second in a series of two of a condensed version of Module 13-Cat B2. This course covers Flight controls, instruments systems, lighting and on board maintenance systems.
Pre-requisite: AVN 3253
Co-requisite: None

AVN 3231 – Avionic Systems I (13B2) (3,9,12-6)

This course introduces theory of flight and its controls to include rolling, pitching, and yaw controls, general concepts of airframe structures are also covered to prepare students for an understanding of control instrumentation as flight aids. The course also covers auto flight control systems. also covered are electronic communication systems, wave propagation principles, transmission lines, radio principles, and modulation techniques.
Pre-requisite: AVN 2254, AVN 2044
Co-requisite: None

AVN 3232 – Avionic Systems II (13B2) (3,3,8-4)

This course covers primary and secondary radar systems, communication and navigation systems such as VHF, VOR, DME, MLS, GPS, FDS, and INS. Also covered are practical installations and data busses.
Pre-requisite: AVN 3231
Co-requisite: None

AVN 3234 – Avionic Systems III (13B2) (3,6,5-5)

This course completes the sequence by covering aircraft electrical power systems, to include AC, DC and emergency power systems sources. Equipment and furnishings, flight controls, instrument, lighting, and onboard maintenance systems.
Pre-requisite: AVN 3232
Co-requisite: None

AVN 3003 – OJT/Internship (0,40,0-13)

Required On the Job Training under the supervision of a faculty member at a Part 145 licensed establishment.
Pre-requisite: Third year student status
Co-requisite: None

AVN 3252 – A/C Digital Techniques I (5B1) (3,6,1-5)

This course covers an advanced level of digital systems with emphasis put on electronic instrument systems, numbering systems, data buses and data conversion with emphasis put on logic circuits, computer technology as applied in aircraft, microprocessors, fiber optics, electronic displays, electrostatic sensitive devices, software management control, electromagnetic environment, and typical electronic/digital aircraft systems layout.
Pre-requisite: AVN 1234
Co-requisite: None

AVN 3253 – A/C Digital Techniques II (5B2) (3,3,1-4)

This course covers materials required for avionics specialization as an in depth continuation to the materials covered Digital Techniques I and II. Covered topics include digital Radar systems, and other digital navigation and communications systems.
Pre-requisite: AVN 1234, AVN 3252
Co-requisite: None

Electromechanical Engineering Technology (EMT)

EMET Mechatronics Engineering Technology Specialization

EMEM101 Statics (3 CR)
This course aims to introduce to the students force and moment vectors, resultants of more than one vector. Principles of statics and free-body diagrams. Equilibrium principles. Applications to simple trusses. Center of Gravity and moment of inertia. Internal forces in beams. Laws of friction.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEE205 Introduction to Circuit Simulation (3 CR)
This course provides an introduction to different simulation software. It is designed to give students fluency in MATLAB, including popular toolboxes. The course covers basic plotting, using flow control, creating

functions and solving complex mathematical problems including linear, polynomial and differential equations. Calculus and Simulink also included in the delivery of the unit. Besides MATLAB, other circuit simulation software such as Multisim and PSpice are also taught in the course and students are required to build and simulate circuits using these programs.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEE201 Digital Logic Design (3 CR)
This course provides the students with the necessary knowledge and skills needed to deal with number-base conversion, Boolean algebra & basic logic gates, gate-level minimization using Boolean algebra, and gate-level minimization using map methods & other techniques. It also provides the basic knowledge about the digital circuits design procedure, the basic combinational logic circuits (half-adder, full-adder, binary adder-subtractor, decimal adder, binary multiplier, magnitude comparator, decoders, encoders, and multiplexers), and the basic sequential circuits (latches, flip-flops, and clocked sequential circuits).
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEC203 Instrumentation and measurement (3 CR)
This course provides the knowledge and the understanding of basics of instrumentation and transducers used in the manufacturing industries. This course will equip the student with the basic knowledge of temperature, flow, pressure, and level measurements. In addition to that he will know various types of detectors, sensors, and instruments that are used with the electronic measurements like displacement, speed, force, vibration, and fire detection.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEE204 Electric Circuits (3 CR)
This course provides the students with the necessary knowledge about the basic concepts of electricity, Ohm's law, electrical diagrams, basic DC theory, open circuits, short circuits, resistive circuits & networks, voltage & current divider techniques, Kirchhoff's laws (KCL & KVL), DC solving methods & analyses (nodal, loop, source transformation, superposition, Thevenin's, Norton's, and maximum power transfer), DC bridges (Wheatstone & Kelvin), capacitive circuits, inductive circuits, and mixed RLC circuits.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX101 Introduction to Programming with C++ (3 CR)
This programming course is oriented to electromechanical students and it is divided into two parts. The first part is a fast-paced introduction to the C++ programming language for students with prior programming experience. The second part of this course introduces the object-oriented programming paradigm focusing on the definition and use of classes along with fundamentals of object-oriented design in C++.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEC201 Control System Technologies I (3 CR)
This units aims to introduce students to the fundamentals knowledge of control system technologies. Topics include: linear feedback control theory, mathematical modeling of physical systems, transfer functions, block diagrams, test signals, transient response of control systems, time domain specifications, steady-state error and stability, PID controllers, root locus techniques, , frequency domain analysis, Nyquist criterion, Bode plots and Nicholas charts.
Lecture 2 hrs/wk, Lab 2 hrs/wk, Tutorial 2 hrs/wk.

EMEE207 Embedded Systems (3 CR)
This course is designed to enable students to recognize and understand Microprocessor and Microcontroller technology. It also provides the student the opportunity to develop the knowledge and skills to program, test and interface memory devices and eventually create an embedded system. The course topics include basic programming of a microcontroller device and interfacing sensors and actuators to the microcontroller.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEC202 Programmable Logic Controllers (3 CR)
This course is designed to develop student competency and skills in mechatronic systems using programmable logic control.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEE203 Electrical Machines (3 CR)
This course has been designed to give students a fundamental knowledge and understanding of a range of electrical machines and their applications. In particular, students will study the analysis of AC circuits, magnetic circuits, constructional features, principle of operation, performance characteristics and applications of DC motors, single phase motors, three phase motors, synchronous generators and motors, and different types of transformers. The Course acts as a good foundation Course for more in depth studies in specialist areas of electrical motors and transformers.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEE202 Electronic Devices 1 (3 CR)
The overall course objective is to develop student understanding and skills in diodes, zener diodes, special-purpose diodes, Bipolar Junction Transistors (BJTs), power amplifiers, Junction Field Effect Transistors (JFETs), and Metal Oxide Semiconductor Field Effect Transistors (MOSFETs).
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX290 PCB OCT (1 CR)
This training module is intended to provide students with knowledge and hands-on skills in the simulation of electrical circuits, printed circuit board (PCB) design, circuit board fabrication and assembly, and testing of a fully functional circuit board. It includes:
1. Simulate, design and test a Printed Circuit Board for Rectifier circuit.
2. Simulate, design and test a Printed Circuit Board for an amplifier circuit.

Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX291 AC Machines OCT (1 CR)
The purpose of the on-campus training is to provide practice-oriented training of new key competencies in areas of electrical Machines. This course covers a wide range of generators and motors –dc. Single phase and three phase a.c.
The training is designed to build:
Social skills through team interactions.
Technical competence through hands-on training.
Introduce the students to the principles of DC electrical machines ;motors& generators.
Introduce the students to the principles of AC electrical machines; motors& generators for single phase and three phases.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX292 Customized Automation Solutions with TIA (1 CR)
The purpose of the on-campus training is to provide practice-oriented training of new key competencies in areas of electrical Machines. This course covers a wide range of generators and motors –dc. Single phase and three phase a.c.
The training is designed to build:
Social skills through team interactions.
Technical competence through hands-on training.
Introduce the students to the principles of DC electrical machines ;motors& generators.
Introduce the students to the principles of AC electrical machines; motors& generators for single phase and three phases.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX293 PLC OCT (1 CR)
The purpose of the on-campus training is to provide practice-oriented training of new key competencies in areas of PLCs -programmable logic controllers' – technologies using Siemens S7- 300 SIMATIC PLC integrated with a flexible manufacturing system. The training is designed to build:

Social skills through team interactions.
Technical competence through hands-on training.
Methodological competence.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX294 ROBOTICS OCT (1 CR)
The overall objective of this module is to provide students with knowledge and hands-on skills in the programming of a pick and place robotic arm.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX295 Pneumatics and Hydraulics OCT (1 CR)
This unit covers training on pneumatics and hydraulics equipment and schematic drawing of Hydraulics and Pneumatics circuits. The equipment used is produced by FESTO with the assist of FLUIDSIM-P and FLUIDSIM-H softwares which can simulate the operation process of both pneumatics and hydraulics circuits.
Lecture 1 hr/wk, Lab 2 hrs/wk.

EMEX296 Pump OCT (1 CR)
This On-Campus Training (OCT) EMEM290 course provides hands-on training on operating, measuring, testing, evaluating and controlling industrial pumps.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX297 Air Compressor OCT (1 CR)
This On-Campus Training (OCT) EMEM291 course provides hands-on training on operating, measuring, testing, evaluating and controlling industrial piston air compressor.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX298 Fluid Mechanics OCT (1 CR)
This On-Campus Training (OCT) EMEM293 course provides hands-on training on operating, measuring, testing and investigating fluid mechanics equipment. Investigate Bernoulli's law, flow types / Reynolds number, Impact force and pressure losses.
Lecture 2 hrs/wk, Lab 2 hrs/wk..

EMEX299 Heat Exchanger OCT (1 CR)
This On-Campus Training (OCT) EMEM292 course provides hands-on training on operating, measuring, testing, evaluating and controlling heat exchangers.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEE-301 Power Electronics 1 (3 CR)
This Course has been designed to develop students and graduates' knowledge, understanding and skills in the characteristics and applications of a range of power electronic devices. Students and graduates will also study how these devices are electrically protected and cooled and will also consider a range of single phase AC to DC converter and dc to dc chopper circuits.
Lecture 3 hrs/wk, Lab 2 hrs/wk.

EMEE302 Signals and Systems (3 CR)
This course convers the basic concepts of systems and the different types of signals. The course topics include sampling of continuous time signals to form discrete time signals, the transformation of continuous time signals to the frequency domain and vice versa and the transformation of discrete time signals to the z domain and vice versa.
Lecture 3 hrs/wk, Lab 2 hrs/wk.

EMEE206 Introduction to Power Systems (3 CR)
This Course is designed to provide students and graduates with knowledge and understanding of electrical power systems and the concept of power transmission. Students and graduates will also be provided with the opportunity to analyze power system operation and explain methods of load flow analysis.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX303 Health, safety and Environment (3 CR)
This course is designed to enable students to understand all relevant health and safety legislation, management, control of workplace hazards and complete basic risk assessment on the equipment, environment and methods relating to the engineering sector.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEC303 Control System Technologies II (3 CR)
This course will enable candidates to describe mathematical modeling of different control systems including, mechanical, electrical, fluid and thermal. Topics would also include different compensators design based on root locus, and frequency response analysis. Candidates will be able to describe mathematical modeling of different control systems in state space.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEE304 Power Transmission (3 CR)
This unit aims to introduce students to the fundamentals of analysing transients in electric power circuits. Topics include: transient analysis of RL (resistive-inductive) circuits under AC/DC supply, transient analysis of RC (resistive-capacitive) circuits under AC/DC supply, transient analysis of RLC (resistive-inductive-capacitive) circuits under AC/DC supply, application of step forcing function and superposition principle in transient analysis, per-unit conversion in three-phase circuits, equivalent circuits and their simplifications and superposition principle in transient analysis of three-phase circuits.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEE305 Communications (3 CR)
This course aims to introduce students to the fundamental concepts of communication systems. The course topics include overview of system types, amplitude modulation and angle modulation both frequency and phase. It introduces students to sampling and pulse code modulation and develop their knowledge of performance parameters of a communication system. Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX301 Applied Engineering Mathematics (3 CR)
This course provides mathematical concepts and techniques that are most relevant to engineering disciplines. It is designed for students gain necessary math skills to study engineering topics such as circuit analysis, signal processing, electromagnetic fields and waves, etc. Topics include matrix algebra, first and second order differential equations, Laplace transform, complex numbers and functions, Fourier series and transform, partial differential equations. For each of these topics, engineering applications will be emphasized in the course.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEE390 Graduation Project I (3 CR)
The aims of this course are to develop a project concept, partnership, and plan; projects will be implemented in the last semester of the fourth academic year, EMEE 490 Graduation Project II. In developing this project, students are expected to utilize their learning throughout the core courses in electrical engineering technology. Students are encouraged to assist each other, and working groups will be established to support student collaboration. Projects may be undertaken with an industry and/or community partner. The graduation project is a significant component of EMET engineering technology work that is aimed to be conducted in a professional and technical engineering manner and is professionally documented in a comprehensive report and presentation. The aims of the graduation project are to provide an opportunity for the student to demonstrate their capacity to bring together their advanced skills and knowledge that have been gained as part of their coursework and apply these to a real-world technical engineering problem.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEE303 Power Systems Protection (3 CR)
This unit aims to introduce students to the fundamentals of analysing applications of power system protection. Topics include: components of system protection, instruments transformers, overcurrent relays, protection of radial systems, symmetrical components, per-unit sequence models of three-phase

transformers and study cases on unsymmetrical faults. Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX-302 Quality Management (3 CR)
This Course is designed to allow students to explain and distinguish between different quality approaches. The course also provides students with opportunities to examine different quality management tools and techniques and analyze quality costs. This course supports the development of quality management standards and quality assurance and control practices suitable to the various needs of the workplace.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEE399 On-Job-Performance 1 (3 CR)
This training course module aims to assess trainee's competence in completing safe and effective on-site hands-on training in disciplines related to Electromechanical Engineering. It includes to identifying hazards, assessing the risks involved, minimizing the risks by implementing control measures and providing ongoing monitoring of plants, equipment and processes. Trainee will be following trainee's organization's safe working practices at all times and working within the work permit procedures. During this work trainee must take account of the relevant worksite operational requirements, procedures and safe working practices.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEE402 Power Systems Operation and Control (3 CR)
This course introduces students to the fundamentals of analyzing the operation of power systems and systems control. Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEX401 Engineering Economics (2 CR)
This course provides an understanding of the theory and methods of economic analysis especially needed for engineering. Topics include cost concepts, the time value of money, comparison of alternative investments, depreciation and income tax, replacement analysis, decision making under risk and uncertainty, and break-even analysis.
Lecture 2 hrs.

EMEE306 Electronic Devices 2 (3 CR)
This course is designed to provide students the skills and competence in the operation of more complex electronic circuits.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEC301 Motor Drives Control (3 CR)
This course covers principles of motor control in part as a continuation on Mechanical Components and Electric Drives. In the first part of the course, General Machine Operation, different types of braking and loads on a motor are addressed, as well as questions of improving motor efficiency and power. Different control techniques are then discussed, including different methods of starting a motor, controlling voltage and frequency, and the role of different sensors in relation to motor operation. Troubleshooting techniques and an examination of the various causes of motor failure are discussed; preventive measures that can be taken in order to protect motors are also taught.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEE499 On-Job-Performance 2 (3 CR)
This second training course module aims to assess trainee's competence in completing safe and effective on-site hands-on training in disciplines related to Electromechanical Engineering. It has a strong focus on building and maintaining working relationships and building on corporate communication skills. It includes to identifying hazards, assessing the risks involved, minimizing the risks by implementing control measures and providing ongoing monitoring of plants, equipment and processes. Trainee will be following trainee's organization's safe working practices at all times and working within the work permit procedures. During this work trainee must take account of the relevant worksite operational requirements, procedures and safe working practices.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX201 Introduction To Mechatronics (3 CR)
This course covers the basics of the electrical and mechanical components in a complex mechatronic system. Based upon a physical system, students will learn the basic functions and physical properties of both electrical and mechanical components, and the roles they play within the system. They will also learn AC and DC electrical drives, mechanical components which lead and support the energy through a mechanical system to increase efficiency and to reduce wear and tear, materials, lubrication requirements, and surface properties. Technical documentation such as data sheets, schematics, timing diagrams and system specifications will also be covered. By understanding the complete system, the flow of energy through it and measurements on the components, students will learn and apply troubleshooting strategies to identify, localize and (where possible) correct malfunctions. Preventive maintenance and safety issues for electrical components within the system will be discussed.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX202 Pneumatic and Hydraulic Systems (3CR)
This course covers the basics of pneumatic, electro-pneumatic and hydraulic control circuits in a complex mechatronic system. Students will learn the functions and properties of control elements based on physical principles, and the roles they play within the system. Technical documentation such as data sheets, circuit diagrams, displacement step diagrams and function charts will also be covered. By understanding and performing measurements on the pneumatic and hydraulic control circuits, students will learn and apply troubleshooting strategies to identify, localize and (where possible) correct malfunctions. Preventive maintenance of (electro) pneumatic and hydraulic components, as well as safety issues within the system, will be discussed.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEM205 CAD/CAM Technologies (3CR)
This course emphasizes the development of skills in computer aided design (CAD) and computer aided manufacturing (CAM). The student will design and program parts to be machined on computer numerical controlled machines. Topics include drawing manipulations, tool path generation and program posting, This course also will enable students to explore and gain further understanding of how the computers can be used in Manufacturing Industry.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEM203 Heat Transfer (3CR)
The Heat transfer is the study of thermal energy transfer between materials due to a temperature difference. It involves heat propagation through solids and fluids, or can take place through a vacuum. The course will enable students to gain the necessary knowledge in the Fundamentals of heat transfer mechanisms.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEM201 Dynamics (3 CR)
This course aims to educate students in their basic understanding of the mechanics of physical bodies under the action of dynamic force systems. The student will apply a working knowledge of the basic laws of motion and the concepts of force, work, impulse, momentum and energy to particles and rigid bodies associated with dynamic behaviour. The following topics will be dealt with: Plane particle kinematics, including curvilinear and relative motion; Plane particle kinetics, including equations of motion, work-energy, impulse-momentum, impact; Kinetics of systems of particles; Introduction to plane kinematics of rigid bodies, types of rigid body motion (translation, rotation about a fixed axis); mass moment of inertia.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEM302 Kinematics of Machinery (3 CR)
This course aims to educate students in concepts of the dynamics of machines. Students will acquire the skills and ability to solve machine dynamics problems involving: kinematic analysis of mechanisms; kinematic analysis of cam-follower motion and gear train configurations; balancing of rotating and reciprocating masses; analysis of flywheel, governor and gyroscopic effect. The knowledge gained in this course will be used extensively in later engineering design and analysis courses.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX402 Mechatronics System Design (3 CR)
This course presents specifics in the mechanical design of mechatronic systems. Its main foci are problem analysis, conceptualization & drawing, design/material selection, and performance analysis to create complete functional mechatronic systems. Topics include requirements of mechanical subsystems as components of the whole and design methods. Components like bills of materials and economic analysis will also be covered in lecture.

This study is oriented towards a design project with the goal of developing a complete dynamic mechatronic system based upon optimal solution and materials considerations, economic considerations, quality and reliability.

Projects and assignments are therefore essential elements of this course. Students will carry out a design project from start to finish, which can be geared toward any application of mechatronics, such as robotics and manufacturing systems. These deliverables are a great opportunity to gain a hands-on experience in designing and building a mechatronic system. The intent of this course is also to provide the student with a cooperative working experience within a team.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEX403 Robotics (3 CR)
This course aims to provide an introduction to the mechanics of robots. The theoretical focus is on kinematics and dynamics of robotic manipulators and control design for nonlinear mechanical systems. Topics covered include homogeneous coordinate transformations, representation of spatial orientation, Denavit-Hartenberg link descriptions, forward and inverse kinematics, Jacobian rate and static force relations, and singularities. The applied component of the unit includes experimental work with robotic manipulators and a mechatronic design and build project.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEM307 Machine Design 1 (3 CR)
This course aims to educate students in the fundamentals of machine design. The student will acquire basic understanding of the parameters and procedures involved when designing commonly used machine elements. The following topics will be dealt with: tolerances and fits; simple, variable, torsional and bending stresses in machine parts; shaft, keys and couplings.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEM204 Material Science (3 CR)
This course is designed to enable students to develop knowledge and understanding of material properties and testing and to apply basic material selection concepts for a range of components.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEM301 Heating, Ventilating, and Air Conditioning (HVAC) (3 CR)
This Course is designed to allow students to develop knowledge and understanding of the principles of operation of refrigeration and HVAC (Heating, Ventilation and Air Conditioning) systems. Students will also develop the knowledge and understanding of the criteria used to select suitable system courses and the skills to test the performance of systems. The topics covered include thermodynamic relations, psychrometry , HVAC processes, cooling and heating loads, and air duct design.
Lecture 2 hrs/wk, Lab 2 hrs/wk.

EMEM303 Manufacturing Process (3 CR)
This course aims to introduce the fundamentals of manufacturing processes (metal forming, forging, metal cutting, welding, and joining etc.); selection of metals, ceramics and other materials relative to the design and choice of manufacturing processes.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEM202 Fluid Mechanics (3 CR)
Introduction to Fluid Mechanics (3 semester hours) Lecture course. Course material includes an introduction to the concepts and applications of fluid mechanics and dimensional analysis with an emphasis on fluid behavior, internal and external flows, analysis of engineering applications of

incompressible pipe systems, and external aerodynamics, ideal fluid flow including potential flow theory, and computer solutions in ideal fluid flow.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEM305 Applied Industrial Maintenance (3 CR)
This Course has been designed to allow Mechanical Engineering students to develop, implement and evaluate a CMSS (Computerized Maintenance Management System) solution to a plant maintenance schedule for a new or existing plant installation. In order to achieve this, students will require to develop a knowledge and understanding of general approaches to plant maintenance and the factors associated with devising a maintenance schedule.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEM405 Thermodynamics II (3 CR)
The overall objective of this module is to allow students to develop knowledge and understanding of the thermodynamic systems that operate on power cycles and refrigeration cycles. The course introduces the fundamental concepts of thermodynamics cycles, the different cycle's classifications such as desired output (power refrigeration), working fluid (Gas or Vapor), etc... It also demonstrates the difference between Carnot, ideal and actual cycles. As well as illustrating open and close combustion heat engines.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEC302 Distributed Control System-1 (3 CR)
This course is designed to enable graduates to gain knowledge and understanding and apply Distributed Control Systems (DCS) in Industrial Measurement and Control Engineering, construction and operation of a DCS controller, operator interface, and CS applications and implementation.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEC305 Distributed Control Systems II (3 CR)
This Unit is designed to enable graduates to gain advanced knowledge and understanding and apply Distributed Control Systems (DCS) in Industrial Measurement and Control Engineering.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEC390 Graduation Project I (3 CR)
Upon successful completion of this course, a student will be able to safely complete a weekly PM on a AMAT Producer CVD The aims of this course are to develop a project concept, partnership, and plan; projects will be implemented in the last semester of the fourth academic year, EMEC490 Graduation Project II. In developing this project, students are expected to utilize their learning throughout the core courses in their specializations. Students are encouraged to assist each other, and working groups will be established to support student collaboration. Projects may be undertaken with an industry and/or community partner. The graduation project is a significant component of EMET engineering technology work that is aimed to be conducted in a professional and technical engineering manner and is professionally documented in a comprehensive report and presentation. The aims of the graduation project are to provide an opportunity for the student to demonstrate their capacity to bring together their advanced skills and knowledge that have been gained as part of their coursework and apply these to a real-world technical engineering problem.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEC399 ON JOB TRAINING 1 (6 CR)
The main purpose of 'on-the-job training' is to acquaint the students formally to a real life work place environment. This will help to explore the relationship between the knowledge & skills acquired in ADPOLY with those required in the working situations. This enables students to understand and respond better to the market demand of I&C engineering. students will be trained on different control systems and process instrumentation techniques besides training on HSE from I&C engineering prospective.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEC401 Feedback Control Systems (3 CR)
This course will introduce students to modern control theory based on state-space methods. The focus will be primarily on modeling, analysis and controller design of continuous-time, Linear Time Invariant (LTI)

systems. The course will emphasize, through examples, how to apply modern control techniques to system models using the MATLAB and Simulink software environments.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEC 404 DCS and SCADA (3 CR)
The purpose of the on-campus training is to provide practice-oriented training of new key competencies in areas of DCS and SCADA technologies, using Siemens HMI SIMATIC basic panels with WinCC flexible software to create simple projects. By integrating the HMI with a S7- 300 SIMATIC PLC to control a flexible manufacturing system.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEC490 Graduation Project II (3 CR)
The purpose of this course is to execute the project planned and conceptualized in EMEC390 Graduation Project I. This unit is a team-based, self-directed project where student groups design and build a fully functional electro-mechanical system. Working in a cooperative learning environment student groups work on their project throughout the semester while reporting to the project supervisor(s). Student groups are responsible for all project activities and project management phases in order to ensure that the design, fabrication, assembly, testing, debug, and operations of the system are fully functional and completed in a timely manner. Effective utilization of all resources including people, materials, and time is strategically planned by the team in order to optimize project outcomes and delivery. The student group delivers a complete functional electro-mechanical system supported by a complete technical report and a brief video compilation which highlights the main features of the project.
Lecture 2 hrs/wk, Lab 2 hrs/wk

EMEC499 ON JOB TRAINING 2 (OJP2) (3 CR)
This training is a completion of on job training one, it concentrate on developing the students' skills in planning, designing and analyzing of control systems, besides enhancing their capabilities in troubleshooting and management of I&C engineering. This will help them to explore the relationship between the knowledge & skills acquired in ADPOLY with those required in the working situations. This enables students to understand and respond better to the market demand of I&C engineering. students will be trained on different control systems and process instrumentation techniques besides training on HSE from I&C engineering prospective.
Lecture 2 hrs/wk, Lab 2 hrs/wk

Engineering Fundamentals (ENG)

ENG-111 Industrial Safety and Professional Ethics. (2 CR)
This course is a study of safety and health management in the workplace as it related to hazard identification and control, accident investigation and prevention, emergency planning and moral responsibilities to society. It introduces the students to profession, professional ethics, various moral issues and uses of ethical theories, and codes of ethics in professional engineering societies.
Lecture 2 hrs / wk,

ENG-113 Engineering Drawings (ENG113) (2 CR)
This course will introduce students to engineering drawings, diagrams and schematics that are used in various industries. Students will learn how to read, interpret and decipher the various graphic symbols, components, systems, and abbreviations found on various engineering drawings categories; Fluid Power Diagrams and Schematics, Process and Instrumentation Diagram (P&ID) and loop diagrams, Electrical / Electronic diagrams and schematics, Logic Circuits and Diagram and Engineering Fabrication Drawings. In addition to that, students will learn how to use Auto-Computer –Aided Design (AutoCAD) software in engineering drawings.
Lecture 1 hrs / wk, 2 lab 2hrs / wk

ENG-121P Mechanical Workshop (1 CR)

This course is a hands-on course covering mechanical shop safety procedures and use of manual and automated mechanical machining processes. It provides the student with skills and knowledge of hand tools, drill presses, mills, lathes, welding and precision measuring instruments.
3 hrs Lab/wk,

ENG-123 Mechanical Technology (3 CR)
This course covers the operating principles and types of valves, pumps, heat exchangers, steam traps, filters and strainers, air compressors, refrigeration machines, heating, ventilation, and air conditioning systems, steam turbines, diesel engines, hangers and snubbers. The course also covers the principles of lubrication.
Lecture 2 hrs / wk, 2 Tutorial, 2hrs lab/ wk
Pre-requisite: MATH111 or MATH103; PHYS 111, PHYS111P

ENG-124 Thermodynamics (3 CR)
This course covers thermodynamics units, important thermodynamics properties, application of thermodynamics to flow systems (steam engines, turbines), and volumetric properties of pure fluids.
Lecture 2 hrs / wk, 2 Tutorial, 2hrs lab/ wk
Pre-requisite: MATH111 or MATH103; PHYS 111, PHYS111P; CHEM111 and CHEM111P

ENG-125 Introduction to Computer Electronics
Electronics is an integral part of computers; hence students of computer engineering and information technology need to know the fundamental of analog and digital electronics circuits. This course has been designed to provide the needful inputs to handle simple electronic components and circuits. Students after studying this course will be able to understand the basics of analog and digital electronics, various electronics components, and develop skills to use simple electronic instruments needed for computer-based working environment. The student will become familiar with the use of computer design aids software for electronics such as PSPICE and to learn to use it to assist them in the analysis of circuits. By using PSPICE, the students will be able to design and draw circuits, simulate circuits, and analyze the simulation results.
Lecture 2 hrs / wk, 2 Tutorial, 2hrs lab/ wk
Pre-requisite: MATH111 or MATH103; PHYS 112, PHYS112P

ENG-141 Instrumentation and Controls I (3 CR)
This course provides the knowledge and understanding of basics instrumentation and control in the manufacturing industries. A student who completed this course will be equipped with basic knowledge of process variables and sound theoretical background of instruments and its measuring techniques.
Lecture 2 hrs / wk, 2 Tutorial, 2hrs lab/ wk
Pre-requisite: MATH111 or MATH103; PHYS 112, PHYS112P

ENG-224 Statics and Strength of Materials (3 CR)
This course is to develop knowledge and understanding of the principles and laws that relate to material strengths, stress and strain concepts, loading on materials, deflection of beams and shafts, and statically indeterminate beams and shafts.
Lecture 2 hrs / wk, 2 Tutorial, 2hrs lab/ wk
Pre-requisite: MATH111 or MATH103; PHYS 112, PHYS112P

ENG-225 Heat Transfer and Fluid Flow (3 CR)

The course explores introductory concepts of fluid mechanics and fluid statics. Also, the course covers mechanisms of heat transfer by conduction, convection, and radiation. It also introduces heat exchanger design and sizing.

Lecture 2 hrs / wk, 2 Tutorial, 2hrs lab/ wk
Pre-requisite: ENG124, MATH111 or MATH103

Information Technology

ICT-112 Introduction to Programming and Problem Solving (3 CR)

This introductory course in engineering problem solving and computer programming is for all undergraduate engineering students without prior programming experience in any language. The course covers the fundamentals of computer programming and its underlying principles using the Java programming language. Concepts and methods are illustrated by examples from various engineering disciplines. Useful numerical techniques and their applications to real world problems in science and engineering are also discussed. Weekly laboratory required.

Lecture 2 hrs / wk, 2Lab 2hrs/wk

ENGLISH-*Course Description*

ENGL-100A English Foundation A (3 CR)
This course enables students to develop their language skills in listening, speaking, reading, and writing to help them cope with other advanced courses. It focuses on analyzing texts, inferring meanings, as well as building and organizing effective arguments. This course also covers a variety of relevant skills, such as categorizing, describing, sequencing events, comparing and contrasting, and explaining causal relationships. Students learn to express ideas effectively in a variety of sentence structures, paragraph types, and spoken interactions while building knowledge of English grammar and lexical items. Toward that end, students will learn to incorporate the material appropriately into clear, complex, and coherent academic essays.

Lecture 3 hrs / wk,

ENGL-100B English Foundation B (3 CR)
This course enables students to further develop their language skills with an emphasis on reading, writing, and critical thinking in preparation for other advanced courses. It focuses on analyzing texts, inferring meanings, as well as building and organizing effective arguments. As an extension of Foundation English Communications–A, this course will also cover a variety of relevant skills, including using graphical organizers, drawing on outside resources for background information, as well as using contextual information to highlight the relationship between text purpose, audience type, and content. Students will further develop their ability to express ideas effectively in a variety of language structures, essay types, and spoken interactions while continuing to build knowledge of more advanced English grammar and lexical items.

Lecture 3 hrs / wk,

ENGL-111 English Communication Skills (3 CR)
This course enables students to develop their language skills to communicate effectively for lifelong learning. This course covers a variety of relevant topics and skills, such as engineering, technology, health and safety issues; English grammar and lexical items; and effective writing for industry.
Lecture 3 hrs / wk,

ENGL-112 Technical English Skills (3 CR)
This course focuses on developing students' language skills in technical communication genres. It is designed to introduce students to information and language specifically for future technical careers. Covered in this course are the following: the importance of Technical Communication (TC); the goals of TC, ethical and legal considerations; verbal and nonverbal communication; features of effective oral presentations; routine correspondence; document design; descriptions and process analyses; long, formal reports; short, informal reports; and evaluation of criteria and reasons for conducting research in TC.
Lecture 3 hrs / wk,

ENGL-113 English for Oil & Gas (3 CR)
This course provides petroleum engineering students with the language, information, and skills that they

need in their field of study and future careers. It enables them to learn and practice the English language and specialist terms they need in real work situations. Consequently, this course develops the students' lexical items, language skills, and knowledge to understand the oil and gas industries, so they can then apply this knowledge practically. It covers a range of subjects, such as historical developments of the oil & gas industries, upstream, midstream, downstream processes, sedimentation and hydrocarbons, as well as product distribution and principles of supply and demand.
Lecture 3 hrs / wk,

ENGL-114 English for Electromechanical Engineering (3 CR)
This English for Electromechanical Engineering course develops students' English language competencies in preparation. English for a career in electromechanical engineering, students will explore engineering lexicon and refine their written communication skills while evaluating and creating technical reports on a variety of current topics related to the electromechanical engineering industry. To complete these tasks, students will also acquire an upper-intermediate level of knowledge in grammar and research techniques. Finally students will hone in on their verbal and non-verbal communication skills for a more polished presentation of current electromechanical engineering topics.
Lecture 3 hrs / wk,

ENGL-115 English for IT (2 CR)
In addition to refining students' competencies in grammar, ICT vocabulary, and oral and written comprehension and expression, this course endeavors to apply students' knowledge in the exploration of current topics of critical interest in the ICT sector. Students will also hone their mastery of professional communication skills through hands-on exercises in customer care, project management, meeting and presentation facilitation, research, and report writing.
Lecture 2 hrs / wk,

ENGL-116 English for aviation (3 CR)
This course is designed to introduce students to the domain-specific terms and skills. Throughout this course, students will be trained to give descriptions, explanations, and information using aviation specific topics and vocabulary. They will also be able to use the language skills they have picked up in previous English courses within aviation context.
Lecture 3 hrs / wk

ENGL-117 English for Meteorology (3 CR)
This course focuses on developing students' English language skills in preparation for a career in Meteorology Sciences. It introduces students to information and language specific to Meteorology. Covered in this course are the following: Meteorology careers and relevant topics; technology and equipment used in Meteorology; analytical thinking; formal, oral presentations; writing and editing relevant short reports; lexical items in relevant contexts; and English grammar.
Lecture 3 hrs / wk,

ENGL-117 Technical Writing (3 CR)
Technical Writing aims to develop students' skills to be skilled writers in their chosen career. This course covers a variety of topics, such as appropriate usage of tools for professional writers, using international business English, writing and editing emails for various audiences, writing reports for industry, and an intermediate knowledge of grammar and writing.
Lecture 3 hrs / wk

FLIGHTLINE MAINTENANCE-Course Description

FLM 1013 – General Safety, Human Factors, Fire Protection and Control (2,6,2-4)
The course provides an understanding and practical skills of personal and workshop safety, evaluating incidents

attributable to human factors and human errors, human performance and limitations, social psychology, environmental influences, errors and their effects on human performance, determine fire classes, decide measures of firefighting, and handle aircraft fire extinguishing equipment,
Pre-requisite: None
Co-requisite: None

FLM 1023 - Workshop Practices, Quality Assurance and GSE Maintenance (2,6,3-4)

The course provides understanding and practical skills to operate hand and power tools, interpret engineering drawings , apply methods of joining aircraft structural members, introduces to regulations related to aircraft quality assurance and quality control procedures, enables to operate and maintain aircraft Ground Support Equipment (GSE) such as hydraulic test benches, ground power units, stairs, ladders, and aircraft towing bars, carry out minor fault diagnosis and defect rectification such as leaks, and loose connections.
Pre-requisite: None.
Co-requisite: None

FLM 1033 – Aircraft Electric and Hydraulic/Pneumatic Power Generation (2,6,2-4)

The course provides a basic overview of aircraft electrical equipment, the generation of different types of current (AC/DC) and their control, safety precautions while handling with electrical or hydraulic power, aircraft electrical power management, types of batteries, charging, loads, systems maintenance, principles of hydraulic and pneumatic aircraft systems, including components such as valves, motors, high pressure and low pressure systems, related power generation and control.
Pre-requisite: None
Co-requisite: None

FLM 1044 – Fundamentals of Turbine and Piston Engines (2,6,2-4)

The course provides basic knowledge of gas turbines and piston engines and their principles of operation, introduces to the various types of engine components and accessories like: fuel system, hydraulic system, lubrication system, starting system, ignition systems, indication systems, and fire-protection system.
Pre-requisite: None
Co-requisite: None

FLM 1054 - Aircraft Fuel & Lubricants and Electrical Ground Power Supply (2,6,3-4)

The course covers the various types of fuels and lubricants used in aviation, identification, properties, calorific values and uses, aspects related to storage, handling and required safety precautions. The course provides a basic overview of aircraft electrical ground supply units, and their basic principles of operation, introduces to aircraft ground power management, aircraft electrical distribution systems, aircraft lighting systems, batteries, Ground Power Units (GPUs), and safety precautions.
Pre-requisite: None
Co-requisite: None

FLM 1064 - Flight Line Operations, Aircraft Documentation (2,6,2-4)

The course provides knowledge and practical experience in aircraft handling and flight line operations like: aircraft taxiing, towing, marshalling, parking and mooring, jacking, tire mounting, flight line inspections, operational testing and troubleshooting as well as consumables replenishment. The course introduces to the various aircraft maintenance documents and applied maintenance procedures. It covers the range of aircraft related documentation such as aircraft log books, manuals, SI, STI, amendments, IPC, and explains how the respective forms have to be filled in.
Pre-requisite: None
Co-requisite: None

🏛🏛 Humanities (HUM)

Course Description

HUM-111 Islamic Civilization (3 CR)
This Islamic culture course deals with the foundation of Islam and its current challenges. Various lectures look at general Islamic regulations and the main issues related to Islamic civilization. Important intellectual issues in religion, Sharia law, worship, ethics and contemporary ideologies are addressed while focusing primarily on aspects of Islamic civilization, its effects and contributions to knowledge and science which have had a clear impact on the rebirth and progress of mankind. The course highlights the problems and challenges facing humanity in general, and Arabic and Islamic nations in particular. Moreover, it discusses the issue of how Islamic nations keep pace with modernity, and how to live and communicate with other cultures in harmony.
Lecture 3 hrs / wk

HUM-112 National Culture and Society (3 CR)

This course is a study of human societies in general, and in particular the general features and main ingredients of the UAE society, geographic location, population development and composition, and economic and geographic aspects. It deals with family and tribal systems and the nature of governance in a tribal society. The nature of services provided to the community before and after the introduction of oil will be discussed, plus the role of cultural, educational and media institutions and the services they contribute to the community. Students will also be provided with a comprehensive and integrated understanding of UAE society and various aspects of social and economic life, political and cultural rights, with particular reference to modern society-building since the establishment of the Union and foreseeing the future. This course aims to strengthen the sense of national belonging, loyalty and pride through consolidation of national culture and social concepts, by student participation in a research project during the semester covering all topics associated with the course

Lecture 3 hrs / wk

HUM-211 Arabic Communication Skills

The communication process of the Arabic language is essential in everyday life, and, based on it, we build our decisions on an individual, collective and international level. This course aims to develop students' capabilities in listening, reading, writing and speaking in their native language. It also helps students to gain linguistic abilities to communicate professionally and socially. In addition, it trains students in different communication skills to avoid common mistakes that can arise from miscommunication. Linguistic performance is developed through a solid and clear understanding of the meanings of different types of texts, which are relevant to the students' environment. Students will navigate through a variety of texts from the Quran, , poetry, prose and short stories.

Lecture 3 hrs / wk

Information Technology and Security Fundamentals

ICT-112 Introduction to Programming and Problem Solving (3 CR)

This introductory course in engineering problem solving and computer programming is for all undergraduate engineering students without prior programming experience in any language. The course covers the fundamentals of computer programming and its underlying principles using the Java programming language. Concepts and methods are illustrated by examples from various engineering disciplines. Useful numerical techniques and their applications to real world problems in science and engineering are also discussed. Weekly laboratory required.

Lecture 2 hrs / wk, 2Lab 2hrs/wk

Mathematics and Sciences (MAS)

MATH-100 Precalculus (4 CR)
This course covers basic algebraic operations on numbers, exponents, roots and radicals, equations, inequalities, scientific notations, algebraic operations on expressions, solving formulas and literal equations. It also covers geometry, functions and its graphs, solving system of linear equations and quadratics equations algebraically and graphically, matrix and its determinant, solving linear equations using the determinant (Cramer's rule), factoring and fractions, exponents and radicals, solving logarithmic and exponential equations, trigonometry, radian measure, vectors and oblique triangles, law of sines and law of cosine, plotting trigonometric functions.

Lecture 4 hrs/wk, Tutorial 1 hrs /wk

MATH-111 Calculus I (3 CR)
This course is an introduction to single variable calculus. Topics include: limits and continuity, derivatives of algebraic, trigonometric, exponential, logarithmic and transcendental functions, implicit differentiation, techniques of differentiation and applications of the derivative in optimization, engineering applications and sketching graphs, L'Hospital rule, the concept of antiderivative and integral, definite and indefinite integrals, fundamental theorem of calculus, simple integration techniques, applications of integration in engineering and geometry.
Lecture 3 hrs
Pre-requisite: MATH100

MATH-112 Calculus II (3 CR)
This course is a continuation of Calculus 1, topics include: Advanced methods of integration using substitution, by parts, or by partial fractions, improper integrals, applications of integration in engineering, infinite sequences, series, power series, the approximation of functions by power series, polar and parametric equations and curves, complex numbers and its forms, functions of two variables, partial derivatives, double integrals
Lecture 3 hrs/wk, .
Pre-requisite: MATH111

MATH-211 Linear Algebra (3CH)
The course covers: Systems of linear equations, matrices, algebraic properties of matrix operations, Echelon form of a matrix, solving linear systems by Gauss-Jordan reduction, finding the inverse of a matrix by row reduction, equivalent matrices, determinants, properties of determinants, cofactor expansion, inverse of a matrix (via its determinant), other applications of determinants (Cramers rule), vectors in the plane and in 3-space, vector space, subspaces, span and linear independence, basis and dimension, row space, null space, nullity and rank of a matrix, homogeneous systems, change of basis, transition matrices, orthogonalization, linear transformations, kernel and range of a linear transformation, eigenvalues and eigenvectors of a matrix.
Lecture 3 hrs/wk,
Pre-requisite: MATH100

MATH-212 Probability and Statistics (3 CR)
This course covers the principal concepts in statistics and probability. Topics in probability include: discrete random variables and probability distributions, continuous random variables and probability distributions. Topics in statistics include: random sampling and data description, point estimation of parameters, statistical intervals for a single sample, and tests of hypotheses for a single sample, correlation and regression. The course will include the use one of the following software packages (Excel, Matlab or R) for implementing the above-mentioned concepts.
Lecture 3 hrs/wk
Pre-requisite: MATH111

MATH-213 Differential Equation for Engineering (3 CR)
Differential equations are fundamental tools for scientists and engineers in modeling any physical system.

The course covers: first order differential equations, exact and linear equations, second order equations, higher order equations, solving system of ODE, Laplace transform solutions of differential equations and Finally, partial differential equations and its classification.
Lecture 3 hrs /wk
Pre-requisite: MATH112

MATH 214 Calculus III (3 CR)
This course deals with Calculus (differentiation and integration) of functions of several variables. Topics include the study of Euclidian space, dot product, cross product, lines, planes, surfaces, tangent planes, gradient vector, linear approximation, multivariable chain rule, directional derivative, triple integrals, line integrals, spherical and cylindrical coordinates, vector fields, divergence, gradient, curl, theorem of Gauss, Stokes and Green, applications in engineering.
Lecture 3 hrs / wk
Pre-requisite: MATH 112

Physics

PHYS-111 Physics I (3 CR)
This course enables students to develop their skills in understanding physical concepts. It helps students approach questions in a logical and systematic manner. This course covers a variety of topics in mechanics that are relevant for the degrees offered at the polytechnic.
Lecture 3 hrs/wk, , Tutorial 1 hrs/wk.

PHYS-111P Physics Lab I (1 CR)
This Lab is an experimental course intended to complement Physics I. The purpose of the lab course is to explore some of the main concepts experimentally, which are covered in the Physics I course. Students will conduct, analyse and interpret experiments on timing, motion, forces and energy, rotational motion, forces and rotational energy and analyse and prepare lab reports working either individually or in teams. This course is to run alongside Physics I.
Lab 3 hrs/wk.

PHYS-112 Physics II (3 CR)
This course enables students to develop their skills in understanding physics concepts of electricity and magnetism. It helps students approach questions in a logical and systematic manner. This course covers a variety of topics in electromagnetism that are relevant for the degrees offered at the polytechnic.
Lecture 3 hrs/wk, Tutorial 1 hrs/wk.

PHYS-112P Physics Lab II (1 CR)
This Lab is an experimental course intended to complement Physics II. The purpose of the lab course is to explore some of the main concepts experimentally, which are covered in the Physics II course. There will be experiments that include aspects of electric field, Ohm's law, resistors and capacitors in series and parallel, charging discharging the RC circuit, resonant frequency of LRC circuit, magnetic field, Magnetic through a coil (induction) and magnetic field in a current-carrying coil.
Lab 3 hrs/wk

Chemistry

CHEM-111 Chemistry I (3 CR)
Chemistry I is 4 credit hours course consisting of 3 credits for Chemistry I (Chem111) and Chemistry Lab

(Chem111P) for 1 credit hour. The Chemistry I course introduces the elementary principles of chemistry and enables students to develop their problem solving skills and understanding the basic fundamentals of chemistry including SI units, unit conversions, significant figures, and periodic table. Emphasizes on chemical reactions and the use of symbolic representation and nomenclature, the mole concept and its applications and molecular structure, stoichiometry and solution stoichiometry, gases law and ideal gas law, and atomic structure and periodicity, chemical bonding and orbital hybridization.
Lecture 3 hrs/wk, Tutorial 1 hrs/wk.

CHEM-111P Chemistry Lab I (1 CR)
This Lab is an experimental course intended to complement Chemistry I and designed for students majoring science and engineering technology. The purpose of the lab course is to explore the safety in chemical laboratories and the fundamental chemistry concepts experimentally, which are covered in the Chemistry I course. Students will conduct, analyse and interpret experiments on physical property, resolution of mixture, composition of element, empirical formula, stoichiometry, types of chemical reactions, gas laws and localized electron model. This course runs alongside with chemistry I and continued with chemistry II.
Lab 3 hrs/wk

CHEM-112 Chemistry II (3 CR)
Chemistry II is 4 credit hours course consisting of 3 credits for Chemistry II (Chem112) and Chemistry Lab (Chem112P) for 1 credit hour. This course continues to provide the fundamentals of chemistry after students finished chemistry I. It emphasizes on the following topics thermochemistry, states of matter and their properties, phase diagrams, solutions composition and properties, chemical kinetics, chemical equilibrium, acids and bases and the fundamentals of electrochemistry
Lecture 3 hrs/wk, Tutorial 1 hrs/wk.

CHEM-112 Chemistry Lab II (1 CR)
This Lab is an experimental course intended to complement Chemistry II. The purpose of the lab course is to explore chemistry concepts experimentally, which are covered in the Chemistry II course. Students will conduct, analyse and interpret experiments on calorimetry, phase diagram, colligative properties, rate and catalyst, chemical equilibrium constant, acid-base and electrochemistry. This course is to run alongside with Chemistry II.
Lab 3 hrs/wk

General Requirements Elective

HUM-110 Life-long Learning Skills
This Life-long Learning Skills course is designed to develop Emirati students' skills essential for success in the university and life. These skills include critical thinking, self-awareness and self-responsibility, problem solving, and soft skills, including teamwork. This course will also give students the information needed to achieve success in their academic life, such as note-taking, critical reading, e-learning, autonomous learning, and effective exam preparation.
Lecture 2 hrs/wk

HUM-404 Leadership Skills (3 CR)
This Leadership Skills course aims to develop students' leadership knowledge and abilities to become effective leaders in their chosen career. Students will learn This course covers a variety of topics such as the nature of leadership, early theories of leadership, contemporary issues and views of leadership, developing effective leadership skills, leadership in teams and decision groups, strategic leadership in organizations, and ethical and authentic leadership.
Lecture 3hrs/wk

HUM-402 Creativity, Innovation and entrepreneurship (3 CR)

Creativity and innovation are essential skills in all engineering industries. Not only are AD Poly engineers expected to work at high international industry standards, but they need to find creative and innovative ways to make these same industries prosper in the UAE regardless of challenges that may be present. This course teaches students about the theory and practical aspects of creativity and innovation in a variety of settings.
Lecture 3hrs/wk

HUM-212 Applied Research and Development Skills (3 CR)
Applied Research and Development Skills (HUM-212) introduces students to applied research methods and techniques, and informs them of the relationship between research and development. Students develop applied research skills in engineering, gain knowledge on how to integrate research design and methodology to industrial development, and learn how to write a study plan based on a critical review of scientific reports/projects. Furthermore, students learn how to research new technology and plan R&D projects.
Lecture 3hrs/wk

Common Courses

ICT 112 Introduction to Programming and Problem Solving (3 CR)
This introductory course in engineering problem solving and computer programming is for all undergraduate engineering students without prior programming experience in any language. The course covers the fundamentals of computer programming and its underlying principles using the Java programming language. Concepts and methods are illustrated by examples from various engineering disciplines. Useful numerical techniques and their applications to real world problems in science and engineering are also discussed. Weekly laboratory required.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

ICT 120 Object Oriented Programming in Java (3 CR)

The course will present concepts of object oriented programming using Java including object-oriented design, encapsulation and information hiding, separation of behavior and implementation, classes and subclasses, inheritance (overriding, dynamic dispatch), polymorphism (subtype polymorphism vs. inheritance) and class hierarchies. Topics include methods, Arrays, Array Lists, String, and String Manipulation, Objects, classes, basic of GUI, Event Handling, GUI components, File I/O, Exceptions, collection classes and iteration. An introduction to programming practice using an IDE (modularity, testing, and documentation).
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

ICT-121 Introduction to Computer Networks (3 CR)
This course equips students with the fundamental concepts and skills in data communications, telecommunications, and computer networking, both wired and wireless. Students will learn basic network devices, functions, standards, and protocols, Local Area Networks and OSI layer model, Analog and digital communication systems; Multiplexing, bandwidth and throughput; Modulation techniques; Transmission lines; Switching and routing; Ethernet technologies; Transmission Control Protocol (TCP)/Internet Protocol (IP); wireless standards; network applications. The students will acquire basic networking skills like designing and setting up a local area network.
Lecture: 2hrs/day; tutorial: 2hrs/day; Lab: 3hrs/day

ICT-130 Discrete Mathematics (3 CR)
This course introduces the foundations of discrete mathematics as they apply to computer science. Topics include functions, relations and sets, basic logic, proof techniques, basics of counting, recurrence relationship. combinatorial problems, recursion, and enumeration
Lecture: 3hrs/week; tutorial: 2hrs/week

ICT-131 Logic Design & Computer Organization (3 CR)
This course covers the study of fundamental combinational logic circuit analysis and design. Combinational concepts covered include Boolean algebra, K-maps, basic logic gates, and small/medium scale integrated circuits. Also it provides students with the basic computer organization; memory systems including, computer arithmetic, and design of a simple computer; Microprogramming and instruction sets; Input/Output and Assembly programming techniques.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

ICT-132 Fundamentals of Information Security (3 CR)
This course covers basic concepts and techniques in applied information security, e.g., confidentiality, integrity, availability, and current concerns of anonymity, privacy and safety of web-based transactions, forensics investigations, etc. The course also covers the main available safeguards, such as authentication, authorizations, and network security, and shows how these techniques are applied to address the issues arising in a variety of different domains, ranging from business to health care, and from law to national security. A coverage of ethical and legal issues in information security; electronic privacy & intellectual property protection; social and economic implications of information security will be discussed.
lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

ICT-210 Introduction to Software Security (3 CR)
The course introduces basic and fundamental concepts in secure software design, development, and engineering issues.. The course starts by describing the software development life cycle; the software design process, the choices of programming languages, operating systems, databases and distributed object platforms for building secure systems. The course then introduce common software vulnerabilities such as buffer overflows and race conditions, auditing software, proving properties of software, software and data watermarking, code obfuscation, tamper resistant software, and the benefits of open and close source development in the context of web technologies and smart phone application development.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

ICT-211 Data Structure and Algorithm Design (3 CR)
This course introduces students to the basic data structures, and the analysis and design of basic algorithms and their role in the problem solving process, as well as techniques for developing, testing and debugging typical programs. Data structures to be covered include: arrays, linked lists, stacks, queues, lists, hash table and trees, heaps and graphs. The algorithms covered include recursion, sorting, selection, searching, and strings and text processing including strategies for choosing the right data structure for a certain problem.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

ICT-212 Introduction to Database Systems (3 CR)
This course covers concepts for organizing, querying and managing databases; database design and the use of database management systems. It covers the characteristics of Entity Relationship Model, and the relational data model, functions of relational database management system (RDBMS), process of normalization, entity-relationship modeling and Structure Query Language (SQL), limit and sort results, use of SQL functions, use group by functions, user different types of joins, and writes subqueries. The course covers the data manipulation language of SQL and how to create simple tables with different data type and constraints. Students will also be introduced to the concepts of Big Data and its impact to businesses.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

ICT-220 Introduction to Operating Systems Security (3 CR)
This course covers fundamentals with hands-on knowledge of operating systems operations and security with focus on dominant operating systems (e.g. Linux and Windows). The first part focuses on operating systems principles and organization, criteria to select, deploy, integrate and administer platforms or components to support the organization's IT infrastructure. Topics covered will be operating system structures, process control, scheduling, synchronization, memory, Files, input/output management, protection and privacy, securing Linux, Securing Windows Server, OS hardening, the security mechanism used in an operating system, configuring different levels of security measures, best practices and security related tools and utilities.

NCS-210 Network Security (3 CR)
This course will cover the essential issues in computer communication and network security and their protocols. It will also introduce students to basic issues in network protection, resiliency, and hardening; hence securing the organization wired and wireless network infrastructure. Topics include: network worms, web server security, denial of service attacks, authentication protocols, firewalls, Trojan horses, intrusion detection, data encryption methods, public key cryptography (RSA, DES), email viruses. The topics to be covered will include security protocols like SSL, and IPSEC. It will also discuss network security threats and attacks, designing resilient networks, configuring of network components like firewall, setting up Virtual Private Network (VPN) and secured wireless connections
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

NCS-220 Ethical hacking and Digital Forensics (3 CR)
This course introduces students to a wide range of topics related to ethical hacking and penetration testing. The topics cover the tools and penetration testing methodologies used by ethical hackers and provide a thorough discussion role of ethical hacker in protecting corporate and government data from cyber-attacks. Students are taught offensive and defensive skills for the organization's wired and wireless networks in order to protect important assets against hackers. This course will also equip students with the fundamental concepts and techniques of computer forensics. Students will learn to preserve, acquire, analyze and present computer data as evidence. Students will acquire hands-on experience on various forensic investigation techniques and standard tools necessary to successfully carry-out a computer forensic investigation
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

NCS-226 Intro to Applied Cryptography (3 CR)
This course is an introduction to the various technical and administrative aspects of modern applied cryptography (e.g. confidentiality, data integrity, authentication, freshness, and non-repudiation). The principles and application of cryptography to secure data and network with different encryption algorithms and techniques (stream/block symmetric key cryptography concepts, protocols and applications, asymmetric (public-key) encryption, authentication, key management, digital signatures, and pseudo-random number generation ciphers, Digital Encryption standard (DES), Advanced Encryption Standard (AES)) will be introduced. Topics include conventional and public-key cryptography, authentication and digital signatures. Students will learn to apply these concepts to secure real-world applications (e.g. authenticate electronic mails and messages). Key management, digital certificates and public-key infrastructure will be discussed to understand the deployment of public-key cryptography. It also provides introduction to the computational complexity requirements of basic cryptographic protocols.
Lecture: 2hrs/day; tutorial: 2hrs/day; Lab: 3hrs/day

SSA-222 Information Systems Security (3 CR)
This course is an introduction to the various technical and administrative aspects of Information Security and Assurance. This course provides the foundation for understanding the key issues associated with protecting information assets, determining the levels of protection and response to security incidents, and designing a consistent, reasonable information security system, with appropriate intrusion detection and reporting features
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSD-220 Web Programming and Security (3 CR)
This course provides overview of static and dynamic web application development and security using HTML5 and the most recent Cascading Style Sheet versions. Other technologies examined include JavaScript, jQuery and jQuery Mobile. In addition, the course will examine and use available libraries (e.g. Google's Map API using JavaScript) that build upon these technologies to make Web pages more interactive. It will also introduce the necessary knowledge needed for web application security such as http protocol, same origin policy, cookies, and sessions. The integrated development environment (IDE) and enterprise web application development that supports .NET web applications development will also be introduced. Students would also be taught on good practices of secure web coding. The course then presents top 10 OWASP web attacks such as Cross Site Scripting, Session Hijacking, and SQL injection. Further topics such as the security and authentication techniques used in web applications are discussed

Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Secure Software Development Specialization

SSD-230 Secure Web Applications Development (OCT-I) (2 CR)
The purpose of this two-week on-campus-training module is to train the students on the tools needed to design and perform penetration testing for web applications security. This module focuses on introducing HTML, JavaScript, and PHP, SQL injection, Cross Site Scripting, Session Hijacking, penetration testing, and penetration testing tools such as Burp Suit. Students would also be taught on good practices of secure web coding
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

SSD-231 Secure Mobile Applications Development (OCT-I) (2 CR)
The purpose of this on-campus-training module is to give the students the tools to design, implement, test, debug and publish smartphone applications on java based android phones. Students will learn how to take their innovative ideas from conception to the android market through a series of rigorous hands-on programming assignments and group projects Topics covered: the android development environment including the Android Studio IDE; key programming paradigms; UI design including views and activities; data persistence including SQLite; content providers; messaging and networking; phone sensors, location based services (e.g., Google Maps), background services; broadcast receivers; cloud programming using App Engine; and publishing applications to the android market.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

SSD-232 Web Application Security (OCT-I) (2 CR)
The purpose of this one-week on-campus-training module is to practice hands-on sessions on conducting software security assessment to identify vulnerabilities in web applications, exploit these vulnerabilities, and escalate privileges across the compromised environment. Topics include: security fundamentals, assessment strategies and tools, common vulnerability classes, cryptographic attacks, and privilege escalation. Students will get hands-on experience identifying vulnerabilities in software.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

SSD-233 Ethical Hacking and Digital Forensics (OCT-I) (1 CR)
The purpose of this one-week on-campus-training module is to practice techniques to perform penetration testing/ethical hacking in order to assess vulnerabilities and protect Enterprise information assets. The course will also present techniques to prevent software vulnerabilities from occurring in applications. The training module will develop student skills to bridge the gap between secure software development and practical post-implementation review through auditing and assessment
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one weeks delivery

SSD-234 Secure Windows/Linux OS (OCT-I) (1 CR)
The purpose of this one-week on-campus-training module is to practice hands-on sessions on securing and hardening Linux and Windows operating systems. Students will be taught on the use of various Linux commands / system tools for user management, security administration, software installation, network administration and configuration of services. The course will also present Hands-on knowledge in securing and hardening a Windows operating system. The course will cover the security mechanism used in the operating system, configuring different levels of security measures, best practices and security related tools and utilities.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

SSD-235 Mobile Forensics and Investigation (OCT-I) (1 CR)
The purpose of this one-week on-campus-training module is to practice techniques and tools to perform forensics investigation for mobile and smart devices. Mobile device forensics is the science of recovering digital evidence from a mobile device under forensically sound conditions using accepted methods. Mobile device forensics is an evolving specialty in the field of digital forensics. This module will look into mobile

devices and explaining technologies involved and their relationship to forensic procedures. The module also discusses procedures for the validation, preservation, acquisition, examination, analysis, and reporting of digital information
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week's delivery

SSD-310 Object Oriented Analysis and Design (3 CR)
The purpose of this course is to introduce students to the fundamentals of analysis and design of computer information systems to meet business requirements. Students will learn and practice various methods, tools and techniques used by the systems analyst at each phase within the systems development cycle. The course will cover object-oriented systems analysis and design techniques. The course also introduces computer aided software development (CASE) technology.
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

SSD 311 Mobile Programming and Security (3 CR)
The goal of this course is to teach students how to design, implement, test, debug and publish smartphone applications (e.g. java based android phones). Students will learn how to take their innovative ideas from conception to the android market through a series of rigorous hands-on programming assignments and group projects Topics covered: the android development environment including the Android Studio IDE; key programming paradigms; UI design including views and activities; data persistence including SQLite; content providers; messaging and networking; phone sensors, location based services (e.g., Google Maps), background services; broadcast receivers; cloud programming using App Engine; and publishing applications to the android market. The course also embarks on concepts of mobile Vulnerabilities; Security threats and problems; Protection techniques, and Specification, design and development of secure systems involving mobility.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSD-312 Embedded Systems Secure Development (3 CR)
This course introduces the basics of Embedded Systems software developments through the introduction of Raspberry Pi server kit and Python programming. The course will give students experience in programming embedded systems in real world applications with focus on security implications related to hardware devices. The Internet of Things (IoT) concept will also be introduced in this course. Topics include software issues in the design of embedded systems. Microcontroller architectures and peripherals, embedded operating systems and device drivers, compilers and debuggers, timer and interrupt systems, interfacing of devices, communications and networking. Emphasis on practical application of development platforms. Toward the end of the course students will be given overview of control systems (e.g. SCADA) operations and programming
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

SSA-314 Cloud and Infrastructure Security (3 CR)
This course aims to provide a systems overview and programming perspective of the cloud computing paradigm and critical infrastructure control systems security. The course will develop an understanding of the current challenges and tradeoffs when mapping different application suites to a cloud. Additionally, this course also provides an overview of the challenges associated with the analysis, evaluation of the security related functions, and protection of key national resources. Students will examine vulnerability and risk reduction strategies, contingency planning, and strategic partnership models as they are applied to the critical infrastructure sectors (Water, Power & Energy, Information & Telecommunications, Chemical Industry, Transportation, Banking & Finance, Defense Industry, Postal & Shipping, Agriculture & Food, Public Health, and Emergency Services), and physical tamper resistant and proof systems
Lecture: 2hrs/day; tutorial: 2hrs/day; Lab: 3hrs/day

SSD-320 Multi-Language Secure Coding (3 CR)
The course will cover various topics on the proper use of Java's APIs and security architecture, and considers security concerns pertaining to standard extension APIs. The course covers security issues applicable to different Java libraries including: lang, util, Collections, Concurrency Utilities, Logging, Management, Reflection, Regular Expressions, Zip, I/O, JMX, JNI, Math, Serialization, and JAXP. Special emphasis is given to CERT Oracle Secure Coding Standard for Java, which provides secure coding rules for the Java SE 6 Platform including the Java programming language and libraries, and also addresses new

features of the Java SE 7 Platform. The course also covers ASP.NET and the .NET. framework with emphasis on security vulnerabilities and integrating security into the ASP.NET framework
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSD-321 Malware Analysis: Tools and Techniques (3 CR)
The course equips students with the basic knowledge of malware analysis to reverse-engineer the malware using practical tools and techniques. The three phases of behavioral, code and memory analysis of malware will be taught. Students will learn how to explore and understand the key characteristics of malware and the techniques of reverse-engineering compiled Windows executables and browser-based malware. This course presents key tools and techniques for malware analysis and examines malicious programs. Code analysis focuses on the specimen's code and makes use of a disassembler and a debugger tools such as IDA Pro and OllyDbg. Students will learn how to build a flexible laboratory to perform such analysis in a controlled manner
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

SSD-322 Software Vulnerability Testing (3 CR)
The course revolves around series of exercises based on "hacking" into a network (penetration testing the network) and then defending against the hacks. This hands-on course focusing on hacking techniques, exploit techniques, vulnerability assessment and penetrating testing techniques. Participants will gain hacking techniques to perform penetration testing for the organization and with the same basis participants can use for countermeasures
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

SSD-323 Secure Databases Development (3 CR)
The course explore in depth SQL language by introducing PL/SQL, database security principles, database auditing, security implementation and database reliability, identifying database vulnerabilities, exploiting flaws to gain control, database assessment, and virtual private database. The following topics are covered: database security, profiles, password policies, privileges and roles, Virtual Private Databases, and auditing. The course also covers advanced topics such as SQL injection, database management security issues such as securing the DBMS, enforcing access controls, and related issues. The course addresses further database security and gives examples of hacking/prevention techniques in different SQL vendors. The student will be provided with the tools, techniques and industry accepted methodologies (e.g. Oracle) to secure organization database.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSD-324 InfoSec Project Management (3 CR)
This course provides students a systematic and practical approach for establishing and managing projects. Project management is the application of processes, methods, knowledge, skills and experience to achieve the project objectives. A project is a unique, transient endeavor, undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes or benefits. In the project, the students are expected to perform problem analysis, investigation, solution design, and implementation of security related project. In addition, project management will also be taught as part of the course
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 0hrs/week

SSD-330 Client Server Security Administration (OCT-II) (2 CR)

The purpose of this two-week on-campus-training module is to practice hands-on sessions on security issues, processes, and solutions, and maps out future directions in the context of today's distributed systems. This insight is elucidated by modeling of modern day distributed systems using a four-tier logical model –host layer, infrastructure layer, application layer, and service layer (bottom to top). The course will cover security threats and issues across these tiers.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

SSD-331 Database Programming and Security (OCT-II) (2 CR)
The purpose of this one-week on-campus-training module is to practice hands-on sessions on writing SQL language by introducing PL/SQL. The course introduces the fundamentals of PL/SQL which includes declaring variables, writing executable statements, control structures, handling exceptions, and stored

procedures and functions. This course utilizes Oracle scenarios and step-by-step examples. It also teaches a comprehensive understanding of the database server architecture and administration with respect to database and server security, database backup and recovery. Students will experiment common threats to databases, identify and implement appropriate security measures to protect and secure databases and its server. The following topics are covered: security, profiles, password policies, privileges and roles, Virtual Private Databases, and auditing. The course also covers advanced topics such as SQL injection, database management security issues such as securing the DBMS, enforcing access controls, and related issues.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

SSD-332 Software Vulnerability Assessment (OCT-II) (2 CR)
The purpose of this two-weeks on-campus-training module is to practice hands-on sessions on "hacking" into a network (penetration testing) to identify system vulnerabilities and then defending against the hacks. This hands-on course focusing on hacking techniques, exploit techniques, vulnerability assessment and penetrating testing techniques to identify and examine vulnerabilities of computer system software and applications
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

SSD-333 Practical Requirements Engineering (OCT-II) (1 CR)
The purpose of this one-week on-campus-training module is to practice hands-on sessions on how to systematically create and maintain requirements and how use those requirements to build more effective, higher-quality software. This course will present a hands-on practice to use RequisitePro in real-world development environments
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

SSD-334 Secure Software Design and Implementation (OCT-II) (1 CR)
The purpose of this one-week on-campus-training module is to practice hands-on sessions on practical standards of secure design of software and implementation. The standard provides secure coding rules on prominent Java SE 6 Platform including the Java programming language and libraries, and also addresses new features of the Java SE 7 Platform. The course will give guidance to students in the proper use of Java's APIs and security architecture, and considers security concerns pertaining to standard extension APIs. The course covers security issues applicable to different Java libraries including: lang, util, Collections, Concurrency Utilities, Logging, Management, Reflection, Regular Expressions, Zip, I/O, JMX, JNI, Math, Serialization, and JAXP.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

SSD-335 Software Verification and Validation (OCT-II) (1 CR)
The purpose of this one-week on-campus-training module is to practice hands-on sessions on verification and validation strategies and techniques as they apply to the development of quality software. Topics include test planning and management, testing tools, technical reviews, formal methods and the economics of software testing. The relationship of testing to other quality assurance activities as well as the integration of verification and validation into the overall software development process are also discussed.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

SSD-410 Advanced Cryptography (2 CR)
This course covers advanced topics in Cryptography including: modern methods of public and private key encryption, authentication and digital signatures, hashing, and passwords, Number theory, abstract algebra, combinatorics, and complexity theory necessary for the design and analysis of advanced cryptographic systems
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 0hrs/week

SSD-411 Enterprise Software Architecture & Design (3 CR)
This course is an introduction to Enterprise Architecture (EA), it is designed to be the first exposure to foundational enterprise architecture (EA) concepts and practices. The course sets the "common language" for EA discussions for professionals new to the EA field as well as functional business people, customers, suppliers, and others that desire an overview of enterprise architecture and the benefits it can bring to an organization
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSD 412 Advanced Web Security (3 CR)
The course will introduce advanced web application security with coverage of attacks and countermeasures. Topics include Cross Site Scripting, SQL Injection, and Session Security. More advanced web application vulnerabilities will be discussed including: Blind SQL injection, Flash Security, Authentication, Web Service, and XPath injection, back end components, application logic, customized attacks on web technologies. Most of the examples in the course will be introduced in PHP, MySQL, and Apache. Challenges will be provided on Virtual Machine for students to practice during the lab or work on them as assignments.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSD-413 Risk Analysis and Management (3 CR)
This course gives students guidance on planning and implementing a risk assessment and protecting business information. The course introduces students to the international code of practice for an information security management system (ISMS) ISO27002. This course also provides students with detailed, practical guidance on how to develop and implement a risk assessment in line with the requirements of ISO27001. Students will learn how to measure risk and how to ensure that proper levels of security are maintained for individual technology users, businesses, government, and other organizations. This course will cover different approaches for risk assessment and risk mitigation. Students will learn how to use a risk analysis matrix for performing both quantitative and qualitative risk analysis. Course covers key topics, such as Threat Vulnerability Analysis, risk scales, threats and vulnerabilities, selection of controls, and roles and responsibilities. Risk Management Strategies (Avoidance, Transference, Mitigation, Acceptance), Counter-Measures, and Cost Benefit Analysis of Info Security investments.
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 1hrs/week

SSD-414, SSD-423 Graduation Projects I and II (1 & 3 CR)
The Graduation Project I, II courses are Capstone Design courses, which allow students of the program to design, implement, and demonstrate a secure system/solution/product. Student teams of three to four students will work over several semesters on an engineering design projects which might be sponsored internally or by a local company. Students choose the particular design project with approval of appropriate faculty. Each project includes the use of open-ended problems, development and use of design methodology, formulation of design problem statements and specification, consideration of alternative solutions, feasibility consideration and detailed system descriptions. While individual performance is emphasized and appraised, team work spirit is highly recognized

SSD-420 Incident Handling and Response (3 CR)
The overall objectives of this course help student understand contingency planning and its components. The course will cover fundamental concepts and techniques of Security Information and Event Management (SIEM). Students will learn the basics of correlation of events, real-time monitoring and presentation of information from network and security devices using SIEM technology. Students will understand the key characteristics of log auditing, event management, and how to handle the situation as the incident responders to contain the incident and plan for the recovery steps.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSD-421 Information Assurance & Security Management (3 CR)
This course provides students a systematic and practical approach for establishing, managing, and operating a comprehensive Information Assurance program at an Organization. The course provides students with an understanding of the essential issues required to develop and apply a targeted information security posture to both public and private corporations and government run agencies. Current software exploitation issues and techniques for information assurance will be investigated. Topics include: Security Management Practices, Business Continuity Planning (BCP), Disaster Recovery Planning (DRP), Commercial and legal implications, Introduction to ISMS standards, Accreditation, Policy, Risk Management, and auditing and reporting.
Lecture: 2hrs/week; tutorial (optional): 2hrs/week; Lab: 1hrs/week

SSD-422 Ethics, Law and Policy in Cyberspace (3 CR)
The course provides an overview of the ethical challenges faced by individuals and organizations in the

information age and introduces the complex and dynamic state of law as it applies to behavior in cyberspace. The course also highlight the bit falls and dangers of doing business in an interconnected world, and provide understanding how to ethically and legally operate and use modern computer systems and networks. Policies and standards such as Sarbanes Oxley, HIPAA, Gramm, Leach, Bliley, will be introduced. The course introduces the entire lifecycle of security policy creation and development including issue specific policies in different domains of security. The course teaches students how to allocate the appropriate security techniques needed to satisfy a specific security policy in context of real life situations. Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

SSD-430 Field Training (3 CR)

This course shall be conducted collaboratively with AD Polytechnic Industrial partner. Content of this course shall meet state-of-the-art and state-of-the-practice technology and training modules. The overall objective of this course aims on developing students' knowledge and practices to develop secure networking and web space. Students spend one full semester as interns in a company, government agency, or business. Under faculty supervision, students fulfill various assignments to acquire first-hand knowledge of a working environment. Students are required to write a final report detailing the technical aspects of their internship. This course is graded on a Pass/Fail scale
Department Approval is required

Elective SSD 415 Homeland Security (3 CR)
In the aftermath of 9/11, many law enforcement agencies (LEAs) shifted more resources toward developing counterterrorism (CT) and homeland security (HS) capabilities. This course examines the effects the focus on CT and HS has had on law enforcement, including organizational changes, funding mechanisms, how the shift has affected traditional crime-prevention efforts, and an assessment of benefits, costs, and future challenges.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSD 416 Security Governance and Compliance (3 CR)
This course provides a detailed knowledge of IT Governance principles and procedures, and the basic concepts of the ISO 27001 / ISO 27002 standard. The student possesses thorough knowledge about the overall process for establishment and maintenance of an Information Security Management Systems (ISMS). The student possesses detailed knowledge about the role of policies, standards and guidelines for controls and is capable of applying his/her knowledge in case studies
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSD 417 Security Architectures and Models (3 CR)
The course covers the broad domain of security architecture and models, access control systems and methodology, OM-AM framework, security architectures and mechanisms, security infrastructure, reusable infrastructures, public-key centric architectures, consumer-oriented public-key infrastructure, coupled and de-coupled authentication and authorization architectures and multilevel security architectures. The course will also demonstrate advanced Internetworking concepts, and security and administration. The course will serve as a prerequisite to the CISSP certification.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSD 418 Security as Continuous Improvement (3 CR)
This course covers the quality improvement paradox in security and quality improvement processes. It will also cover how to ensure the improvement of the performance of computer security incident Response teams (CSIRTs). It will give students direction on how to implement incident reporting systems and learn from incidents
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSD 419 Human-Computer Interface Design (3 CR)
This course introduces methods and principles of human-computer interaction (HCI), user-centered design (UCD), and usability evaluation. Provides broad overview of HCI and how HCI informs UCD processes throughout product development lifecycle.

Lecture: 1hr/week; tutorial: 1hrs/week; Lab: 4hrs/week

Elective SSD 425 Critical Software Security Controls & Standards (3 CR)
This course will demonstrate the techniques and tools needed to implement and audit the critical security controls. It helps students to master specific, proven techniques and tools needed to implement and audit the Twenty Critical Security Controls. These Top 20 Security Controls of OWASP are rapidly becoming accepted as the highest priority list of what must be done and proven before anything else at nearly all serious and sensitive organizations.
lecture: 2hr/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

Elective SSD 426 Data Mining and Machine Learning (3 CR)
This course introduces and studies the concepts, issues, tasks and techniques of data mining and information retrieval. Topics include data preparation and feature selection, association rules, classification, clustering, evaluation and validation, scalability, spatial and sequence mining, and data mining applications. The course mainly focuses on data mining issues such as data selection and cleaning, machine learning techniques to ``learn" knowledge that is ``hidden" in data, and the reporting and visualization of the resulting knowledge. The course illustrates data mining process by examples of practical applications from the life sciences, computer science, and commerce. Several machine learning topics including classification, prediction, and clustering will be covered
Lecture: 2hr/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSD 310 Privacy in a Networked World (3 CR)
This course focuses on both the technical challenges of handling sensitive data and the policy and legal issues facing data subjects, data owners, and data users. The students will recognize, analyze, and manage privacy challenges created by technology. Topics include privacy concepts, policies, and mechanisms; identity, anonymity, and confidentiality; private data analysis and database sanitization; privacy-preserving data mining techniques; privacy issues in social networks, RFID, and healthcare applications. The course includes a privacy-related project
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 0 hrs/week

Elective SSD 428 Advanced Mobile Application Development (3 CR)
This course focuses on advanced Mobile application programming constructs will be covered. In addition, students will learn how a cross-platform development tool such as PhoneGap can be set up and used with JavaScript to create mobile applications. The process of deployment and publishing of mobile applications will also be taught. Students will learn to develop apps which utilize mobile interface components, use geolocation and maps, store data in device, and import web content. Examples of cross-platform tools to be used are JQuery Mobile and Phonegap
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 0 hrs/week

Network and Cyber Security Specialization

NCS-230 Routing and Switching (OCT-I) (2 CR)
The purpose of this on-campus-training module is to give the students the tools to design hands on and practice concepts covered in the prerequisite course(s) in the Cisco training academy and other specialized labs. Topics include routing and switching fundamentals of computer networks and would be the best routing protocols and switching fabrics to achieve certain performance
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

NCS-231 Secure Network Design (OCT-I) (2 CR)
The course provides a two-week hands-on and practice on concepts covered in the prerequisite course(s) in the training academies and specialized labs. Topics include LAN design and analysis, implementation of routing protocols, WAN technologies and telecommunications industry standards with special emphasis on Cisco equipment and protocols.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

NCS-232 Network Security (OCT-I) (2 CR)
The course provides two-weeks hands on and practice on concepts covered in the prerequisite course(s) in the training academies and specialized labs. Topics include: viruses, Internet worms, computer crime, web server security, denial of service attacks, authentication protocols, firewalls, Trojan horses, intrusion detection, data encryption methods, public key cryptography (RSA, DES), email viruses, attachments, spyware, digital homeland security.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

NCS-233 Ethical Hacking and Digital Forensics (OCT-I) (1 CR)
The purpose of this one week on-campus-training module is to give the students the tools to introduce students to a wide range of topics related to ethical hacking and penetration testing. The course provides an in-depth understanding of how to effectively protect computer networks. The topics cover the tools and penetration testing methodologies used by ethical hackers and Security Professionals to conduct high-value penetration testing focused on discovering and exploiting vulnerabilities to determine and reduce business risk. The goal is protecting corporate and government data from cyber-attacks
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one weeks delivery

NCS 234 Mobile Programming and Security (OCT-I) (1 CR)
The purpose of this one-week on-campus-training module is to practice hands-on sessions on how to design, implement, test, debug and publish smartphone applications (e.g. java based android phones). Students will learn how to take their innovative ideas from conception to the android market through a series of rigorous hands-on programming assignments and group projects The course also embarks on concepts of mobile Vulnerabilities; Security threats and problems; Protection techniques, and Specification, design and development of secure systems involving mobility.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

NCS-235 Penetration Testing in-Depth (OCT-I) (1 CR)
The purpose of this one-week on-campus-training module is to provide students with technical skills, tools and techniques that they can use to perform penetration testing to improve the security of organization. The goal is to identify security problems, implement appropriate defenses and respond to attacks immediately with the skills to contain, mitigate and remediate the identified issues.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one weeks delivery

NCS-310 Fundamentals of Storage Networking (3 CR)
The overall objective of the course is to develop student capabilities (skills) of Information Storage System Environment: Information Storage, Evolution of Storage Technology and Architecture, Data Center Infrastructure, Key Challenges in Managing Information. Advanced concepts in Storage Area Networks (SAN) including building blocks, architecture; protocols and mechanisms; and the different Standardization Bodies and Industry Organizations concerned with SAN.
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

NCS-313 Wireless Networks Security (3 CR)
This course covers security and privacy issues in wireless networks and systems, such as cellular networks, wireless LANs, wireless PANs, mobile ad hoc networks, vehicular networks, satellite networks, wireless mesh networks, sensor networks and RFID systems. Security problems of MAC and especially upper layers will be emphasized.
This course will address various issues (attacks and defense strategies) in wireless and mobile security, including WEP and WPA, wireless jamming attacks, and mobile privacy. The course will also demonstrate wireless Internetworking concepts, and security and administration including WEP, IEEE 802.11i, RADIUS, WPA, WPA2, and related encryption algorithms.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

NCS-315 Cloud and Infrastructure Security (3 CR)
This course aims to provide a systems overview and programming perspective of the cloud computing paradigm. The course will develop an understanding of the current challenges and tradeoffs when mapping

different application suites to a cloud. Additionally, this course also provides an overview of the challenges associated with the protection of key national resources. Students will examine vulnerability and risk reduction strategies, contingency planning, and strategic partnership models as they are applied to the critical infrastructure sectors (Water, Power & Energy, Information & Telecommunications, Chemical Industry, Transportation, Banking & Finance, Defense Industry, Postal & Shipping, Agriculture & Food, Public Health, and Emergency Services).
Lecture: 2hrs/day; tutorial: 2hrs/day; Lab: 3hrs/day

NCS-320 Perimeter Protection (3 CR)
This course is an introduction to the various technical and administrative aspects of perimeter protection. This course provides the foundation for understanding the key issues associated with modern networks and protection of the perimeter using various technologies including Firewalls, proxies, application firewalls, virtual firewalls, deep packet inspection and UTM.
Lecture: 2hrs/day; tutorial: 2hrs/day; Lab: 3hrs/day

NCS-321 Malware Analysis: Tools and Techniques (3 CR)
The course equips students with the basic knowledge of malware analysis to reverse-engineer the malware using practical tools and techniques. The three phases of behavioral, code and memory analysis of malware will be taught. Students will learn how to explore and understand the key characteristics of malware and the techniques of reverse-engineering compiled Windows executables and browser-based malware. This course presents key tools and techniques for malware analysis and examines malicious programs. Code analysis focuses on the specimen's code and makes use of a disassembler and a debugger tools such as IDA Pro and OllyDbg. Students will learn how to build a flexible laboratory to perform such analysis in a controlled manner.
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

NCS-322 Advanced Network Security (3 CR)
The overall objective of the course is to develop advanced student capabilities (skills) in network security This course covers techniques and mechanisms for network intrusion detection and prevention both in wired and wireless networks. Topics covered mainly include: configuring intrusion detection systems, generating common attacks, Intrusion detection based network architectures, attack signatures, filtering rules for network monitoring, Snort IDS, denial of services (DoS) attacks, distributed DoS attacks, buffer overflow attack, Man-in-the-Middle attacks, ARP cache poisoning attacks, common mobile and wireless network attacks, IP spoofing based attacks, malicious sniffing attacks in wired and wireless networks, NIC promiscuous mode detection, common attacks on firewalls and network devices.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

NCS-323 Advanced Web Security (3 CR)
The course will introduce advanced web application security threats, such as hackers, masqueraders, information spoofing, sniffing, and distribution of damaging software, the associated security risks, and prevention/detection/response techniques. The course will cover three areas of Web Security: 1) Internet Communication Security, 2) Web Application Vulnerabilities 3) Web Application Exploitation
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

NCS-324 InfoSec Project Management (3 CR)
This course provides students a systematic and practical approach for establishing and managing projects. Project management is the application of processes, methods, knowledge, skills and experience to achieve the project objectives. A project is a unique, transient endeavor, undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes or benefits. In the project, the students are expected to perform problem analysis, investigation, solution design, and implementation of security related project. In addition, project management will also be taught as part of the course.
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 1hrs/week

NCS-33 Linux/Unix Operating Systems Security Administration (OCT-II) (2 CR)
The purpose of this two-week on-campus-training module is to practice hands-on sessions on the use the

tools provided by Linux/Unix. Students will become comfortable with using a Linux/Unix system and will become familiar with many of the Linux/Unix design paradigms. The module will also equip the students with hands-on knowledge in securing and hardening a Linux operating system. The course will cover the security mechanism used in the operating system, configuring different levels of security measures, best practices and security related tools and utilities.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

NCS-331 MS Windows Server Security Administration (OCT-II) (2 CR)
The purpose of this two-week on-campus-training module is to practice hands-on sessions on Configuring Windows Server and Directory Domain Services by providing in-depth training on implementing, configuring, managing and troubleshooting Active Directory Domain Services (AD DS) in Windows Server environments. The module will provide hands-on knowledge in securing and hardening a Windows operating system. The course will cover the security mechanism used in the operating system, configuring different levels of security measures, best practices and security related tools and utilities.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

NCS-332 Advanced Routing and Switching (OCT-II) (2 CR)
The purpose of this two-week on-campus-training module is to practice hands-on sessions on advanced topics in routing and switching in wired and wireless computer networks. Such training contributes to students being able to manage today's complex while keeping key applications secure and performing efficiently. The training helps for preparation of students for CCNP certification.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

NCS-334 Intrusion Detection & Response (OCT-II) (1 CR)
The purpose of this one-weeks on-campus-training module is to practice hands-on sessions on setup and configuration of intrusion detection and response systems in a network; Attack generation (e.g. denial-of-service and sniffing attacks) and configuration of the intrusion detection system (IDS) to detect the attacks; Misuse and anomaly detection; Network attacks (e.g. denial of service, sniffing attacks, buffer overflow.); Fundamental limits of intrusion detection; Statistical techniques; Signature and pattern matching techniques; Artificial intelligence techniques
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

NCS-334 Intrusion Detection & Response (OCT-II) (1 CR)
The purpose of this one-weeks on-campus-training module is to practice hands-on sessions on setup and configuration of intrusion detection and response systems in a network; Attack generation (e.g. denial-of-service and sniffing attacks) and configuration of the intrusion detection system (IDS) to detect the attacks; Misuse and anomaly detection; Network attacks (e.g. denial of service, sniffing attacks, buffer overflow.); Fundamental limits of intrusion detection; Statistical techniques; Signature and pattern matching techniques; Artificial intelligence techniques
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

NCS-335 Database Server Security (OCT-II) (1 CR)
The purpose of this one-week on-campus-training module is to practice hands-on sessions on comprehensive understanding of the database server architecture and administration with respect to database and server security, database backup and recovery. Students will experiment common threats to databases, identify and implement appropriate security measures to protect and secure databases and its server. The following topics are covered: security, profiles, password policies, privileges and roles, Virtual Private Databases, and auditing. The course also covers advanced topics such as SQL injection, database management security issues such as securing the DBMS, enforcing access controls, and related issues.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

NCS-410 Advanced Cryptography (2 CR)
This course covers advanced topics in Cryptography including: modern methods of public and private key encryption, authentication and digital signatures, hashing, and passwords, Number theory, abstract algebra, combinatorics, and complexity theory necessary for the design and analysis of advanced

cryptographic systems
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 0hrs/week

NCS-411 Firewall and Intrusion Analysis (3 CR)
This course introduces network firewall security. It will cover basic installation techniques, discuss how to make an intelligent choice of firewall technology and present basic firewall troubleshooting. Moreover, it will cover different intrusion detection systems and their signatures. Students will complete hands-on exercises and case projects for testing and evaluating various firewall techniques
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

NCS-412 Advanced Penetration Testing & Ethical Hacking (3 CR)
This course focuses on network and information systems security from an offensive point of view. Students will learn technical testing and examination techniques used to identify, validate and assess technical vulnerabilities within and enterprise. Topics include penetration testing methodology, foot printing and reconnaissance, scanning and enumeration, vulnerability validation, data collection and reporting.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

NCS-413 Risk Analysis and Management (3 CR)
This course gives students guidance on planning and implementing a risk assessment and protecting business information. The course introduces students to the international code of practice for an information security management system (ISMS) ISO27002. This course provides students with detailed, practical guidance on how to develop and implement a risk assessment in line with the requirements of ISO27001. Course covers key topics, such as risk scales, threats and vulnerabilities, selection of controls, and roles and responsibilities.
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 1hrs/week

NCS-414, NCS-423 Graduation Projects I and II (1 & 3 CR)
The Graduation Project I, II courses are Capstone Design courses, which allow students of the program to design, implement, and demonstrate a secure system/solution/product. Student teams of three to four students will work over several semesters on an engineering design projects which might be sponsored internally or by a local company. Students choose the particular design project with approval of appropriate faculty. Each project includes the use of open-ended problems, development and use of design methodology, formulation of design problem statements and specification, consideration of alternative solutions, feasibility consideration and detailed system descriptions. While individual performance is emphasized and appraised, team work spirit is highly recognized

NCS-420 Incident Handling and Response (3 CR)
The overall objectives of this course help student understand contingency planning and its components. This includes the role of policies and procedures as well as risk assessment, business impact analysis, incident reporting and response and business resumption planning
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

NCS-421 Information Assurance & Security Management (3 CR)
This course provides students a systematic and practical approach for establishing, managing, and operating a comprehensive Information Assurance program. The course provides students with an understanding of the essential issues required to develop and apply a targeted information security posture to both public and private corporations and government run agencies. Current software exploitation issues and techniques for information assurance will be investigated. The course is aimed at imparting knowledge and skill sets required to assume the overall responsibilities of administration and management of security of an enterprise information system
Lecture: 2hrs/week; tutorial (optional): 2hrs/week; Lab: 1hrs/week

NCS-422 Ethics, Law and Policy in Cyberspace (3 CR)
The course provides an overview of the ethical challenges faced by individuals and organizations in the information age and introduces the complex and dynamic state of law as it applies to behavior in

cyberspace. The course also highlight the bit falls and dangers of doing business in an interconnected world, and provide understanding how to ethically and legally operate and use modern computer systems and networks.
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

NCS-430 Field Training (3 CR)
This course shall be conducted collaboratively with AD Polytechnic Industrial partner. Content of this course shall meet state-of-the-art and state-of-the-practice technology and training modules. The overall objective of this course aims on developing students' knowledge and practices to develop secure networking and web space. Students spend one full semester as interns in a company, government agency, or business. Under faculty supervision, students fulfill various assignments to acquire first-hand knowledge of a working environment. Students are required to write a final report detailing the technical aspects of their internship. This course is graded on a Pass/Fail scale
Department Approval is required

Elective NCS 415 Homeland Security (3 CR)
In the aftermath of 9/11, many law enforcement agencies (LEAs) shifted more resources toward developing counterterrorism (CT) and homeland security (HS) capabilities. This course examines the effects the focus on CT and HS has had on law enforcement, including organizational changes, funding mechanisms, how the shift has affected traditional crime-prevention efforts, and an assessment of benefits, costs, and future challenges.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective NCS-416 Security Governance and Compliance (3 CR)
This course provides a detailed knowledge of IT Governance principles and procedures, and the basic concepts of the ISO 27001 / ISO 27002 standard. The student possesses thorough knowledge about the overall process for establishment and maintenance of an Information Security Management Systems (ISMS). The student possesses detailed knowledge about the role of policies, standards and guidelines for controls and is capable of applying his/her knowledge in case studies
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective NCS-417Hardware Based Security (3 CR)
The course will cover the security measures embedded into digital systems for reliable, safe, and secure operation. The course introduces methods of design and evaluation of secure and trustworthy hardware. It also teaches the concepts of tamper-proof, tamper-resistance, and trusted platform modules. Topics covered include: Identity Management, Smartcards, TPM management and deployments, Rootkit and APT detection, event logging, RFIDs, cryptographic processor analysis, physical and invasive attacks, side-channel attacks, hardware-based true random number generators, watermarking of Intellectual Property (IP) blocks, FPGA security, passive and active metering for prevention of piracy, access control, hardware Trojan detection and isolation.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective NCS-418 Security Architectures and Models (3 CR)
The course covers the broad domain of security architecture and models, access control systems and methodology, OM-AM framework, security architectures and mechanisms, security infrastructure, reusable infrastructures, public-key centric architectures, consumer-oriented public-key infrastructure, coupled and de-coupled authentication and authorization architectures and multilevel security architectures. The course will also demonstrate advanced Internetworking concepts, and security and administration. The course will serve as a prerequisite to the CISSP certification.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective NCS-425 Wireless Ethical Hacking and Defense (3 CR)
This course will use hacking techniques on wireless networks used by malicious, black hat hackers as a means to learn best defense from these same hackers the course is an in-depth study using hands-on lab exercises. While these hacking skills can be used for malicious purposes, this class teaches you how to use the same hacking techniques to perform a white-hat, ethical hack, on the organization.

Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective NCS-426 Network Security Trends (3 CR)
This course will offer participants advanced topics in network and cyber security, which is related to new technology, solutions, models, and approaches. With a focus on the latest trends in Network Security, the objective is to help students explore advancement, state-of-the-art technology, solutions, methods, processes, and approaches in order to cope with technology evolution.

Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

Elective NCS-427 Privacy in a Networked World (3 CR)
This course focuses on both the technical challenges of handling sensitive data and the policy and legal issues facing data subjects, data owners, and data users. The students will recognize, analyze, and manage privacy challenges created by technology. Topics include privacy concepts, policies, and mechanisms; identity, anonymity, and confidentiality; private data analysis and database sanitization; privacy-preserving data mining techniques; privacy issues in social networks, RFID, and healthcare applications. The course includes a privacy-related project
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 0 hrs/week

Elective NCS-428 Security Protocols in-depth (3 CR)
This course focuses on the design, analysis, and evaluation of various security protocols and mechanisms including but not limited to: basic symmetric and asymmetric cryptography protocols, SSL/TLS, WEP/WPA, IPSec, S/MIME, PGP, SSH, X.509 and Kerberos. This course focuses on discussing the pros and cons of various security trade-offs involved in the design of such protocols, and describes vulnerabilities that some of these protocols are susceptible to, Cryptographic Algorithms & Protocols (Encryption and data authentication; Algorithms related to cryptographic operations; Key management and key generation; Implementation of algorithms
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 0 hrs/week

Systems and Servers Security Administration Specialization

SSA-230 MS Windows Server Security (OCT-I) (2 CR)
The purpose of this on-campus-training module is to give the students the skills and tools to install, configure, and administer Windows Server and Security by providing in-depth training on implementing, configuring, managing and troubleshooting Active Directory Domain Services (AD-DS) in Windows Server environments. It covers core AD-DS concepts and functionality as well as implementing Group Policies, performing backup and restore and monitoring and troubleshooting Active Directory and security related issues
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

SSA-231 MS Exchange Server Security (OCT-I) (2 CR)
The purpose of this on-campus-training module is to give the students the skills and tools to configure and manage a messaging environment in accordance with technical requirements. Students will learn how to install Microsoft Exchange Server and manage routing, client access, and the backup and restore of databases. They will also learn how to manage addressing and recipient objects such as mailboxes, distribution groups, and contacts
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

SSA-232 Linux/UNIX Operating Systems Security (OCT-I) (2 CR)
The purpose of this on-campus-training module is to give the students the skills and tools to use manage security of Linux/Unix operating system. Students will become comfortable with using a Linux/Unix system and will become familiar with many of the Linux/Unix design paradigms. Apart from basic

Linux/Unix proficiency, this course is designed to give students a working knowledge of security basics in Linux/Unix based work environments
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

SSA-233 Microsoft SharePoint Server Security (OCT-I) (1 CR)
The overall objective of the course is to teach give student practice on how to install, configure, and administer Microsoft SharePoint and also how to manage and monitor sites and users by using Microsoft SharePoint 2010 or later. It will also cover the new features and functionality introduced with SharePoint 2010 Sp1 or later
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

SSA-234 Physical Security and Biometrics (OCT-I) (1 CR)
The purpose of this on-campus-training module is to give the students the skills and tools to handle Physical (Environmental) Security and Biometrics control. The Physical (Environmental) Security domain provides protection techniques for the entire facility, from the outside perimeter to the inside office space, including all of the information system resources. In particular, development of site Physical Security Program will be demonstrated. The student will learn to apply a research methodology for gathering information, conducting investigations Personnel access, traffic control and other mitigation measures will be covered
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

SSA- 235 Ethical Hacking (OCT-I) (1 CR)
The purpose of this one-week on-campus-training module is to practice techniques to perform penetration testing/ethical hacking in order to assess vulnerabilities and protect Enterprise information assets. The course will also present techniques to prevent software vulnerabilities from occurring in applications. The training module will develop student skills to bridge the gap between secure software development and practical post-implementation review through auditing and assessment
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one weeks delivery

SSA 310 Virtualization Technology and Security (3 CR)

Cloud computing is a relatively new phenomenon that provides for distributed computing and data storage capabilities. There is a continuous trend of dependency on virtual networks and private/public clouds for running businesses today. This course will present state of the art security trends and issues in cloud security and identify opportunities for useful security solutions
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 1hrs/week

SSA 311 Client/Server Security Administration (3 CR)
This course will provide students an insight into current security issues, processes, and solutions, and maps out future directions in the context of today's distributed systems. This insight is elucidated by modeling of modern day distributed systems using a four-tier logical model –host layer, infrastructure layer, application layer, and service layer (bottom to top). The course will cover security threats and issues across these tiers with case studies from Linux and Windows operating Systems.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSA 312 Securing Linux/UNIX Server (3 CR)
This course focuses on Linux/UNIX system security administration. Topics include system administration concepts, system installation and configuration, Access control lists, secure communication, NTP Infrastructure, Mapping attacks, logging, malware detection, and secure configurations. Additional topics include understanding the Unix file system, configuring basic system hardware and services, managing user accounts, basic system security, and backups. Major Unix variants will also be covered. This course continues with (Unix/Linux Administration II).
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSA-313 Cloud and Infrastructure Security (3 CR)
This course aims to provide a systems overview and programming perspective of the cloud computing paradigm. The course will develop an understanding of the current challenges and tradeoffs when mapping different application suites to a cloud. Additionally, this course also provides an overview of the challenges

associated with the protection of key national resources. Students will examine vulnerability and risk reduction strategies, contingency planning, and strategic partnership models as they are applied to the critical infrastructure sectors (Water, Power & Energy, Information & Telecommunications, Chemical Industry, Transportation, Banking & Finance, Defense Industry, Postal & Shipping, Agriculture & Food, Public Health, and Emergency Services).
Lecture: 2hrs/day; tutorial: 2hrs/day; Lab: 3hrs/day

SSA 320 Penetration And Vulnerability Analysis (3 CR)
This course introduces students to a wide range of topics related to ethical hacking and penetration testing. The course provides an in-depth understanding of how to effectively protect computer networks. The topics cover the tools and penetration testing methodologies used by ethical hackers and provide a thorough discussion of what and who an ethical hacker is and how important they are in protecting corporate and government data from cyber-attacks.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSA 321 Malware Analysis: Tools and Techniques (3 CR)
The course equips students with the basic knowledge of malware analysis to reverse-engineer the malware using practical tools and techniques. The three phases of behavioral, code and memory analysis of malware will be taught. Students will learn how to explore and understand the key characteristics of malware and the techniques of reverse-engineering compiled Windows executables and browser-based malware. This course presents key tools and techniques for malware analysis and examines malicious programs. Code analysis focuses on the specimen's code and makes use of a disassembler and a debugger tools such as IDA Pro and OllyDbg. Students will learn how to build a flexible laboratory to perform such analysis in a controlled manner.
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

SSA 322 Security Tools and Technologies: Windows (3 CR)
This course Provides hands-on experience in configuring and experimenting with security software in widows environment through live laboratory environment, with the purpose of understanding real-world security threats. Also, discussed possible mitigation and defending mechanisms, such as monitoring and intrusion detection software.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSA 323 Database Server Security Administrations (3 CR)
This course is about database security and auditing. You will learn many methods and techniques that will be helpful in securing, monitoring and auditing database environments. It covers diverse topics that include all aspects of database security and auditing - including network security for databases, authentication and authorization issues, links and replication, database Trojans, etc. You will also learn of vulnerabilities and attacks that exist within various database environments or that have been used to attack databases
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSA 324 InfoSec Project Management (3 CR)
This course provides students a systematic and practical approach for establishing and managing projects. Project management is the application of processes, methods, knowledge, skills and experience to achieve the project objectives. A project is a unique, transient endeavor, undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes or benefits. In the project, the students are expected to perform problem analysis, investigation, solution design, and implementation of security related project. In addition, project management will also be taught as part of the course.
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 1hrs/week

SSA 330 Linux/Unix Operating Systems Security Administration (OCT-II) (2 CR)
The purpose of this two-week on-campus-training module is to practice hands-on sessions on the use the tools provided by Linux/Unix. Students will become comfortable with using a Linux/Unix system and will become familiar with many of the Linux/Unix design paradigms. The module will also equip the students with hands-on knowledge in securing and hardening a Linux operating system. The course will cover the security mechanism used in the operating system, configuring different levels of security measures, best

practices and security related tools and utilities
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

SSA 331 MS Windows Server Security Administration (OCT-II) (2 CR)
The purpose of this two-week on-campus-training module is to practice hands-on sessions on Configuring Windows Server and Directory Domain Services by providing in-depth training on implementing, configuring, managing and troubleshooting Active Directory Domain Services (AD DS) in Windows Server environments. The module will provide hands-on knowledge in securing and hardening a Windows operating system. The course will cover the security mechanism used in the operating system, configuring different levels of security measures, best practices and security related tools and utilities.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

SSA 332 Database Server Security Administrations (OCT-II (2 CR)
The purpose of this two-week on-campus-training module is to practice hands-on sessions on database security and auditing. Students will learn many methods and techniques that will be helpful in securing, monitoring and auditing database environments. It covers diverse topics that include all aspects of database security and auditing - including network security for databases, authentication and authorization issues, links and replication, database Trojans, etc. You will also learn of vulnerabilities and attacks that exist within various database environments or that have been used to attack databases.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, two weeks delivery

SSA 333 Microsoft SharePoint Server Security Administration (1 CR)
The overall objective of the course is to teach students how to install, configure, and administer Microsoft SharePoint and also how to manage and monitor sites and users by using Microsoft SharePoint 2010 or later. It will also cover the new features and functionality introduced with SharePoint 2010 Sp1 or later
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSA 334 MS Exchange Server Security Administration (OCT-II) (2 CR)
The overall objective of the course is to develop student capabilities (skills) on how to configure and manage a messaging environment in accordance with technical requirements. Students will learn how to install Microsoft Exchange Server latest release and manage routing, client access, and the backup and restore of databases. They will also learn how to manage addressing and recipient objects such as mailboxes, distribution groups, and contacts
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSA 335 Mobile Programming and Security (OCT-II) (1 CR)
The purpose of this one-week on-campus-training module is to practice hands-on sessions on how to design, implement, test, debug and publish smartphone applications (e.g. java based android phones). Students will learn how to take their innovative ideas from conception to the android market through a series of rigorous hands-on programming assignments and group projects The course also embarks on concepts of mobile Vulnerabilities; Security threats and problems; Protection techniques, and Specification, design and development of secure systems involving mobility.
Lecture: 1hrs/day; Practical: 3hrs/day; Lab: 3hrs/day, one week delivery

SSA 410 Advanced Cryptography (2 CR)
This course covers advanced topics in Cryptography including: modern methods of public and private key encryption, authentication and digital signatures, hashing, and passwords, Number theory, abstract algebra, combinatorics, and complexity theory necessary for the design and analysis of advanced cryptographic systems
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 0hrs/week

SSA 411 Advanced Web Security (3 CR)
The course will introduce advanced web application security with coverage of attacks and countermeasures. Topics include Cross Site Scripting, SQL Injection, and Session Security. More advanced web application vulnerabilities will be discussed including: Blind SQL injection, Flash Security, Authentication, Web Service, and XPath injection, back end components, application logic, customized

attacks on web technologies. Most of the examples in the course will be introduced in PHP, MySQL, and Apache. Challenges will be provided on Virtual Machine for students to practice during the lab or work on them as assignments.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSA 412 Identity Management (3 CR)
This course provides students with necessary tool for understanding the complexity of identity in a virtual world. The course describes the key issues of identity management as well as appropriate strategies and preventative measures for ensuring personal safety in the virtual world. The course discusses how to identify and control the way in which the organization deals with customers, suppliers, employees, and other users who may interact with the information systems of the company. Also, the course provides strategies for overcoming this task in real-world terms as well as questions that assist in focusing on the key issues ranging from role-based access control to single sign-ons and electronic identity smart cards.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSA 413 Risk Analysis and Management (3 CR)
This course gives students guidance on planning and implementing a risk assessment and protecting business information. The course introduces students to the international code of practice for an information security management system (ISMS) ISO27002. This course also provides students with detailed, practical guidance on how to develop and implement a risk assessment in line with the requirements of ISO27001. Students will learn how to measure risk and how to ensure that proper levels of security are maintained for individual technology users, businesses, government, and other organizations. This course will cover different approaches for risk assessment and risk mitigation. Students will learn how to use a risk analysis matrix for performing both quantitative and qualitative risk analysis. Course covers key topics, such as Threat Vulnerability Analysis, risk scales, threats and vulnerabilities, selection of controls, and roles and responsibilities. Risk Management Strategies (Avoidance, Transference, Mitigation, Acceptance), Counter-Measures, and Cost Benefit Analysis of Info Security investments
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 1hrs/week

SSA-414, SSA-423 Graduation Projects I and II (1 and 3 CR)
The Graduation Project I, II courses are Capstone Design courses, which allow students of the program to design, implement, and demonstrate a secure system/solution/product. Student teams of three to four students will work over several semesters on an engineering design projects which might be sponsored internally or by a local company. Students choose the particular design project with approval of appropriate faculty. Each project includes the use of open-ended problems, development and use of design methodology, formulation of design problem statements and specification, consideration of alternative solutions, feasibility consideration and detailed system descriptions. While individual performance is emphasized and appraised, team work spirit is highly recognized.
Coordination meetings are held once a week. Two additional team meetings per week are required with the advisor

SSA 420 Incident Handling and Response (3 CR)
The overall objectives of this course help student understand contingency planning and its components. The course will cover fundamental concepts and techniques of Security Information and Event Management (SIEM). Students will learn the basics of correlation of events, real-time monitoring and presentation of information from network and security devices using SIEM technology. Students will understand the key characteristics of log auditing, event management, and how to handle the situation as the incident responders to contain the incident and plan for the recovery steps.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

SSA-421 Information Assurance & Security Management (3 CR)
This course provides students a systematic and practical approach for establishing, managing, and operating a comprehensive Information Assurance program at an Organization. The course provides students with an understanding of the essential issues required to develop and apply a targeted information security posture to both public and private corporations and government run agencies. Current software exploitation issues and techniques for information assurance will be investigated. Topics

include: Security Management Practices, Business Continuity Planning (BCP), Disaster Recovery Planning (DRP), Commercial and legal implications, Introduction to ISMS standards, Accreditation, Policy, Risk Management, and auditing and reporting.
Lecture: 2hrs/week; tutorial (optional): 2hrs/week; Lab: 1hrs/week

SSA 422 Ethics, Law and Policy in Cyberspace (3 CR)
The course provides an overview of the ethical challenges faced by individuals and organizations in the information age and introduces the complex and dynamic state of law as it applies to behavior in cyberspace. The course also highlight the bit falls and dangers of doing business in an interconnected world, and provide understanding how to ethically and legally operate and use modern computer systems and networks. Policies and standards such as Sarbanes Oxley, HIPAA, Gramm, Leach, Bliley, will be introduced. The course introduces the entire lifecycle of security policy creation and development including issue specific policies in different domains of security. The course teaches students how to allocate the appropriate security techniques needed to satisfy a specific security policy in context of real life situations.
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab: 2hrs/week

SSA 430 Field Training (3 CR)
This course shall be conducted collaboratively with AD Polytechnic Industrial partner. Content of this course shall meet state-of-the-art and state-of-the-practice technology and training modules. The overall objective of this course aims on developing students' knowledge and practices to develop secure networking and web space. Students spend one full semester as interns in a company, government agency, or business. Under faculty supervision, students fulfill various assignments to acquire first-hand knowledge of a working environment. Students are required to write a final report detailing the technical aspects of their internship. This course is graded on a Pass/Fail scale.
Department Approval required

Elective SSA 415 Homeland Security (3 CR)
In the aftermath of 9/11, many law enforcement agencies (LEAs) shifted more resources toward developing counterterrorism (CT) and homeland security (HS) capabilities. This course examines the effects the focus on CT and HS has had on law enforcement, including organizational changes, funding mechanisms, how the shift has affected traditional crime-prevention efforts, and an assessment of benefits, costs, and future challenges.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSA 416 Hardware Based Security (3 CR)
The course will cover the security measures embedded into digital systems for reliable, safe, and secure operation. The course introduces methods of design and evaluation of secure and trustworthy hardware. It also teaches the concepts of tamper-proof, tamper-resistance, and trusted platform modules. Topics covered include: Identity Management, Smartcards, TPM management and deployments, Rootkit and APT detection, event logging, RFIDs, cryptographic processor analysis, physical and invasive attacks, side-channel attacks, hardware-based true random number generators, watermarking of Intellectual Property (IP) blocks, FPGA security, passive and active metering for prevention of piracy, access control, hardware Trojan detection and isolation.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSA 417 Security Governance and Compliance (3 CR)
This course provides a detailed knowledge of IT Governance principles and procedures, and the basic concepts of the ISO 27001 / ISO 27002 standard. The student possesses thorough knowledge about the overall process for establishment and maintenance of an Information Security Management Systems (ISMS). The student possesses detailed knowledge about the role of policies, standards and guidelines for controls and is capable of applying his/her knowledge in case studies
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSA 418 Advanced Secure Database Administration (3 CR)
This course is an advanced course for Oracle DBA (continuing to SSA-144). The overall objective of the course is to develop student of in-depth understanding of Oracle architecture and internal mechanisms such that the student is able to perform basic DBA tasks such as database creation, startup and shutdown,

and database management. The course also covers Oracle networking basics and the Oracle utility programs. It serves as preparatory course for the Oracle Certified Professional (OCP) program
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSA 425 Security Architectures and Models (3 CR)
The course covers the broad domain of security architecture and models, access control systems and methodology, OM-AM framework, security architectures and mechanisms, security infrastructure, reusable infrastructures, public-key centric architectures, consumer-oriented public-key infrastructure, coupled and de-coupled authentication and authorization architectures and multilevel security architectures. The course will also demonstrate advanced Internetworking concepts, and security and administration. The course will serve as a prerequisite to the CISSP certification.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSA 426 System Security Intelligence (3 CR)
This course provides detailed coverage of key enterprise security topics while demystifying technologies such as Next Generation Firewall. Through an in-depth look at proxy design and its policy enforcement engine, malware, malnets, and application proxies, you'll easily discover the foundation needed for a careful analysis while gaining deeper comprehension of security policies for application-specific proxies, application classification and control, security data analysis, and mobile security. You will learn the most effective solutions, technologies, and methodologies that can be implemented to monitor for, guard against, and mitigate security threats.
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSA 427 Systems/ Servers Security Trends (3 CR)
This course module, emerging technological and social trends will have far-reaching implications for enterprise security. This course outlines the Information technology trends that organizations can expect to see in the next several years, the catalysts behind those trends and the ways in which various solutions can help organizations strategically balance risk with opportunity
Lecture: 2hrs/week; tutorial: 2hrs/week; Lab: 2hrs/week

Elective SSD 428 Security Protocols in-depth (3 CR)
This course focuses on the design, analysis, and evaluation of various security protocols and mechanisms including but not limited to: basic symmetric and asymmetric cryptography protocols, SSL/TLS, WEP/WPA, IPSec, S/MIME, PGP, SSH, X.509 and Kerberos. This course focuses on discussing the pros and cons of various security trade-offs involved in the design of such protocols, and describes vulnerabilities that some of these protocols are susceptible to, Cryptographic Algorithms & Protocols (Encryption and data authentication; Algorithms related to cryptographic operations; Key management and key generation; Implementation of algorithms.
Lecture: 2hrs/week; tutorial: 2hrs/week (optional); Lab:

Petroleum Engineering Technology

PET-110 Introduction to Petroleum Engineering (3 CR)
Overview of petroleum industry and petroleum engineering including nature of oil and gas reservoirs, petroleum exploration and drilling, formation evaluation, well completions and production, surface facilities, reservoir mechanics, and improved oil recovery.
Lecture 3 hrs/wk.

PET-111 Introduction to Gas Production (3 CR)
The aims of the course are to give an understanding to the technology of gas production, processing and sulphur recovery systems. General as well as specific concepts will be introduced which will enable students to have a basic comprehension of the needs and requirements of gas production systems. Topics: natural gas origin, drilling and well completion, gas behavior, gas recovery, gas liquefaction, treating, gathering systems, and storage.

Lecture 3 hrs/wk.

PET-120 Introduction to Petroleum Geology (4 CR)
This course is an introduction to petroleum geology for petroleum Engineering students. The objectives of the course are to provide petroleum Engineering students with a basic understanding of the concepts and methods in petroleum geology, exploration and development found in today's major integrated oil companies.
Lecture 3 hrs/wk; lab: 3 hrs/wk.

PET-209 Reservoir Rock Properties (3 CR)
Basic petrophysical properties of reservoir rocks including porosity, permeability, fluid saturation, electrical conductivity, capillary pressure, and relative permeability. Laboratory measurement of the reservoir rock characteristics mentioned above.
Lecture 2 hrs/wk; lab: 3 hrs/wk,

PET-216 Reservoir Fluid Properties (3 CR)
Study of the phase behavior of hydrocarbon systems as related to petroleum recovery. Ideal and real gas behavior, single and multicomponent two-phase systems, properties of reservoir fluids under various conditions of pressure and temperature. Laboratory tests on reservoir fluids.
Lecture 2 hrs/wk, Lab 3 hrs/wk

PET-217 Reservoir Engineering I (3 CR)
The course includes application of reservoir engineering data to calculation of recovery potentials and to analysis and prediction of reservoir performance under a variety of production methods to effect maximum conservation.
Lecture 3 hrs/wk

PET-225 Drilling Technology I (4 CR)
This course introduces basic drilling techniques and drilling fluid properties. This is the first of two courses in drilling technology. This course covers all aspects of rig construction and, operation and fundamental operations associated with drilling a well for petroleum exploration and production.
Lecture 3 hrs/wk; lab: 3 hrs/wk

PET-271 Pumps and Valves (1 CR)
On-Campus-Training I (OCT-I)
This course introduces the students with basic concepts related to different equipment such as valves and pumps. The overall course objective is to develop student basic knowledge in: Valves and Pumps
1 Week, lecture: 5 hrs, practical training: 30 hrs

PET-272 Heat Exchangers & Steam Traps (1 CR)
On-Campus-Training I (OCT-I)
This course introduces the students with basic concepts related to different equipment such as heat exchangers and steam traps. The overall course objective is to develop student basic knowledge in: Heat exchangers and Steam traps
1 Week, lecture: 5 hrs, practical training: 30 hrs

PET-273 Air Compressors (PET-273) (1 CR)
On-Campus-Training I (OCT-I)
This course introduces the students with basic concepts related to different equipment such as heat exchangers and steam traps.
1 Week, lecture: 5 hrs, practical training: 30 hrs

PET-274 Experimental Fluid Mechanics (1 CR)
On-Campus-Training I (OCT-I)
This course introduces the students with basic concepts related to fluid mechanics.
1 Week, lecture: 5 hrs, practical training: 30 hrs

PET-275 Oil and Gas Testing (1 CR)
On-Campus-Training I (OCT-I)
This course introduces the students with basic concepts related to fluid mechanics.
1 Week, lecture: 5 hrs, practical training: 30 hrs

PET-276 DC Machines (1 CR)
On-Campus-Training I (OCT-I)
This course introduces the students with basic concepts related to direct current (DC) machines.
1 Week, lecture: 5 hrs, practical training: 30 hrs.

PET-277 AC Machines (1 CR)
On-Campus-Training I (OCT-I)
This course introduces the students with basic concepts related to alternating current (AC) machines.
1 Week, lecture: 5 hrs, practical training: 30 hrs.

PET-278 Instrumentation and Control (1 CR)
On-Campus-Training I (OCT-I)
This course provides the basics of petroleum (oil & gas) instrumentation and measurement. Oil and gas operations have a sensitive and critical importance as it deals with very high temperature and pressure and extreme natural conditions. A student geared towards this industry should be equipped with sound theoretical background of measurement instruments and measuring techniques. The safety in the oil and gas industry is of paramount. This course also imparts basics knowledge of process variables as related to measuring instruments and their control.
1 Week, lecture: 5 hrs, practical training: 30 hrs.

PET-279 Process Fundamentals Simulation (PET-279) (1 CR)
On-Campus-Training I (OCT-I)
This course introduces the students with basic concepts related to fluid hydraulics.
1 Week, lecture: 5 hrs, practical training: 30 hrs.

PET-326 Numerical Methods (3 CR)
Use of numerical methods in a variety of petroleum engineering problems; numerical differentiation and integration; root finding; numerical solution of differential equations; curve fitting and interpolation.
Lecture 3 hrs/wk,

PET-319 Well Testing (2 CR)
Introduce the students to the theory of well testing and its applications, emphasize the importance of well testing as a tool for reservoir description and evaluation, emphasize the importance of well testing as a diagnostic tool for evaluating the ability of a formation to produce reservoir fluids and monitoring well performance, emphasize the importance of properly designed, executed, and analyzed well tests to provide reservoir parameters and providing students the skills to integrate well testing with other petroleum disciplines.
Lecture 2 hrs/wk.

PET-305 Petroleum Production (3 CR)
The upstream of the petroleum industry involves itself in the business of oil and gas exploration and production (E&P) activities. While the exploration activities find oil and gas reserves, the production activities deliver oil and gas to the downstream of the industry (i.e., processing plants). The petroleum production is definitely the heart of the petroleum industry. The course contains eight topics covering petroleum production engineering fundamentals. It presents an introduction to the petroleum production system, documents properties of oil and natural gases that are essential for designing and analyzing oil and gas production systems, covers in detail the performance of oil and gas wells, presents techniques used to forecast well production for economics analysis, and describes empirical models for production decline analysis.
Lecture 3 hrs/wk.

PET-310 Project Management (2 CR)
This course will provide a comprehensive presentation and discussion of modern project management principles and practices as they relate to design; procurement; construction activities, maintenance; and upgrade turnarounds at facilities in the oil and gas industry. The course is taught using a combination of instruction, facilitated discussion, and hands-on exercises using "real-world" project examples related to facilities design, procurement, construction, and turnarounds. The exercises will include both individual and group activities that will provide each student with a visual application of the principles and practices discussed throughout the course.
Lecture 2 hrs/wk

PET-314 Well Logging (4 CR)
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.
3 hrs/wk; Lab: 3 hrs/wk.

PET-315 Geomechanics (2 CR)
This course provides an understanding of the fundamentals of rock mechanics. It introduces important concepts such as elasticity and failure mechanics, borehole stresses, poroelasticity, and acoustic wave propagation. In addition, the course also discusses the important parameters in rock mechanics and the application of rock mechanics in borehole stability, hydraulic fracturing, and reservoir subsidence.
Lecture 2 hrs/wk.

PET-317 Reservoir Engineering II (3 CR)
The course includes application of reservoir engineering data to calculation of recovery potentials and to analysis and prediction of reservoir performance under a variety of production methods to effect maximum conservation.
Lecture 3 hrs/wk

PET-330 Health and Safety at workplace (HSW) (2 CR)
This course is designed to equip students with the knowledge and skills needed to identify and deal with hazards at workplace, helping to reduce accidents and delivering cost savings to the organization or company.
Lecture 2 hrs/wk

PET-335 Drilling Technology II (2 CR)
This course deals with additional topics in drilling engineering, namely design of directional and horizontal wells; casing and cementing specifications and strengths, casing sizing, prediction of casing loads and resistances, design of different casing strings; HTHP wells; Managed pressure drilling; subsea well control; and well planning.
Lecture 2 hrs/wk.

PET-345 Well Completion & Workover (3CR)
The course presents a review of well completion and workover techniques. The objectives and optimum solutions of well completions for different field conditions are discussed including technical and economic considerations. The design of the tubing string, the most important downhole equipment of any hydrocarbon well, is discussed in detail. The ways of opening the formation for production are detailed and the different types of perforating oil and gas wells are analyzed. Workover procedures including remedial cementing, well stimulation methods are studied along with the required design procedures. Lecture 3hrs/wk

PET-340 Unconventional Resources Completion & Stimulation (3 CR)
Horizontal wells have become the industry standard for unconventional and tight formation gas reservoirs.

Because these reservoirs have poorer quality pay, it takes a good, well-planned completion and fracture stimulation(s) to make an economic well. Even in a sweet spot in the unconventional and tight gas reservoir, good completion and stimulation practices are required; otherwise, a marginal or uneconomic well will result. This course will address few questions related to the course title such as: what are good completion and stimulation practices in horizontal wells in these unconventional reservoirs? What are the objectives of horizontal wells and how do we relate the completion and stimulation(s) to achieving these goals? How many completions/stimulations do we need for best well performance and/or economics? How do we maximize the value from the horizontal wells? When should a horizontal well be drilled longitudinally or transverse?
Lecture 3 hrs/wk.

PET-371 Rig Safety (1 CR)
On-Campus-Training II (OCT-II)
The On-Campus-Training II (OCT-II) modules, using state of the art walk-in drilling simulator 5000 (DS 5000) and portable drilling & well control simulator (CS inc.) provides hands-on actual drilling operations and well control equipment (drilling gauges, remote choke, standpipe manifold, choke manifold), training on well head/Christmas tree, workover and cementing, stuck pipe, and rig safety. Also using state of the art formation evaluation system (FES 350), formation damage and well treatment system (FDS 350), and matrix acidizer (Mat 700). The training is designed for Petroleum Engineering Technology students.
The rig safety module overall objectives are to teach safety aspects of an oil/gas rig and raise the students awareness of possible solutions to overcome them. In addition to this, to develop student's skills such as analysis, communication, and technical report writing.
1 Week, lecture: 5 hrs, practical training: 30 hrs.

PET-372 Drilling (1 CR)
On-Campus-Training II (OCT-II)
The On-Campus-Training II (OCT-II) modules, using state of the art walk-in drilling simulator 5000 (DS 5000) and portable drilling & well control simulator (CS inc.) provides hands-on actual drilling operations and well control equipment (drilling gauges, remote choke, standpipe manifold, choke manifold), training on well head/Christmas tree, workover and cementing, stuck pipe, and rig safety. Also using state of the art formation evaluation system (FES 350), formation damage and well treatment system (FDS 350), and matrix acidizer (Mat 700). The training is designed for Petroleum Engineering Technology students.
The drilling module overall objectives are to teach drilling practices and problems from spud to completion and raise the students awareness of drilling operations and well problems. In addition to this, to develop student's skills such as observation, data acquisition and analysis, communication, and technical report writing. Ultimately, the training goal is to narrow the gap existing between the theoretical approach and practical application in the art of drilling engineering.
1 Week, lecture: 5 hrs, practical training: 30 hrs.

PET-373 Well Control (1 CR)
On-Campus-Training II (OCT-II)
The On-Campus-Training II (OCT-II) modules, using state of the art walk-in drilling simulator 5000 (DS 5000) and portable drilling & well control simulator (CS inc.) provides hands-on actual drilling operations and well control equipment (drilling gauges, remote choke, standpipe manifold, choke manifold), training on well head/Christmas tree, workover and cementing, stuck pipe, and rig safety. Also using state of the art formation evaluation system (FES 350), formation damage and well treatment system (FDS 350), and matrix acidizer (Mat 700). The training is designed for Petroleum Engineering Technology students.
The well control module overall objectives are to teach concepts and equipments of well control and raise the students awareness of well problems. In addition to this, to develop student's skills such as observation, data acquisition and analysis, communication, and technical report writing. Ultimately, the training goal is to narrow the gap existing between the theoretical approach and practical application in the art of drilling engineering by the application of different well control methods.
1 Week, lecture: 5 hrs, practical training: 30 hrs.

PET-374 Stuck Pipe Prevention (1 CR)
On-Campus-Training II (OCT-II)
The On-Campus-Training II (OCT-II) modules, using state of the art walk-in drilling simulator 5000 (DS

5000) and portable drilling & well control simulator (CS inc.) provides hands-on actual drilling operations and well control equipment (drilling gauges, remote choke, standpipe manifold, choke manifold), training on well head/Christmas tree, workover and cementing, stuck pipe, and rig safety. Also using state of the art formation evaluation system (FES 350), formation damage and well treatment system (FDS 350), and matrix acidizer (Mat 700). The training is designed for Petroleum Engineering Technology students.
The stuk pipe prevention module overall objectives are to teach mechanisms of stuck pipes and techniques of freeing pipes while drilling, logging or during any well intervention. In addition to this, to develop student's skills such as observation, data acquisition and analysis, communication, and technical report writing. Ultimately, the training goal is to narrow the gap existing between the theoretical approach and practical application in the art of special operation of whole problems related to stuck pipe prevention and jarring.
1 Week, lecture: 5 hrs, practical training: 30 hrs.

PET-375 Cementing (1 CR)
On-Campus-Training II (OCT-II)
The On-Campus-Training II (OCT-II) modules, using state of the art walk-in drilling simulator 5000 (DS 5000) and portable drilling & well control simulator (CS inc.) provides hands-on actual drilling operations and well control equipment (drilling gauges, remote choke, standpipe manifold, choke manifold), training on well head/Christmas tree, workover and cementing, stuck pipe, and rig safety. Also using state of the art formation evaluation system (FES 350), formation damage and well treatment system (FDS 350), and matrix acidizer (Mat 700). The training is designed for Petroleum Engineering Technology students.
The cementing module overall objectives are to teach the students the important cement properties that we measure before doing the cementing job. These properties include.
Cement rheology, thickening time, permeability and compressive strength. In addition to this, to develop student's skills such as observation, data acquisition and analysis, communication, and technical report writing.
1 Week, lecture: 5 hrs, practical training: 30 hrs

PET-376 Well Head /Christmas tree (1 CR)
On-Campus-Training II (OCT-II)
The On-Campus-Training II (OCT-II) modules, using state of the art walk-in drilling simulator 5000 (DS 5000) and portable drilling & well control simulator (CS inc.) provides hands-on actual drilling operations and well control equipment (drilling gauges, remote choke, standpipe manifold, choke manifold), training on well head/Christmas tree, workover and cementing, stuck pipe, and rig safety. Also using state of the art formation evaluation system (FES 350), formation damage and well treatment system (FDS 350), and matrix acidizer (Mat 700). The training is designed for Petroleum Engineering Technology students.
The Well Head /Christmas Tree module overall objectives are to teach the logic sequence of wellhead construction and Xmas tree production and intervention purposes. In addition to this, to develop student's skills such as observation, data acquisition and analysis, communication, and technical report writing. Ultimately, the training goal is to narrow the gap existing between the theoretical approach and practical application in understanding the engineering of wellhead and Xmas tree.
1 Week, lecture: 5 hrs, practical training: 30 hrs

PET-377 Workover (1 CR)
On-Campus-Training II (OCT-II)
The On-Campus-Training II (OCT-II) modules, using state of the art walk-in drilling simulator 5000 (DS 5000) and portable drilling & well control simulator (CS inc.) provides hands-on actual drilling operations and well control equipment (drilling gauges, remote choke, standpipe manifold, choke manifold), training on well head/Christmas tree, workover and cementing, stuck pipe, and rig safety. Also using state of the art formation evaluation system (FES 350), formation damage and well treatment system (FDS 350), and matrix acidizer (Mat 700). The training is designed for Petroleum Engineering Technology students.
The module overall objectives is to teach remedial work done on the well (production stopped) to maintain, restore, or improve production by a workover. This includes both solving mechanical problems and cleaning out the well. In addition to this, to develop student's skills such as observation, data acquisition and analysis, communication, and technical report writing. Ultimately, the training goal is to narrow the gap existing between the theoretical approach and practical application in the art of workover engineering.
1 Week, lecture: 5 hrs, practical training: 30 hrs

PET-378 Formation Evaluation (1 CR)
On-Campus-Training II (OCT-II)
The On-Campus-Training II (OCT-II) modules, using state of the art walk-in drilling simulator 5000 (DS 5000) and portable drilling & well control simulator (CS inc.) provides hands-on actual drilling operations and well control equipment (drilling gauges, remote choke, standpipe manifold, choke manifold), training on well head/Christmas tree, workover and cementing, stuck pipe, and rig safety. Also using state of the art formation evaluation system (FES 350), formation damage and well treatment system (FDS 350), and matrix acidizer (Mat 700). The training is designed for Petroleum Engineering Technology students.
The formation evaluation module overall objectives are to teach determination of permeability changes of a formation sample as it is exposed to a variety of test fluids and raise the students awareness of all types of formation treating. In addition to this, to develop student's skills such as observation, data acquisition and analysis, communication, and technical report writing. Ultimately, the training goal is to narrow the gap existing between the theoretical approach and practical application.
1 Week, lecture: 5 hrs, practical training: 30 hrs

PET-379 Matrix Acidization (1 CR)
On-Campus-Training II (OCT-II)
The On-Campus-Training II (OCT-II) modules, using state of the art walk-in drilling simulator 5000 (DS 5000) and portable drilling & well control simulator (CS inc.) provides hands-on actual drilling operations and well control equipment (drilling gauges, remote choke, standpipe manifold, choke manifold), training on well head/Christmas tree, workover and cementing, stuck pipe, and rig safety. Also using state of the art formation evaluation system (FES 350), formation damage and well treatment system (FDS 350), and matrix acidizer (Mat 700). The training is designed for Petroleum Engineering Technology students.
The module's overall objectives are to familiar students with the theory and practices matrix acidization for the damaged reservoirs, the types of acids used and which acid is suitable for the particular formation. In addition to this, to develop student's skills such as observation, data acquisition and analysis, communication, and technical report writing.
1 Week, lecture: 5 hrs, practical training: 30 hrs

PET-394; OGP-394 Graduation Project (2 CR)
In this project, students are distributed into groups with a minimum of three students. Each group selects a project under the supervision of a faculty member and makes literature review, process selection and submits a written report and presents it orally at the end of the semester. Each group makes the mathematics calculations, equipment selection and design, technical and profitability analysis, safety and environment evaluation. Students should use available design and simulation software. Final technical written report is submitted by the end of the quarter (week 15) and presented by the group in the same week or during the examination week (16).
Lecture 2 hrs/wk

PET-409 Equipment Design and Selection (3 CR)
The course includes three topics presenting principles and rules of designing and selecting the main components of petroleum production systems. These topics are designed for senior level petroleum Engineering students. The topics address tubing design, present rule of thumbs for selecting components in separation and dehydration systems, and details principles of selecting liquid pumps, gas compressors, and pipelines for oil and gas transportation.
Lecture 3 hrs/wk

PET-410 Gas Production Engineering (3 CR)
Reservoir performance covers the fundamentals of reservoir gas flow and details the best methods for testing wells, according to the time and money available. The importance of flow regime and non-Darcy flow on test design and interpretation is emphasized for new wells and for the possibility of improving the performance of older wells. Also discussed are performances of tight formations, horizontal wells, fractured wells, and methods for estimating gas reserves. Calculation and determination of the effect of each system component on total well performance, which permits optimum sizing of tubing, flow-lines, separators, and compressors. Formation damage, gas well de-watering, hydrate formation, water influx, and abnormal reservoir pressure problems are reviewed. Relate reservoir and well performance to time, as well as

calculate cash flow and compression requirements. Discuss the best procedures to predict when liquid loading will make a well nonproductive. Field gas processing, including dehydration and condensate recovery, is briefly reviewed. Gas production is emphasized, although an overview on field gas processing is presented.
Lecture 3 hrs/wk.

PET-411 Petroleum Economics (2 CR)
The course will provide students with the fundamentals necessary to enable them to answer some questions about planned oil and gas projects such as: what will it cost? what is it worth? will it earn sufficient profit? Contractual arrangements, which also significantly impact the economic viability of a project, are covered. Students will practice cash flow techniques for economic evaluations and investigate frequently encountered situations.
Lecture 2 hrs/wk,

PET-420 Artificial Lift & production Enhancement (3 CR)
This is the last course in petroleum production engineering and is composed of three topics introducing artificial lift methods and four advanced topics addressing production enhancement techniques. The artificial lift method topics present an introduction to the sucker rod pumping system and its design procedure, describe gas lift method, and provide an overview of all other artificial lift methods and their design procedures. While the production enhancement topics start with identifying well production problems, deal with designing acidizing jobs, provide a guideline to hydraulic fracturing and job evaluation techniques, and the last topic presents some relevant information on production optimization techniques.
Lecture 3 hrs/wk,

PET-415 Enhanced Oil Recovery (3 CR)
One-third to one-half of the original oil-in-place may remain in a reservoir as it reaches abandonment due to its economic limit. The primary reasons are heterogeneity of the reservoir, unfavorable fluid properties, inefficient nature of the displacement process, oil price and production cost considerations. The secondary reasons, however, are: inappropriate development, inefficient reservoir management practices, and escalating costs of remedial interventions/corrective measures and producing operations. The oil recovery is generally lower than expected due to some combination of the above reasons. Gaining a better understanding of the reservoir fundamentals and the important variables that influence the recovery process can enhance it. This course covers the recovery improvement possibilities that present themselves at all stages in the reservoir life cycle. It thereby enables one to timely select the most beneficial method and set realistic expectations on production behavior changes and recovery improvement.
Lecture 3 hrs/wk

PET-417 Reservoir Simulation (3 CR)
Solution of production and reservoir engineering problems using state-of-the-art commercial reservoir simulation software, using data commonly available in industry. Emphasis on reservoir description, reservoir model design and calibration, production forecasting and optimization, economic analysis and decision making under uncertainty.
Lecture 3 hrs/wk,

PET-422 Applied Water Technology & Corrosion (2 CR)
This course will provide the student with the knowledge to identify various types of corrosion, the causes of corrosion and the susceptible locations of corrosion in petroleum industry. This course provides an overview of the main water handling systems typically encountered in upstream (E&P) drilling operations, both onshore and offshore. The chemistry of the main water related problems of mineral scales, corrosion, bacteria, and oily water will be reviewed both from the theoretical and practical aspects.
Lecture 2 hrs/wk.

PET-425 Water Treatment and Injection (3 CR)
Secondary Recovery schemes, including pressure maintenance, have become almost standard in the development of oil fields throughout the world in an effort to increase recoveries at a minimum cost. The primary mechanism used is water injection - water is cheap, readily available and immiscible with the oil - but requires specific treatments to ensure reservoir problems are minimized. Furthermore as water is

injected water will be produced in increasing amounts leading to additional (or different) treatment prior to injection or disposal. The course provides coverage of the theory and practice of water treatment for injection as part of a secondary recovery scheme or disposal of produced waters.
Lecture 2 hrs/wk Lab: 3 hrs/week

PET-435 Applied Environment (2 CR)
This course provides opportunities to apply the tools, techniques and management systems of environmental management in petroleum industries. The course is designed to introduce students to a range of environmental challenges, including policy development, conducting environmental reviews, tackling environmental issues including waste management, energy efficiency, pollution control and emergency planning, environmental monitoring and becoming an 'agent for change' in their company. A well-blended variety of exercises, problems and case study scenarios are used to practice the application of learning.
Lecture 2 hrs/wk,

PET-450 Special Topic in Petroleum Engineering Technology (3 CR)
The course will cover a special topic in one or more of the areas of the petroleum engineering discipline. The special topics course series presents selected current and emerging topics in petroleum engineering depending on need as determined by the department faculty. Topic(s) will be selected according to the faculty expertise and the students' interest and enrollment.
Lecture 3 hrs/wk

PET-494; OGP-494 Graduation Project (3 CR)
In this project, students are distributed into groups with a minimum of three students. Each group selects a project under the supervision of a faculty member and makes literature review, process selection and submits a written report and presents it orally at the end of the semester. Each group makes the mathematics calculations, equipment selection and design, technical and profitability analysis, safety and environment evaluation. Some students groups might decide to continue working on the same project started in PET-394 or OGP-394 and add advanced design components to it. Students should use available design and simulation software. Final technical written report is submitted by the end of the quarter (week 15) and presented by the group in the same week or during the examination week (16).
Lecture 3 hrs/wk,

PET-495; OGP-495 Internship (3 CR)
PET-495 and OGP-495 are required on the job training for petroleum Engineering technology and oil and gas process engineering technology students, respectively. On-the-Job-Training will take place during the fourth year for AB students. Abu Dhabi Polytechnic will arrange with ADNOC, service companies and international operating companies, operating in UAE, to allocate training place for course students ahead of time. Each student must participate in an approved training/performance (internship) program in either upstream (petroleum Engineering technology) or downstream (oil and gas process engineering technology) industries depending on his/her specialization. The program must contain practical elements of the courses in the AB programs. At the end of the training period, a formal written report must be submitted; student grade will be either P OR NP (Pass or Non-Pass).
Practical Training of 8-10 weeks.

Oil and Gas Process Engineering Technology

OGP-120 Organic Chemistry (3 CR)
This is an introductory course in organic chemistry designed to give petroleum engineering technology students a knowledge and understanding of the fundamental chemical concepts of organic products and derivatives which are prominent in the petroleum industry.
Lecture 2 hrs/wk; Lab 2 hrs/wk,

OGP-211 Fundamentals of Pipeline Engineering (3 CR)
This course will provide an overview over history of pipelines, types of pipelines and basics of pipeline engineering, introduction to pipeline welding, corrosion and coatings, introduction to pipeline engineering design and codes, introduction to offshore construction, basics of inspection, principles of pressure regulators, instrumentation and control, pipeline routing and construction offshore and onshore, pipeline materials selection.
Lecture 3 hrs/wk,

OGP-213 Introduction to Surface Production Operations (2 CR)
This course presents a basic overview of all typical surface production equipment. Students should learn not only the purpose of each piece of equipment but how each works. Emphasis is on gaining a basic understanding of the purpose and internal workings of all types of surface facilities and equipment. A major goal of this course is to improve communication among all disciplines, the field, and the office to have safe operations.
Lecture 2 hrs/wk,

OGP-215 Equilibrium Thermodynamics (2 CR)
Provide students with an understanding of the basic laws and principles of equilibrium thermodynamics. To develop students' ability to undertake thermodynamic analysis in various applications.
Lecture 2 hrs/wk,

OGP-216 Introduction to Gas Processing and Treatment (3 CR)
Natural gas must be processed to convert it into a commercial commodity and stabilize its form into a stored or transportable liquid. The process must be fully understood and each part of the process as to the removal and separation of certain elements and the conversion specifications for plant operators.
The course is designed for oil and gas processing technology students to enhance their understating about gas processing and treatment.
Lecture 3 hrs/wk,

OGP-218 Fluid Mechanics (3 CR)
This is an introductory course in fluid mechanics designed to develop both the knowledge of the laws and principles governing fluid mechanics and the ability to apply this knowledge in analyzing related petroleum engineering applications. The course also provides a base for advanced courses in piping design, ducting design, and fluid power systems.
Lecture 2 hrs/wk; Lab 2 hrs/wk,

OGP-220 Mass Transfer (3 CR)
The course introduces the fundamental aspects of basic unit operations used in petroleum and oil and gas industry and the concept of equilibrium staged separations. It provides sufficient understanding of the size calculations required for design of unit equipment.
Lecture 3 hrs/wk,

OGP-222 Elementary Principles of Process Engineering (2 CR)
Solution of elementary problems by application of mass balances, energy balances, and equilibrium relationships. This course intends to introduce students to the basic principles of process engineering.
Lecture 2 hrs/wk

OGP-223 Physical Chemistry (3 CR)
An overview of some of the topics in Physical Chemistry – Atomic and Molecular Structure, Spectroscopy, Statistical Thermodynamics and Electrochemistry.
Lecture 2 hrs/wk; Lab 2 hrs/wk,

OGP-224 Pipelines Installation and Operation Management (3 CR)
This course will provide an understanding of management operations, practical aspects of pipeline design, operating and maintaining of gas pipelines, quality control, troubleshooting, review of risk management concepts and methodologies, and pipeline economic importance.
Lecture 3 hrs/wk.

OGP-225 Chemical Reactors and Mixing (4 CR)
OGP-225P Chemical Reactors and Mixing Lab
In oil and gas industries, chemical reactions take place in chemical reactors. A variety of chemical reactors will be examined and in in-depth study of batch, and continuously stirred tank reactors will take place. Simulation and laboratory work will be used to teach students the fundamentals of safe and correct start-up, shut down, and control and troubleshooting of mixing tanks and reactors.
Lecture 3 hrs/wk; Lab 3 hrs/wk.

OGP-228 Heat Transfer (3 CR)
This course deals with underlying theories and applications of heat transfer. These principles are then related to the unit processes involved in petroleum industry.
lecture: 2 hrs/wk and lab: 2 hrs/wk.

OGP-295 Internship (OGP-295) (3 CR)
OGP-295 is required on the job training for oil and gas process technology students only. On-the-Job-Training will take place during the second year for Diploma students. Abu Dhabi Polytechnic will arrange with ADNOC and/or Dolphin Energy, service companies and international operating companies, operating in UAE, to allocate training place for course students ahead of time.
Each student must participate in an approved training/performance (internship) program in either upstream (petroleum Engineering technology) or downstream (oil and gas process engineering technology) industries depending on his/her specialization. The program must contain practical elements of the courses in the Diploma program. At the end of the training period, a formal written report must be submitted; student grade will be either Pass OR Non-pass (P or NP).On-the-Job Training (Industrial Practical Training) 8-10 weeks

OGP-314 Analytical Chemistry (3 CR)
The course will define and illustrate the analytical approach to chemical analysis, in particular environmental analysis. The theoretical principles of classical and instrumental analysis will be reinforced by means of a laboratory and tutorial programme. Students will be encouraged to develop problem solving skills and apply these to the solution of real chemical problems.
Lecture 2 hrs/wk; Lab 2 hrs

OGP-313 Surface Production Operation (2 CR)
This course deals with underlying theories and applications of surface production facilities. Understanding of production aspects such as well stimulation, secondary and tertiary recovery methods applied to reservoirs to increase their productivity are addressed as well.
Lecture 2 hrs/wk.

OGP-316 Gas Processing and Treatment (3 CR)
The course is designed for petroleum engineering technology students to enhance their understating about gas processing and treatment.
Lecture 3 hrs/wk.

OGP-340 Petroleum Storage and Loading (2 CR)
Oil and gas storage and loading belongs the oil and gas process which takes the product from the wellhead manifolds and delivers stabilized marketable products, in the form of Crude Oil, Condensate or Gas to the market.
Lecture 2 hrs/wk.

OGP-345 Petroleum Refining & Processing (3 CR)
OGP-345P Petroleum Refining & Processing Lab
This course focuses on the core building blocks of the refining process systems, equipment and economics. The course will emphasize refining process unit operation fundamentals and safe utilization of these fundamentals by operations and maintenance personnel.
lecture: 2 hrs/wk; Lab: 3hrs/wk.

OGP-338 Process Equipment Drawing (1 CR)
This course covers an introduction and anatomy of process equipment drawing. It will integrate the materials cover in the prerequisite (schematic and mechanical drawing). Different process equipment schematics and components will be covered as shown in the course topics.
Lecture 1 hrs/wk.

OGP-371 Process Engineering Drawing (1 CR)
OCT-II OGP On-Campus Training II
The On-Campus-Training II (OCT-II) provides hands-on training on process drawing, utility systems and operations, start-up, shut-down, safety procedures, P&ID building, separation processes, distillation, reactors, pipe pigging and flaring, control room and tank farm safety issues related to various oil and gas process equipment. The training is designed for Oil and Gas Process Engineering Technology students.
The overall objectives of On-Campus Training II modules are to develop student practical skills by "learning while doing" and provide hands-on training with machine equipment and systems. In addition to this, to develop student's skills such as observation, measurement, recording data, data analysis, technical report writing and presentation. And also to develop student team working skills.
The objective of this module is to provide the student with the necessary fundamentals and basic understanding of process engineering equipment drawing and schematics. Free-hand and computer drawing and sheets will be taught and utilized
1 week, lecture: 5 hrs, practical training: 30 hrs.

OGP-372 Oil Handling Systems & Facilities (1 CR)
OCT-II OGP On-Campus Training II
The On-Campus-Training II (OCT-II) provides hands-on training on process drawing, utility systems and operations, start-up, shut-down, safety procedures, P&ID building, separation processes, distillation, reactors, pipe pigging and flaring, control room and tank farm safety issues related to various oil and gas process equipment. The training is designed for Oil and Gas Process Engineering Technology students.
The course provides an overview of the various Utility Systems, key selection considerations and how they are integrated into oil and gas facilities. Individuals will develop a basic understanding of the wide variety of utility systems and components and how they integrate with the process facilities and overall operation. System selection, costs and other managerial decisions pertinent to utility operations are covered.
1 week, lecture: 5 hrs, practical training: 30 hrs.

OGP-373 Gas Handling Systems & Facilities (1 CR)
OCT-II OGP On-Campus Training II
The On-Campus-Training II (OCT-II) provides hands-on training on process drawing, utility systems and operations, start-up, shut-down, safety procedures, P&ID building, separation processes, distillation, reactors, pipe pigging and flaring, control room and tank farm safety issues related to various oil and gas process equipment. The training is designed for Oil and Gas Process Engineering Technology students.
The course provides an overview of the various Utility Systems, key selection considerations and how they are integrated into oil and gas facilities. Individuals will develop a basic understanding of the wide variety of utility systems and components and how they integrate with the process facilities and overall operation. System selection, costs and other managerial decisions pertinent to utility operations are covered.
1 week, lecture: 5 hrs, practical training: 30 hrs.

GP-374 Separation Processes (1 CR)
OCT-II OGP On-Campus Training II
The On-Campus-Training II (OCT-II) provides hands-on training on process drawing, utility systems and operations, start-up, shut-down, safety procedures, P&ID building, separation processes, distillation, reactors, pipe pigging and flaring, control room and tank farm safety issues related to various oil and gas process equipment. The training is designed for Oil and Gas Process Engineering Technology students.
The overall objectives of On-Campus Training II modules are to develop student practical skills by "learning while doing" and provide hands-on training with machine equipment and systems. In addition to this, to develop student's skills such as observation, measurement, recording data, data analysis, technical report writing and presentation and to develop student team working skills.

The training module will help the students to understand the basic principle of Oil and Gas separation.
1 week, lecture: 5 hrs, practical training: 30 hrs.

OGP-375 Oil and Gas Distillation (1 CR)
OCT-II OGP On-Campus Training II
The On-Campus-Training II (OCT-II) provides hands-on training on process drawing, utility systems and operations, start-up, shut-down, safety procedures, P&ID building, separation processes, distillation, reactors, pipe pigging and flaring, control room and tank farm safety issues related to various oil and gas process equipment. The training is designed for Oil and Gas Process Engineering Technology students
The training module will help the students to understand the basic principle of petroleum distillation processes.
1 week, lecture: 5 hrs, practical training: 30 hrs.

OGP-376 Reactors Engineering (1 CR)
OCT-II OGP On-Campus Training II
The On-Campus-Training II (OCT-II) provides hands-on training on process drawing, utility systems and operations, start-up, shut-down, safety procedures, P&ID building, separation processes, distillation, reactors, pipe pigging and flaring, control room and tank farm safety issues related to various oil and gas process equipment. The training is designed for Oil and Gas Process Engineering Technology students.
To provide a thorough understanding of reactor engineering and the use of reactors in processing plants.
1 week, lecture: 5 hrs, practical training: 30 hrs.

OGP-377 Pipeline Pigging & Inspection (1 CR)
OCT-II OGP On-Campus Training II
The On-Campus-Training II (OCT-II) provides hands-on training on process drawing, utility systems and operations, start-up, shut-down, safety procedures, P&ID building, separation processes, distillation, reactors, pipe pigging and flaring, control room and tank farm safety issues related to various oil and gas process equipment. The training is designed for Oil and Gas Process Engineering Technology students.
To provide a thorough understanding of pipeline pigging and inspection.
1 week, lecture: 5 hrs, practical training: 30 hrs

OGP-378 Tank Farm Operations (1 CR)
OCT-II OGP On-Campus Training II
The On-Campus-Training II (OCT-II) provides hands-on training on process drawing, utility systems and operations, start-up, shut-down, safety procedures, P&ID building, separation processes, distillation, reactors, pipe pigging and flaring, control room and tank farm safety issues related to various oil and gas process equipment. The training is designed for Oil and Gas Process Engineering Technology students.
This training module will provide an understanding of pipeline operations and inspection procedure.
The overall objectives of On-Campus Training II modules are to develop student practical skills by "learning while doing" and provide hands-on training with machine equipment and systems. In addition to this, to develop student's skills such as observation, measurement, recording data, data analysis, technical report writing and presentation. And also to develop student team working skills.
Correct management and operation of an Oil & Gas terminal is essential for a successful business. The processing, transporting and storing of crude oil or refined petroleum products in tank farms involve custody transfers of partner and commingled stock, significant volumes of data from various sources and blending complexities.
In addition, as these liquids are loaded and offloaded in bulk quantities, there is a large transfer of high value that makes it imperative for tank farm operators to efficiently manage their inventory and maximize their return on investment.
The tank farm's mission is to perform its daily operations while maintaining a safe storage terminal.
1 week, lecture: 5 hrs, practical training: 30 hrs.

OGP-379 Control Room Operations (1 CR)
OCT-II OGP On-Campus Training II
The On-Campus-Training II (OCT-II) provides hands-on training on process drawing, utility systems and operations, start-up, shut-down, safety procedures, P&ID building, separation processes, distillation, reactors, pipe pigging and flaring, control room and tank farm safety issues related to various oil and gas

process equipment. The training is designed for Oil and Gas Process Engineering Technology students.
This course will give students the knowledge necessary to understand the control room operation as found in the oil and gas industry today. They will learn the purpose of a control room is to serve as an operations center where a service or facility can be monitored and controlled. At any time it can be designated as an area of refuge in high-risk facilities during emergency situations.
1 week, lecture: 5 hrs, practical training: 30 hrs.

OGP-394; PET-394 Graduation Project (2 CR)
In this project, students are distributed into groups with a minimum of three students. Each group selects a project under the supervision of a faculty member and makes literature review, process selection and submits a written report and presents it orally at the end of the semester. Each group makes the mathematics calculations, equipment selection and design, technical and profitability analysis, safety and environment evaluation. Students should use available design and simulation software. Final technical written report is submitted by the end of the quarter (week 15) and presented by the group in the same week or during the examination week (16).
Lecture 2 hrs/wk

OGP-415 Chemical Reactor Design (4 CR)
OGP-415P Chemical Reactor Design Lab
The On-Campus-Training II (OCT-II) provides hands-on training on process drawing, utility systems and operations, start-up, shut-down, safety procedures, P&ID building, separation processes, distillation, reactors, pipe pigging and flaring, control room and tank farm safety issues related to various oil and gas process equipment. The training is designed for Oil and Gas Process Engineering Technology students.
Lecture: 3 hrs/wk; Practical: 3hrs/wk.

OGP-417 Process Modeling & Simulation (3 CR)
OGP-417P Process Modeling & Simulation Lab
The course is designed for OGP technology students to enhance their process units modeling and simulation knowledge and skills.
Process Modeling and Simulation. Introduction: uses and classification of mathematical models; a unified approach for formulation, solution and validation of mathematical models; numerical methods (review of techniques for solving systems of linear and nonlinear algebraic equations, systems of ODEs, applications to chemical engineering problems); introduction to MATLAB and available process simulation packages; modeling and simulation of chemical engineering systems (fundamental laws and concepts, modeling and simulation of typical examples with/without controllers). Process optimization. Essential features of optimization problems; necessary and sufficient conditions for an extremum; unconstrained single variable and multivariable search methods; nonlinear Programming with constraints; applications.
Lecture: 2 hrs/wk; Practical: 3hrs/wk.

OGP-430 Petrochemicals (3 CR)
In this course students will be introduced to the building blocks of petrochemicals, the nine key hydrocarbon compounds that form the basis for the petrochemicals industry. The course covers these important hydrocarbons one by one, sharing knowledge of how they're derived, the technology employed to produce them, and some of the many products manufactured using them.
Lecture 3 hrs/wk

OGP-464 Process Dynamics and Control (3 CR)
This is a three-hour course which is intended to introduce students to the fundamentals and applications of process dynamics and control. The course reinforces controllers design of common process equipment. Practical problems are used as examples.
Lecture 3 hrs/wk

OGP-465 Plant and Equipment Design (4 CR)
OGP-465P Plant and Equipment Design Lab
In this course the students will apply the legislation and codes necessary for Process Engineering design. The course also covers design procedures for some equipment involved in a chemical/oil and gas/ process engineering plant.

Lecture 3 hrs/wk; Lab 3 hrs/wk,

OGP-494; PET-494 Graduation Project (3 CR)
In this project, students are distributed into groups with a minimum of three students. Each group selects a project under the supervision of a faculty member and makes literature review, process selection and submits a written report and presents it orally at the end of the semester. Each group makes the mathematics calculations, equipment selection and design, technical and profitability analysis, safety and environment evaluation. Some students groups might decide to continue working on the same project started in PET-394 or OGP-394 and add advanced design components to it. Students should use available design and simulation software. Final technical written report is submitted by the end of the quarter (week 15) and presented by the group in the same week or during the examination week (16).
Lecture 3 hrs/wk,

OGP-495; PET-495 Internship (3 CR)
PET-495 and OGP-495 are required on the job training for petroleum Engineering technology and oil and gas process engineering technology students, respectively. On-the-Job-Training will take place during the fourth year for AB students. Abu Dhabi Polytechnic will arrange with ADNOC, service companies and international operating companies, operating in UAE, to allocate training place for course students ahead of time. Each student must participate in an approved training/performance (internship) program in either upstream (petroleum Engineering technology) or downstream (oil and gas process engineering technology) industries depending on his/her specialization. The program must contain practical elements of the courses in the AB programs. At the end of the training period, a formal written report must be submitted; student grade will be either P OR NP (Pass or Non-Pass).
Practical Training of 8-10 weeks.

Meteorology Specialization

MET-101 Introduction to Meteorology (3CH)
This course covers introduction to meteorology science, the Earth atmosphere, Earth's radiative balance, air temperature, atmospheric pressure, winds, humidity, condensation, clouds, fog, precipitations, thunderstorms and atmospheric optics. Lecture: 3 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-201 Meteorological Instruments & Observations (1CH)
This course covers introduction to weather observation systems, instruments and observations of: air temperature, atmospheric pressure, humidity, precipitation, radiation, sunshine duration, radiation, visibility, evaporation, clouds, measurements of upper-air pressure, temperature, humidity and wind, measurements at automated weather stations, balloon techniques. Lecture: 0 hrs, Tutorial: 2 hrs, Lab: 3 hrs.

MET-202 Atmospheric Thermodynamics (3CH)
This course covers basic concepts, gases laws, 1st law of thermodynamics, enthalpy and specific heat, thermodynamics processes, air stability, 2d law of thermodynamics, thermodynamics diagrams. Lecture: 3 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-201 Mapping and GIS (2CH)
This course covers introduction to GIS, data model and structure, projections and coordinate system, visualization of spatial data, querying a map, creating and editing feature data, raster basics and analysis, single map analysis. Lecture: 1 hrs, Tutorial: 0 hrs, Lab: 3 hrs.

MET-204 Atmospheric Dynamics I (3CH)
This course covers math review, forces and Newton's 2d law, pressure, total derivatives. scale analyses, continuity equation, balanced flow, thermal wind, vertical motion. Lecture: 3 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-205 Aviation Meteorology (2CH)
This course covers fundamentals of aerodynamics, aircraft performance, altitude, thunderstorms, icing, turbulence, wind shear, aviation weather services. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-206 Physical Meteorology (4CH)
This course covers
Part A (Radiation): introduction to radiation, the sun, properties of radiation, the EM spectrum, radiative properties of natural surfaces, thermal emission, absorption spectra, terrestrial radiation.
Part 2 (Cloud Physics): clouds properties, formation of cloud droplets, diffusion growth of water droplets, collision-coalescence growth of rain drop, growth of ice-crystal, precipitation and clouds modification.. Lecture: 4 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-207 Meteorological International Code (2CH)
This course covers variety of meteorological codes, Surface Synoptic Code (FM 12-XIV SYNOP), Upper-Level Report (FM 35-XI Ext. Temp), Aerodrome Routine Meteorological Report (FM 15-XIV METAR), Aerodrome Special Meteorological Report (FM 16-XIV SPECI), and Report of Monthly Values from a Land Station (FM 71-XII CLIMAT). Lecture: 0 hrs, Tutorial: 0 hrs, Lab: 6 hrs.

MET-208 Climatology (2CH)
This course covers climate and weather, climate analysis methods, general circulation, regional climates, climate classifications, aerosols and climate, biogeophysical cycle. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-209 Basic Electronics for Meteorology (2 CH)
This course aims to introduce to the students the basics of Receiver circuit, Transmitter circuit and their applications. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-210 Synoptic Meteorology I (3 CH)
This course covers variety of weather charts, meteograms, decoding SYNOP,TEMP and METAR reports station plotting techniques: station model and reading, plotting of weather elements on the weather station. samples of analyzed weather charts, introduction to surface weather chart analysis. Lecture: 3 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-211 Introduction to Weather Charts analysis (3CH)
This course covers variety of weather charts, meteograms, samples of analyzed weather charts, introduction to surface weather chart analysis. Lecture: 0 hrs, Tutorial: 0 hrs, Lab: 3 hrs.

MET-212 Meteorology and Computing (1CH)
a. **MS Excel** In this introductory course to Excel, participants will explore Excel activities that go beyond the basic. After successful completion of this session, participants can expect to have the skills required to work efficiently in an existing worksheet and to also create new worksheets from a template and from scratch. The purpose of this course is provide students the necessary skills to use MS Excel in the workplace as an analysis and presentation tool,
b. **LINUX:** This module introduces the Linux operating system and the underlying Unix platform. For this course, the goal is to introduce the basic operating system commands, editing tools, and the program execution environment.

Lecture: 0 hrs, Tutorial: 0 hrs, Lab: 3 hrs.

MET-301 Atmospheric Remote Sensing (2 CH)
This course covers introduction to remote sensing, the nature of electromagnetic radiation, sensors and platforms, aerial cameras, microscopic interactions, macroscopic interactions. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-302 Atmospheric Dynamics II (3 CH)
This course covers circulation, mathematical concepts in barotropic and baroclinic fluids, types of vorticity and vorticity equation, ageostrophic wind, quasi-geopotential geostrophic tendency equation, quasi-

geopotential omega equation, barotropic and baroclinic instability. Lecture: 3 hrs, Tutorial; 0 hrs, Lab: 0 hrs.

MET-303 Weather Charts Analysis I (1CH)
This course covers analysis of upper air charts, analysis of surface weather chart. Lecture: 0 hrs, Tutorial: 0 hrs, Lab: 3 hrs.

MET-304 Oceanography (2CH)
This course covers introduction to oceanography, atmospheric influences, the oceanic heat budget, physical properties of seawater, response of upper ocean to wind, geotrophic currents, coastal processes and tides, circulation and water masses of the oceans, use of chemical traces in oceanography.Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-305 Synoptic Meteorology II (2CH)
This course covers analyses of Midlatitude systems using the balance equation, the height tendency equation , and isentropic potential vorticity, fronts and jets, precipitation systems in the Midlatitudes. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-306 Numerical Weather Prediction and Numerical Analysis(3CH)
Part 1- NWP**:** This course covers dynamic review, finite difference, the barotropic model, boundaries, spectral models, the effects of discretization, data assimilations,

Part 2- Numerical Analysis**:** model verification, NW process, leading forecast centers, forecast models, details about WRF model. Lecture: 2 hrs, Tutorial: 2 hrs, Lab: 3 hrs.

MET-207 Agrometeorology (2CH)
This course covers introduction to agricultural meteorology, response of plants to radiation, effect of temperature on crops, weather and crops, evapotranspiration, drought, weather abnormalities, climatological methods for managing farm water resources. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-308 Satellite Meteorology (2CH)
This course covers introduction to satellite meteorology, orbits and navigations, radiative transfer, meteorological satellite instrumentation, image interpretation of clouds. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-309 Marine Meteorology (2CH)
This course covers introduction to marine meteorology, ocean water motions, sea and swell waves, avoidance of tropical storms, weather forecasts for seafarer, ocean surface currents, sea ice, meteorological factors of planning an ocean passage, observations and instruments, problems associated with route ships and oil tankers. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-310 Environmental Issues (2CH)
This course covers pollution and environmental ethics, ecosystems, natural biogeochemical cycles, population, water pollution, solid waste, hazardous waste, radioactive waste, air pollution, noise pollution, environment impacts, ozone problem and global change, biological indicators of the environment quality. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-311 Radar Meteorology (2CH)
This course covers introduction to radar, radar hardware and operations, electromagnetic waves, radar equation, distributed targets, radar reflectivity, Doppler radar, Doppler spectrum, meteorological targets. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-312 Computer Programing (C++) – OCT (1CH)
This training course covers introduction to computer programming, writing, compiling, and debugging programs, data types, operators and expressions, program control statements, functions, arrays, strings, and pointers, classes and objects, object oriented programming, he C++ I/O system, pointers revisited, programming applications and software design. Lecture: 0 hrs, Tutorial: 2 hrs, Lab: 3 hrs. (10 Weeks)

MET-313 WRF Model – OCT (1CH)
This training course covers WRF model overview, soft installation, processing system, initialization, WRF model, data assimilation and case study. Lecture: 0 hrs, Tutorial: 0 hrs, Lab: 3 hrs. (10 Weeks)

MET-314 Weather Broadcast Practice – OCT (2CH)
Besides forecasting ability, this training course covers broadcasting preparation; a minor in broadcast journalism/communication is ideal, including work on broadcast newswriting, broadcast reporting, and television/radio production. Students must be able to prepare high-quality demonstration weathercasts, and an internship at a television/radio station is strongly recommended. Lecture: 0 hrs, Tutorial: 2 hrs, Lab: 6 hrs. (10 Weeks)

MET-315 Weather Charts Analysis - OCT (1CH)
This training course covers analysis of upper air charts, analysis of surface weather chart. Lecture: 0 hrs, Tutorial: 2 hrs, Lab: 3 hrs. (10 Weeks)

MET-316 Weather Forecasting Techniques – OCT (1CH)
This course covers the nature of weather forecasting problem, the role of human forecaster, weather forecasting methods, application of theories for furcating, practical forecasting techniques, forecast verification. Lecture: 0 hrs, Tutorial: 2 hrs, Lab: 3 hrs. (10 Weeks)

MET-317 Numerical Computing Using MATLAB – OCT (1CH)
This training course covers introduction to MATLAB, simple calculations and graphs, programming in MATLAB, matrix computations, advanced graphs, solving nonlinear problems in MATLAB, efficiency in MATLAB, advanced data types in MATLAB. Lecture: 0 hrs, Tutorial: 2 hrs, Lab: 3 hrs. (10 Weeks)

MET-318 Satellite & Radar Analyses - OCT (1CH)
This training course covers practical use of water vapor imagery of interpretation of synoptic scale systems and for assessing NWP model and weather radars: the polarimetric basis for characterizing precipitation, radar rainfall estimation. Lecture: 0 hrs, Tutorial: 2 hrs, Lab: 3 hrs. (10 Weeks)

MET-319 Synoptic Met & Tephigram– OCT (1CH)
This training course covers pressure gradient force, Coriolis force, geostrophic wind , thermal wind, gradient wind, ageostrophic wind, pressure at various levels, geopotential, geopotential heights and thermal advections calculations using weather charts, finding areas of divergence/convergence and positive/negative vorticity using upper weather charts, relation between jet streams and weather activities, full picture of cyclone/ anticyclone acticities, thermodynamics diagrams: tephigram, the skewT/Log P diagram and Stuve diagram, case study. Lecture: 0 hrs, Tutorial: 2 hrs, Lab: 3 hrs. (10 Weeks)

MET-401 Mesometeorology (2CH)
This course covers introduction, mesoscale instability, lower tropospheric mesoscale systems, deep convective systems, orographic mesoscale phenomena, project. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-402 Air Pollution (2CH)
This course covers introduction to air pollution, the physics and chemistry of air pollution, risks from air pollution, the measurement and monitoring of air pollution, the meteorological bases of atmospheric pollution, air pollution modeling and prediction, the regulatory criteria and standards, preventing air pollution. Lecture: 2 hrs, Tutorial: 2 hrs, Lab: 0 hrs.

MET-403 Hydrology & Water Resources (3CH)
This course covers
Part A: introduction to hydrology, water balance, precipitation, evaporation, soil-water, groundwater, runoff, estimates of rainfall by remote sensors.
Part B: basic parameters of water, surface water, groundwater, water measurements, flood events, water quality, irrigation, dams, water treatment, international, regional, and local water allocation laws. Lecture: 3 hrs, Tutorial:0 hrs, Lab: 0 hrs.

MET-404 Atmospheric Waves (2CH)
This course covers introduction to waves, linear waves, shallow-water gravity waves, waves in a two layer fluid, sound waves, inertial waves, topographic waves, Rossby waves, inertial-gravity waves. Lecture: 2 hrs, Tutorial:0 hrs, Lab: 0 hrs.

MET-405 Tropical Meteorology (2CH)
This course covers main characteristics of tropical regions, general circulation, seasonal mean wind fields, local and diurnal circulations, zonally asymmetric features of tropics, tropical weather systems, the tropical oceans, tropical cyclones, monsoons. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-406 Project 1 (1CH)
This course is aims to introduce to the students the concept of developing a project in the field of student specialization utilizing the knowledge and hands-on the student has gained over the years of study and training. The project scope could be outlined by an industrial sponsor towards real life technical applications. The graduation project is a significant component of MET work that is aimed to be conducted in a professional and scientific manner and is professionally documented in a comprehensive report and presentation. The aims of the graduation project are to provide an opportunity for the student to demonstrate their capacity to bring together their advanced skills and scientific knowledge of the atmospheric science that have been gained as part of their coursework and apply these to a real-world problem. Open-ended design projects ideas are highly encouraged to motivate students' innovation and critical thinking.
In addition to understand and apply the concept and significance of research, aspects of research, writing research document, class presentation of research area, research data, developing a research proposal, and class presentation of research proposal, student shall in a new way to solve a real-world scientific problem in one of meteorological aspects or related fields.
The subject of the study will be discussed and defined with one of the faculty members in the MET department. Students will undertake research projects under supervision by academic member(s) of staff. The results of the study will be defined in an open presentation with a least of two faculty members.

MET-407 Planetary Boundary Layer Meteorology (2CH)
This course covers the atmospheric boundary layer, basic equations for mean and fluctuating quantities, scaling laws for mean and turbulent quantities, surface roughness and local advection, energy fluxes at the land surface, the thermally stratified boundary layer, and the cloud-topped boundary layer. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-408 Climate Data Management (1CH)
This course covers introduction, climate data management, characterizing climate from data sets, statistical methods for analyzing climate data, services and products. Lecture: 0 hrs, Tutorial: 0 hrs, Lab: 3 hrs.

MET-409 Global Climate Changes (2CH)
This course covers introduction to climate changes, climate history of the Earth, the scientific method and its use, climate change trends, atmospheric circulation and climate change, ocean and climate change, projections of the future climate. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-410 Regional Synoptic Meteorology (1CH)
This course covers introduction to regional synoptic meteorology, Mediterranean lows, Red Sea trough, Siberian high, monsoon, air masses, pressure systems, and frontal systems affecting the UAE. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-411 Long Range Weather Forecasts (2CH)
This course covers introduction to long range forecasts, the use of El Nino/La Nina oscillations used in seasonal forecasts, the Southern Pacific Oscillation impacts, the use of Arctic and North Atlantic oscillations for seasonal forecasts, Rossby waves effects, intraseasonal weather analysis for tropics, inter-tropical convergence zone effects. Lecture: 2 hrs, Tutorial: 0 hrs, Lab: 0 hrs.

MET-412 Project 2 (1CH)
Concept and significance of research, aspects of research, writing research document, class presentation of research area, research data, developing a research proposal, and class presentation of research proposal.

MET-413 Meteorological Instruments & Observations – OJT (1CH)
The training course module aims to assess trainee's competence in meteorological instruments. During this work trainee must take account of the relevant worksite operational requirements, procedures and safe working practices. This training course module aims to assess trainee's competence in working safely. This module continues the recognition of meteorological instruments. Instruments of measuring: precipitation, radiation, sunshine duration, visibility, evaporation and upper-air pressure, temperature, humidity and wind. Training on taking weather elements measurements at automated weather stations, and observations at weather stations of: air temperature, atmospheric pressure, humidity, precipitation, radiation, sunshine duration, visibility, evaporation, clouds, balloon techniques, radiation observations. 2 Weeks (10 Days)

MET-414 Meteorological International Code OJT(1CH)
This training course covers training of variety of meteorological codes, Surface Synoptic Code/Decode (FM 12-XIV SYNOP). 2 Weeks (10 Days)

MET-415 Weather Charts Analysis & Forecast I- OJT (1CH)
This training course covers analysis of upper air charts, analysis of surface weather chart. 2 Weeks (10 Days)

MET-416 Weather Charts Analysis & Forecast II- OJT (1CH)
This training course covers weather forecast techniques and tools, weather forecasting methods, analyzing midlatitude weather, upper ridges and troughs, jet streams and jet streaks, weather analysis for tropics, practical forecasting techniques.2 Weeks (10 Days)

MET-417 Numerical Weather Analysis – OJT (1CH)
This training course covers model verification, NW process, leading forecast centers, forecast models, NW products. 2 Weeks (10 Days)

MET-418 Sat & Radar Analyses II – OJT (1CH)
This training course covers overview of types, imagery, and interpretations of satellite, and radar operations, types of radar data, radar displays, radar interpretations and products. 2 Weeks (10 Days)

MET-419 Weather Forecasting Techniques II– OJT (1CH)
This training course covers weather forecast techniques and tools, weather forecasting methods, analyzing of Midlatitude weather, upper ridges and troughs, jet streams and jet streaks, weather analysis for tropics, practical forecasting techniques. 2 Weeks (10 Days)

13. Student Information and Services

Academic Advising/ Counselling

Students can obtain academic advice from their course instructors and their technical division faculty. In addition tutors and learning advisers are available and can advise students on issues related to academic writing, exam preparation, time management, and other academic skills. Learning advisers can help students improve the structure of written assignments, organize ideas, develop arguments, and understand the expectations of Abu Dhabi Polytechnic. Their focus is on helping students develop strategies to independently revise their own work and manage their study.

Personal and Career Counselling

All students are given advise on careers at the orientation session administered early in their enrollment and throughout their tenure at Abu Dhabi Polytechnic. Students are given opportunities to discuss their careers with sponsors visiting Abu Dhabi Polytechnic on frequent basis.

Abu Dhabi Polytechnic has career advisers, counselors, and other administrative staff whose primary focus is to help students overcome their academic and social problems and to be aware of other programmes at Abu Dhabi Polytechnic. Counseling may be offered to students who have academic or personal problems that might interfere with their classroom performance or social functioning. Counselors will be able to help students find solutions to their problems and enhance their development at the academic and/or personal level.

Dining

Abu Dhabi Polytechnic: Abu Dhabi offers a variety of food outlets for students and staff. Abu Dhabi Polytechnic understands that everyone has different tastes, appetites, and eating habits. Therefore, Abu Dhabi Polytechnic offers an extensive variety of menus and venue options to best fit each individual lifestyle, schedule, budget, and dietary need. A catering service is also available for Abu Dhabi Polytechnic functions and conference groups of all sizes. Abu Dhabi Polytechnic aims to offer fresh, safe, innovative, and quality food products in modern surroundings which reflect current market trends while ensuring value for money.

At the Al Ain campus there is a Canteen or a Cafeteria that will serve food, drinks, salads and fruits during the two breaks. The canteen is obviously a place that serves food and drink and as such is required to meet the stringent health and hygiene requirements of the UAE. The Management expects you, the student, to play a full part in assisting in keeping this environment free from unnecessary rubbish and waste.

Dress Code

Staff and students are expected to dress modestly at all times. Clothing must be clean, neat and tidy. Female staff are expected to wear blouses/tops that cover their shoulders and upper arm, and to wear skirts or trousers where the hem is at the mid-calf or ankle. Female staff are expected to leave their face uncovered while in class and the staff rooms. Male staff are expected to wear shirts that cover their shoulders and upper arm, and to wear trousers where the hem is at the ankle. Male UAE Students and staff have to wear a kandoora.

Staff and students are expected to wear clothes that are appropriate for the activities they will be undertaking. Staff and students must wear closed shoes for all classes in laboratories for safety. Staff and students must wear sleeves that can be folded back so that hands can be washed thoroughly and safety ensured in

the laboratories.

At the Al Ain campus students are required to wear the Aviation uniform every day of the academic week, unless told otherwise. Students need to be aware that all academic and non-academic activities are directed towards helping them prepare to enter the workforce and to be responsible UAE citizens. It is important for students to act as ambassadors of the Al Ain campus and their sponsors and so they should always present themselves smartly.

Extracurricular Activities and Groups

The Student Council (described below) is officially recognized by Abu Dhabi Polytechnic to organize students to work with staff to enrich Abu Dhabi Polytechnic's extracurricular activities such as coordinating athletic and cultural activities and forming organized groups of students for particular purposes. Examples, Abu Dhabi Polytechnic sponsors an annual 'Aircraft Pulling Competition' in which teams of students pulled our Bell helicopter around a track on National Day. Abu Dhabi Polytechnic also sponsors field trips to air shows and aviation related events. Our students get a look into the business they are choosing as their career.

A variety of physical, social, and cultural activities are planned during the academic year. Students may organize events through the Student Council. Activities are also planned to complement classroom activities and develop leadership skills and teamwork.

In addition, Abu Dhabi Polytechnic provides opportunities for youngsters to experience aviation first hand. Abu Dhabi Polytechnic sponsors a summer programme for all 9th, 10th, 11th grades that exposes them to the aviation field. Groups of Students from the IAT schools learned skills in the assembly of model aircraft to build up an appreciation of the principles of flight and gain an insight into the basics of aircraft engineering.

Health Services

Abu Dhabi Polytechnic provides medical care for students during the day. Minor complaints are attended to by the Abu Dhabi Polytechnic nurse. Injuries and major complaints are sent to a nearby hospital.

Housing

On the main campus in Abu Dhabi students from other cities are given the opportunity of residence in Abu Dhabi. The Student Support services unit arranges furnished residence to all students that travel from other cities. Student support services unit is working on providing the residence hall with computer facilities.

At the Al Ain campus students from other cities are given the opportunity of residence in Al Ain. The Student Support services arranges furnished residence to all students that travel from other cities to enroll at threAbu Dhabi Polytechnic.

Library and Academic Resources

Abu Dhabi Polytechnic has a well-equipped library and study hall with a growing collection of resources. The library is designed to support the Diploma / Higher Diploma and Applied Bachelor technical programmes through a wide collection of books, journals, electronic resources, and on-line databases which provide links to full text articles. The library information technology infrastructure includes work stations connected to the internet to allow students to access the most recent articles. The library is staffed by well qualified and experienced library professionals who work with the Heads of the technical programmes to identify the needs of the students for a wide range of books and other resources, conduct information skills programmes to enable students to find, retrieve, and use the academic resources efficiently, and encourage and teach students to access and research scholarly journals and resources. See

the section entitled Library Policies and Procedures for more information.

Mobile Phones and Electronic Devices

Abu Dhabi Polytechnic expects students to behave in such a way as to optimize learning. Mobile phones and other electronic equipment (iPods, MP3 players, mini disc players, radios, etc.) that are likely to be disruptive are not to be brought into class.

Students are to turn their mobile phones off and store them out of sight. Answering, texting, or using either a telephone or electronic device in class will be viewed as misconduct and disciplinary action will be taken.

Office Hours

Students may access Abu Dhabi Polytechnic faculty and staff during usual business hours by making an appointment or dropping in during posted Office Hours – 8am – 4pm.

Privacy and Confidentiality

Student information and academic performance is confidential material and will only be disclosed to staff who need to know. In addition, a student's academic performance will only be discussed with the student concerned and their parents, guardians or sponsor.

Parents and family play an important role in supporting students enrolled in tertiary studies. Parents are able to meet with staff and discuss their child's academic life. Parents, guardians and sponsors should contact the Abu Dhabi Polytechnic receptionist for advice about who it is best to speak with and to make an appointment. In the case of an emergency, parents, guardians and sponsors should contact the Abu Dhabi Polytechnic receptionist who will assist with finding the students. Parents, guardians and sponsors should not enter a classroom or any other teaching area without first making contact with the receptionist.

Smoking Policy

Abu Dhabi Polytechnic is a smoke free zone at both campuses. There is no smoking on or immediately outside the premises.

Student Council

The Student Council is an officially recognized organization that advises the Abu Dhabi Polytechnic administration on the enhancement of student facilities and activities to enhance the student experience in terms of both teaching & learning and cultural enrichment.

The Student Council is a self-governed advisory committee to the Abu Dhabi Polytechnic and all recommendations are submitted to the Executive Committee and other relevant committees. All students are encouraged to participate in the election of their representatives to the Student Council.

The Student Council organizes students to work with staff to enrich Abu Dhabi Polytechnic's athletic, cultural, and organizational activities. The Student Council also addresses and manages student issues pertaining to resources and the learning environment.

Students are encouraged to form and join clubs recognized by the Student Council such as professional and scientific societies, debate clubs, intramural sports, etc., depending on the student's interest.

Transportation

Details are to be determined.

Work Experience/On the Job Training Policy

On the Job Training/Work Experience is the term used to describe work that has to be carried out by students in order to complete the requirements of the course in which they are enrolled. Work experience could include activities such as field studies, practical experience in manufacturing companies, EASA part 145 organizations, aviation companies, etc. For the most part, the experience of on the Job Training for EASA 66/147 seekers must be completed at an EASA part 145 organization.

Personal Behavior

Students of Abu Dhabi Polytechnic undertaking a period of work experience are required to be aware of their personal responsibility to:

- obey the lawful and reasonable instructions of the organization with which they are undertaking the work experience programme;
- respect the security and confidentiality of any information that they may receive from that organization in the course of the work experience programme;
- maintain a standard of conduct befitting a student of Abu Dhabi Polytechnic.

14. Library Policies and Procedures

The Abu Dhabi Polytechnic Library (Learning Resource Center)

The Library of the Abu Dhabi Polytechnic is seen more as a learning resource center than a traditional library.

Vision

The vision of the library is to take a leading role in the fulfillment of the Abu Dhabi Polytechnic's mission, vision and goals through:

- Developing education and training programmes to equip staff and students with the skills for lifelong learning
- Structuring systems and developing gateways to provide integrated, convenient and client-friendly access to resources
- Developing staff to become innovative information specialists, skilled in providing exceptional service
- Contributing to the development and enhancement of a knowledge based society

Mission

The library's mission is to facilitate access to quality resources and services for excellence in research, teaching and learning by delivering a range of services and technologies to enable the retrieval of needed resources, irrespective of their format or location and providing leadership and expertise in navigating an increasingly complex and diverse information environment.

Evaluation Process

The Abu Dhabi Polytechnic library will evaluate its collection and services on an ongoing basis through daily statistics that are to be kept to assist in the planning and management of the library and will be collated on a monthly basis.

Annual Survey

An annual student survey is to be undertaken to evaluate client satisfaction. Results will be collated and stored by library staff and a report on findings submitted to the Manager Students and Support Services and the Librarian will be responsible for recommending any changes to current practice in response to survey findings.

Ongoing Training Sections Input

The library staff welcome input for both acquisition and weeding of material. This is done on an ad hoc basis as well as a formal basis periodically. The library staff also collaborates with the academic sections on an ongoing basis to identify material that is in high demand to ensure that students have access to these resources.

Student Requests

Students may request additions to the collection. Forms for "Requests and Recommendations" are to be made available for students and all requests will be considered.

Library Hours

The Library is open for students, staff and training sections for the majority of the teaching day at the Abu Dhabi Polytechnic.

Eligibility of Borrowers

The following persons are eligible users of the library and its facilities. This includes the right to borrow materials, subject to the rules set in this policy document:

- Student enrolled and with a valid Abu Dhabi Polytechnic library card.
- Teaching and nonteaching Staff of Abu Dhabi Polytechnic and its education partners with a valid Abu Dhabi Polytechnic library card.

Academic Staff may borrow items from the Main Collection for one quarter.

Staff members are responsible for all items they borrow and may not give borrowed materials to students or other staff.

All academic staff loans are due at the end of each quarter, or on the date of the final examination for the subject they teach.

Staff who do not return materials, or who have lost or damaged material must resolve the issue with the Abu Dhabi Polytechnic Librarian. Staff loans that are not returned to the library three months past the due date will be deemed lost and the staff member will be invoiced for replacement. Staff will be billed in accordance with the charges documented in the section below called "Replacement of lost or damaged items."

Staff Borrowers

Faculty may borrow items from the Main Collection for one quarter.

Staff members are responsible for all items they borrow and may not give borrowed materials to students or other staff.

All academic staff loans are due at the end of each quarter, or on the date of the final examination for the subject they teach.

Staff who do not return materials, or who have lost or damaged material must resolve the issue with the Abu Dhabi Polytechnic Librarian. Staff loans that are not returned to the library three months past the due date will be deemed lost and the staff member will be invoiced for replacement. Staff will be billed in accordance with the charges documented in the section below called "Replacement of lost or damaged items."

Student Borrowers

Students must present their Abu Dhabi Polytechnic ID card in order to borrow. This card is not transferable. Students are responsible for all items borrowed using their ID card, and must pay for any lost or damaged items borrowed in their name.

Orientation/Educational Programmes

Identified as one of their priorities, the library staff will strive to provide students and training sections with information on the library and information literacy on an ongoing basis. This is done in the following ways:

- The Librarian provides a brief overview of the library for all new students attending on Orientation Day. All new students and staff are given a copy of the library brochure as part of their Abu Dhabi Polytechnic orientation pack.
- Brochures will be available for users to assist them with procedures and location of materials and other general information about the library (hours, staff, etc.).
- Reference assistance will be provided for users on an ongoing basis. This includes assistance with identifying appropriate material for studies/assignments and then locating this material within the library; accessing electronic resources such as the electronic database system as well as locating good information on the internet.
- Library shelving will be clearly marked with Dewey decimal classification to assist with easy location of materials for our students.
- Librarian staff will assist our users with locating information that is appropriate to their information needs.
- Students are encouraged to use information in a variety of formats depending on information needs. Formats include: books, journals, newspapers, online databases, e-books, Internet resources, video cassettes, and audio cassettes.

Circulation of Materials (Borrowing)

Circulation of materials is a basic function of the Library. All students and staff of the Abu Dhabi Polytechnic have borrowing privileges. Items are due for return on the date shown on the date due slip.

All returning items must be handed to a staff member at the circulation desk or placed in the return chute. Returning material should not be placed on shelves.

Renewal of Loans

Borrowers may renew loans twice in addition to the original loan, provided the material is not overdue, or reserved for another user.

Inter-library Loan and Cooperative Agreements between Libraries

While the Abu Dhabi Polytechnic Library aims to build a strong resource library for its students and training sections, it is important to have links with other institutions in order to fully support users.

The librarian maintains contact with other academic libraries in the region through both formal and informal networks.

Library Current Awareness Services

The Library aims to provide current awareness to support the information needs of staff and students at the Abu Dhabi Polytechnic.

E-mail messages are sent to the relevant person when new books they requested have arrived and are ready to borrow.

Each month a list of all new acquisitions is emailed to all staff. This list is also posted on the library website. New books are prominently displayed.

Individual staff may be placed on email notification lists to be notified when journals relevant to their academic or research needs are received.

Copyright

The library abides by the fair use clause that states that 10 percent of any given work may be photocopied. With this in mind, the library does not condone the photocopying of entire works of books or journals. The library collection does not include any illegally photocopied text or journal.

Code of Conduct for Library Users

The rights and responsibilities of all Library patrons are as follows:

- All users have a right to use the facilities of the Library without undue distraction or disturbance.
- Within the precincts of the Library, no person shall act in a manner that interferes with the comfort or convenience of other users.
- Abu Dhabi Polytechnic identification cards must be shown in response to any reasonable request from any member of staff who might require such identification in the course of their duties. Any Library user, whether or not a member of Abu Dhabi Polytechnic, shall produce identification on request from a member of Library staff.
- It is a condition of entry into the Library that staff may inspect all bags, folders or other receptacles capable of containing Library materials and their contents.
- No food is allowed in the library. Drinks are allowed on the proviso that no damage is caused and all rubbish is deposited in bins provided.
- Talking is not permitted in reading areas: quiet conversation is allowed for the purpose of seeking assistance in the use of the catalogues or the collection.
- The reservation of seats or computers is not permitted.
- The Library staff may remove books and other articles left unattended on chairs or tables in the Library for more than twenty minutes. Articles left in these areas at closing time will be cleared away and sent to the Student Services lost property section. The Abu Dhabi Polytechnic accepts no responsibility for personal belongings left in the building.
- No user shall deface, mutilate or destroy Library materials: in addition to any penalty that may be imposed for such conduct; the person concerned shall be liable to pay for the full cost of repair or replacement of damaged materials.
- Users are responsible for all Library materials borrowed in their name until such time as the items are returned to the Library and deleted from the loans register. Borrowers will be charged the replacement cost of any item that is not returned.
- Users should obey any reasonable directions of Library staff in enforcing this Code of Conduct.

Code of Conduct in the Libraries and Other Public Space

Users of the Library and other public space should behave in a manner that does not inconvenience, offend or limit the rights of other users to have access to library materials, study space, and other information technology facilities and services.

This policy applies to all categories of users, including external borrowers and casual visitors.

Standards to be observed within Information Services public spaces

The Code of Conduct sets out the standards of behavior that members of the Abu Dhabi Polytechnic community can reasonably expect when engaged in Abu Dhabi Polytechnic activities.

Users of the Library facilities and services expect an environment that is conducive to study and research. Activities that disrupt such an environment are not acceptable. Such activities include:

- Creation of noise through loud conversations, use of mobile phones, etc.;
- Eating and drinking beverages other than water;
- Smoking;
- Theft of equipment or the property of others;
- Movement of furniture;
- Vandalism;
- Posting of notices without permission; and,
- Unauthorized presence in non-public or restricted areas.

Users of the Library and services expect equitable access to equipment and facilities. Improper use or obstruction of access to such equipment and/or facilities, including the reservation of seats in study areas and the Library, is not acceptable.

Users of library collections expect equitable and open access to these resources. Unauthorized removal, misplacement or mutilation of library resources or retention of overdue material is not acceptable.

Users leaving the Library may be required to present for inspection any item in their possession or any bags, cases or other material brought into the Library.

Users are expected to provide identification to staff acting in the course of their duties where a violation of the Abu Dhabi Polytechnic policy is in question.

Exclusion from the Library

A person who breaches the above standards may be requested to leave the Library.

Imposition of Penalty relating to Conduct

In addition to exclusion from a Library facility, a person may be penalized according to the misconduct procedures for staff.

Appeals

Any person upon whom a penalty has been imposed may appeal against that penalty using the appeal procedures for staff.

Library Lending Policy

Definitions

"Item" includes any book, pamphlet, periodical issue (bound or unbound), newspaper, manuscript, film, videotape, CD, DVD, microfilm, microfiche, photograph, print, slide, monograph, thesis, cassette, photocopy, sound recording, musical score, map, laptop, DVD player, musical instrument, plan or any other recorded material, regardless of physical form, under the control of the Librarian. In the Abu Dhabi Polytechnic the terms Library and Learning Resource Center are interchangeable.

Eligibility

The Abu Dhabi Polytechnic staff and students are registered to borrow from the Library. An Abu Dhabi Polytechnic Student/Staff Card is also a Library card.

Staff and students of other tertiary institutions and members of the public may make application to be registered as borrowers by completing and signing a registration form undertaking to comply with Library Lending Policies, and by providing identification, proof of address and where appropriate, proof of eligibility for a particular borrower category.

Upon acceptance of an application, a Library card, identifying the holder's category as a borrower, will be issued.

Registrations must be renewed annually. Registration may be cancelled or suspended before the expiry date for breaches of Library Lending Policies.

The Librarian or their representative may refuse an application for registration as a user when in the judgment of the Abu Dhabi Polytechnic Director or that officer, such a registration would adversely affect services to Abu Dhabi Polytechnic staff and students.

General Conditions of Loan

The Librarian has discretionary power to lend or refuse to lend any item at any time.

The Librarian may alter the loan period of any item at any time.

No person may remove an item from the Library without a proper loan transaction having first been made.

A valid Abu Dhabi Polytechnic Student/Staff or Library card is required before any loan transaction is made.

Library cards are not transferable. In exceptional circumstances (e.g. a lecturer's research assistant or a representative of a borrower with a disability or illness) an authorized representative may borrow on a library cardholder's behalf, upon receipt of written authorization, and subject to the discretion of the Librarian.

The Library collects stores and uses borrower information for administrative purposes only. The information collected is confidential and will not be disclosed to third parties without the borrower's consent, except to meet government, legal and other regulatory authority requirements.

A borrower is responsible for the safe keeping and return of all items borrowed from the Library and for the cost of repair or replacement of any item damaged or not returned.

Restrictions are placed on the number of loans a user may have at any one time.

Responsibilities of Library Borrowers

The Abu Dhabi Polytechnic staff and students are responsible for maintaining accurate contact details through the Abu Dhabi Polytechnic Portal. As in compliance with the contractual agreements, the affiliated Abu Dhabi Polytechnic email is the main channel for communication concerning library borrowing.

All other borrowers need to notify the Library of any change of address (postal and email) at the earliest opportunity.

The Library should be notified immediately of the loss of an Abu Dhabi Polytechnic Student/Staff or Library Card.

Loan Policies

Loan policies are shown in Table 1. Overnight loans for 2 Hour Loans are not available during Study and Examination weeks.

Table 2.Loan policies for different borrower categories and different loan categories.

Loan Category	Penalty
2 hour loans	Suspension of borrowing rights immediately the item is overdue, plus a maximum of AED 50.00.
4 day loans	Suspension of borrowing rights immediately the item is overdue, plus a maximum of AED 25.00 per item.
14 day loans	Suspension of borrowing rights immediately the item is overdue, plus a maximum of AED 25.00 per item.
28 day loans	Same as for 14 day loans.
Recalled loans	Suspension of borrowing immediately the item is overdue, plus a maximum of AED 25.00 per item.

Renewals

Short and standard loan items may be renewed for a maximum of five additional loan periods. The new due date is calculated from the date on which the renewal is made.

The Librarian has the option of denying a renewal but will usually only refuse a request for such a renewal if:

- The item has been or is about to be recalled, or
- A hold has been placed by another borrower, or
- The maximum number of renewals permitted has been reached.

Recall on Borrowed Items

At the discretion of an officer authorized by the Librarian any item on loan may be recalled at any time, if it is required for the Reserve Collection or for another borrower. Recall notices specify a new due date for the item on loan, allowing a minimum seven-day loan period.

Penalties for Overdue and Lost Items

When an item is returned after the due date, penalties apply as shown in Table 2.

The penalty for items that are not returned or lost is suspension of borrowing rights plus replacement costs.

Suspension of borrowing rights remains in effect until either all overdue items are renewed or returned

and any outstanding debts are paid; or, replacement costs are paid for any item declared lost.

Borrowers are notified of overdue items.

Table 2.Penalties for Overdue Items.

	Staff	Student
Maximum Number of Loans (all types)	10	6
Standard Loans Loan Period	28 days	14 days
Number of Renewals	5	3
Short Loans Loan Period	4 days	
Number of Renewals	5	3
2 Hour Loans Number of Loans	3	2
Loan Period	2 Hours Also available for overnight loan 2 hours before closing.	
Number of Renewals	0	
Holds	5	3

Appeals

Persons to whom penalties are applied may appeal either orally, or in writing, to the Librarian to waive or reduce the penalty, or to defer payment of any fine.

A person making such representations may appeal to the Librarian against a decision relating to a penalty made by another Library officer, and may appeal against a decision made by the Librarian to the Abu Dhabi Polytechnic Director whose decision shall be final.

15. Work Experience Policy

Work Experience

Work Experience is the term used to describe work that has to be carried out by students in order to complete the requirements of the course in which they are enrolled. Work experience could include activities such as field studies, practical experience in manufacturing companies, electricity generation sites, airport or automotive companies, etc.

Personal Behavior

Students of the Abu Dhabi Polytechnic undertaking a period of work experience are required to be aware of their personal responsibility to:

- Obey the lawful and reasonable instructions of the organization with which they are undertaking the work experience programme.
- Respect the security and confidentiality of any information that they may receive from that organization in the course of the work experience programme.
- Maintain a standard of conduct befitting a student of the Abu Dhabi Polytechnic.

Public Liability

Students are indemnified for their legal liability in respect of third party claims for damages to property or injury to persons while undertaking approved work experience.

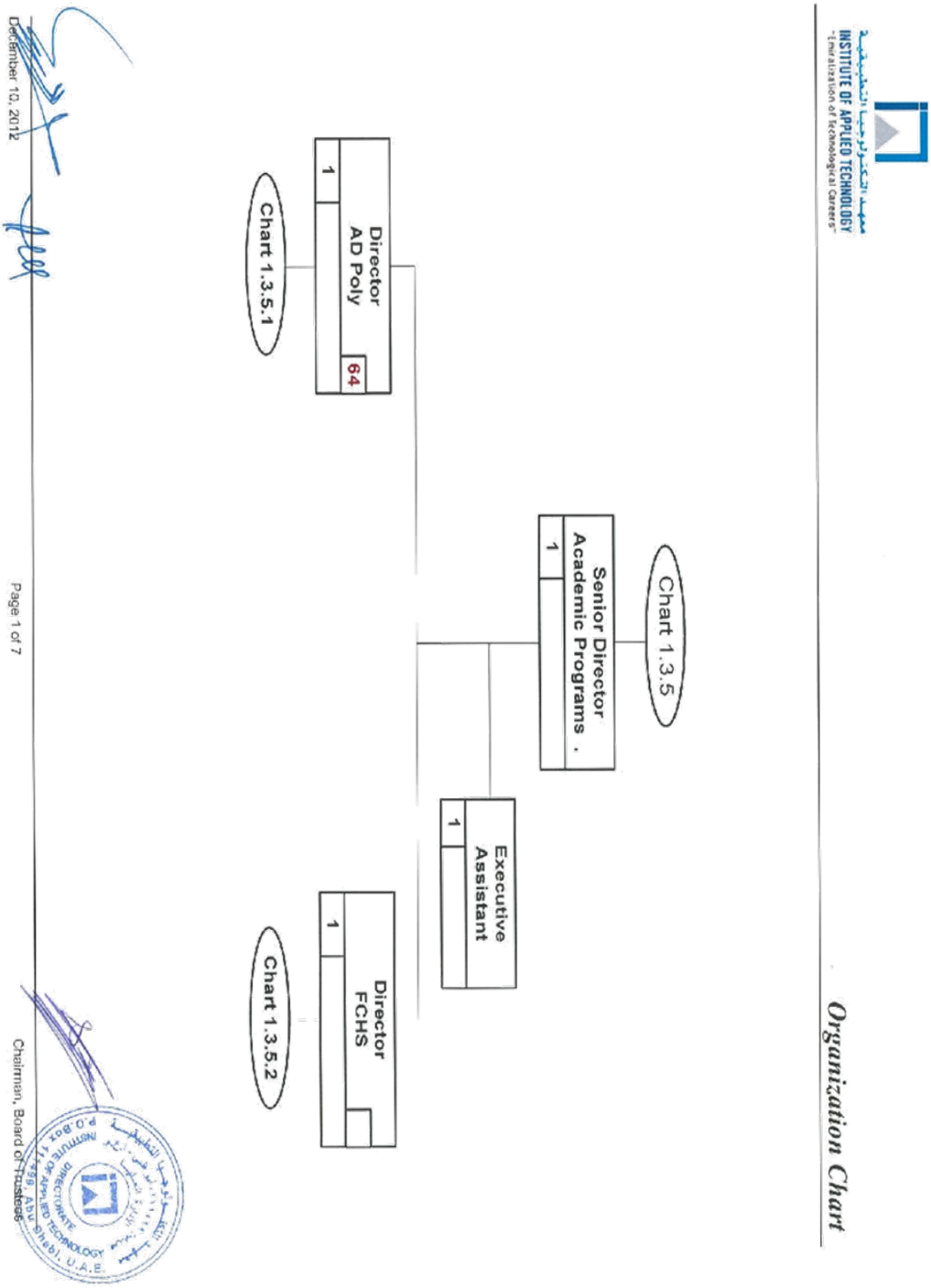
Personal Property

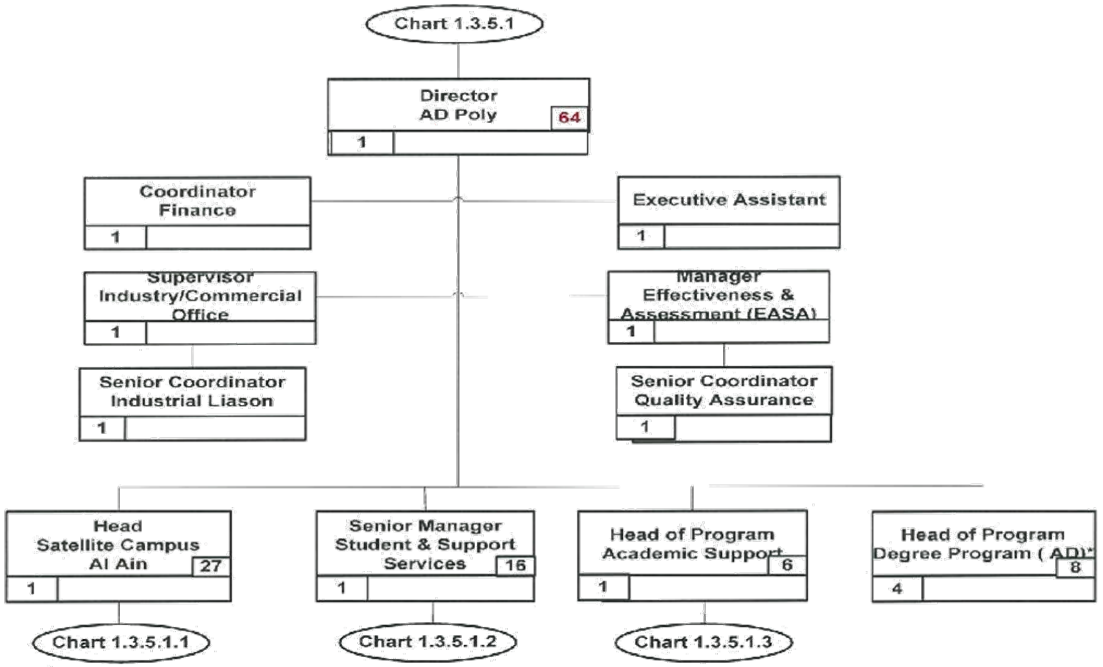
A student's personal property is not covered by Abu Dhabi Polytechnic's Insurance at any time. If a student wishes to arrange cover for personal items they must do so at their own expense.

Personal Health and Accidents

The details regarding medical insurance coverage are to be determined.

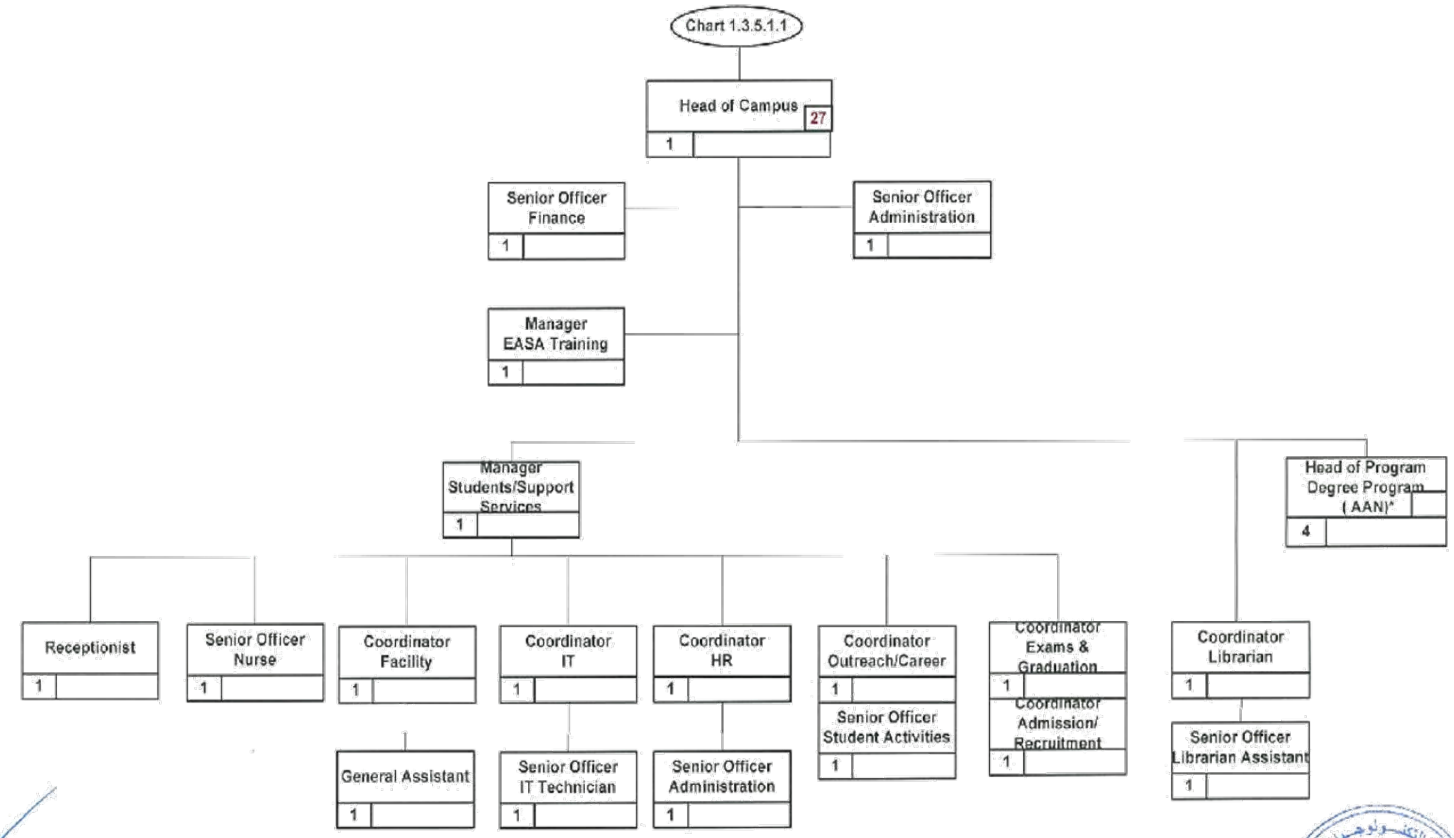
Appendix A – Abu Dhabi Polytechnic Organization Chart





* Assignment role.

Organization Chart



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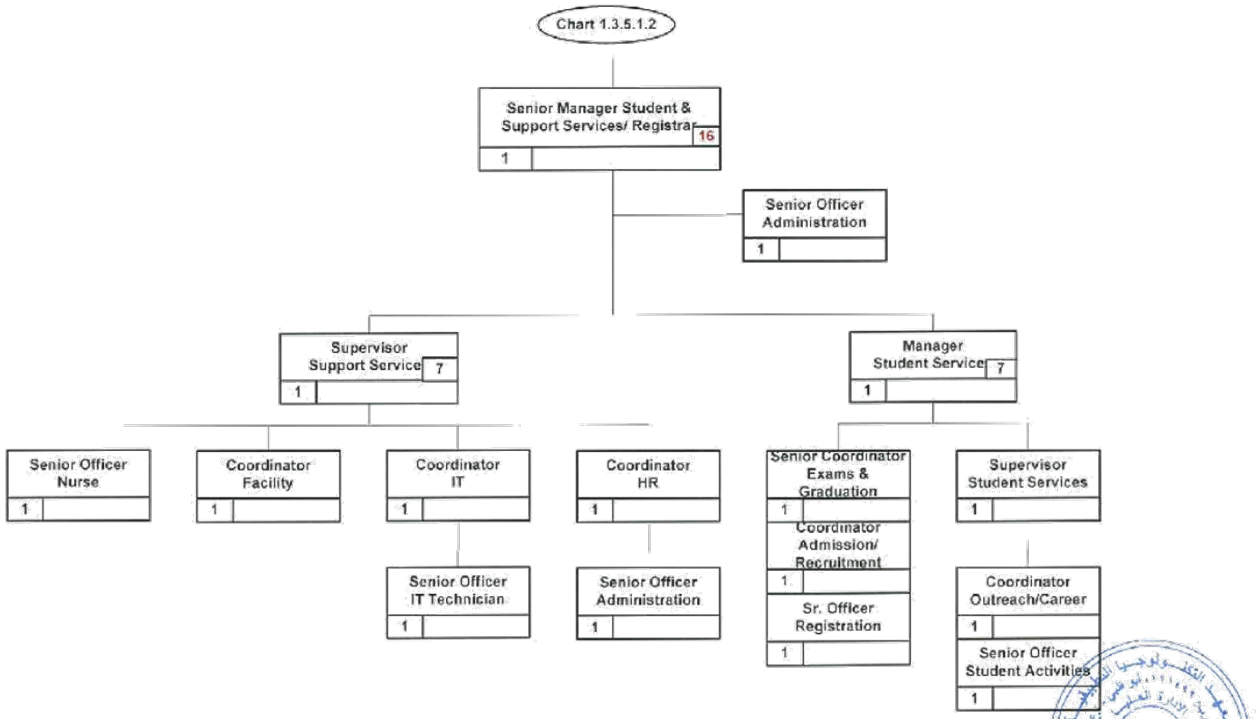

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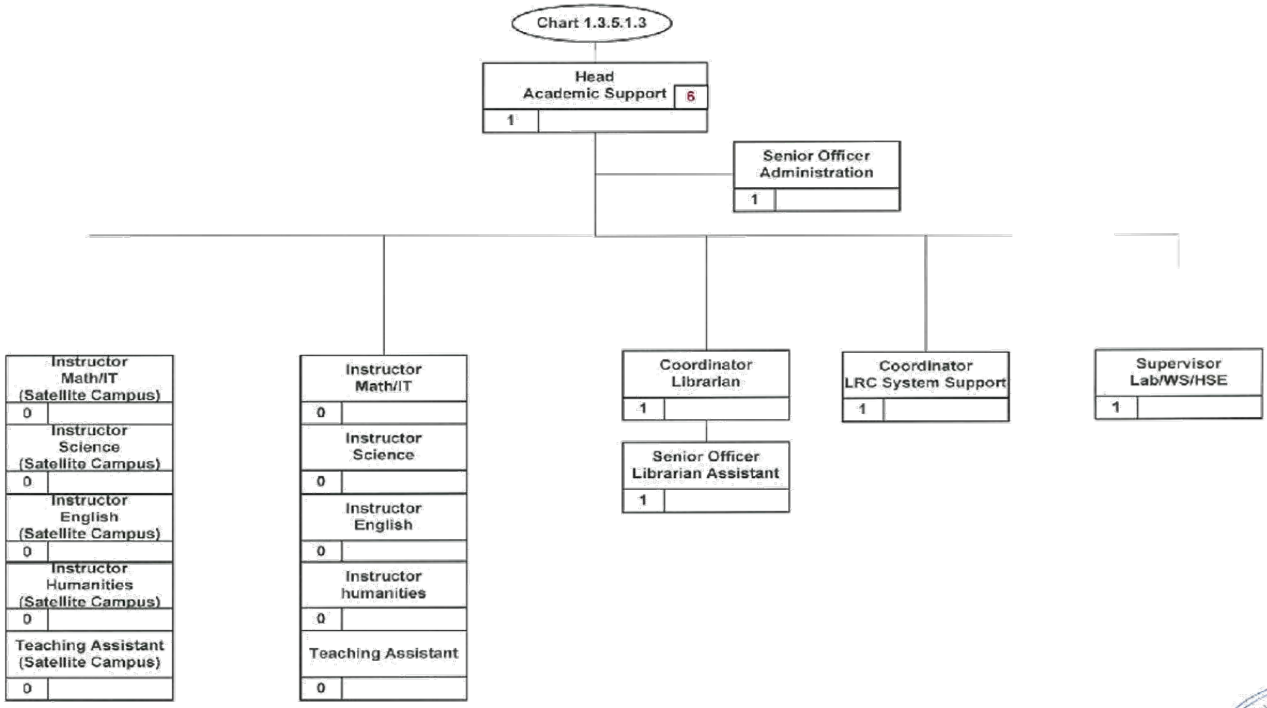
معهد التكنولوجيا التطبيقية
INSTITUTE OF APPLIED TECHNOLOGY
"Emiratization of Technological Careers"

Organization Chart



All Academics positions subject to Student Numbers

December 10, 2012

Chairman, Board of Trustees

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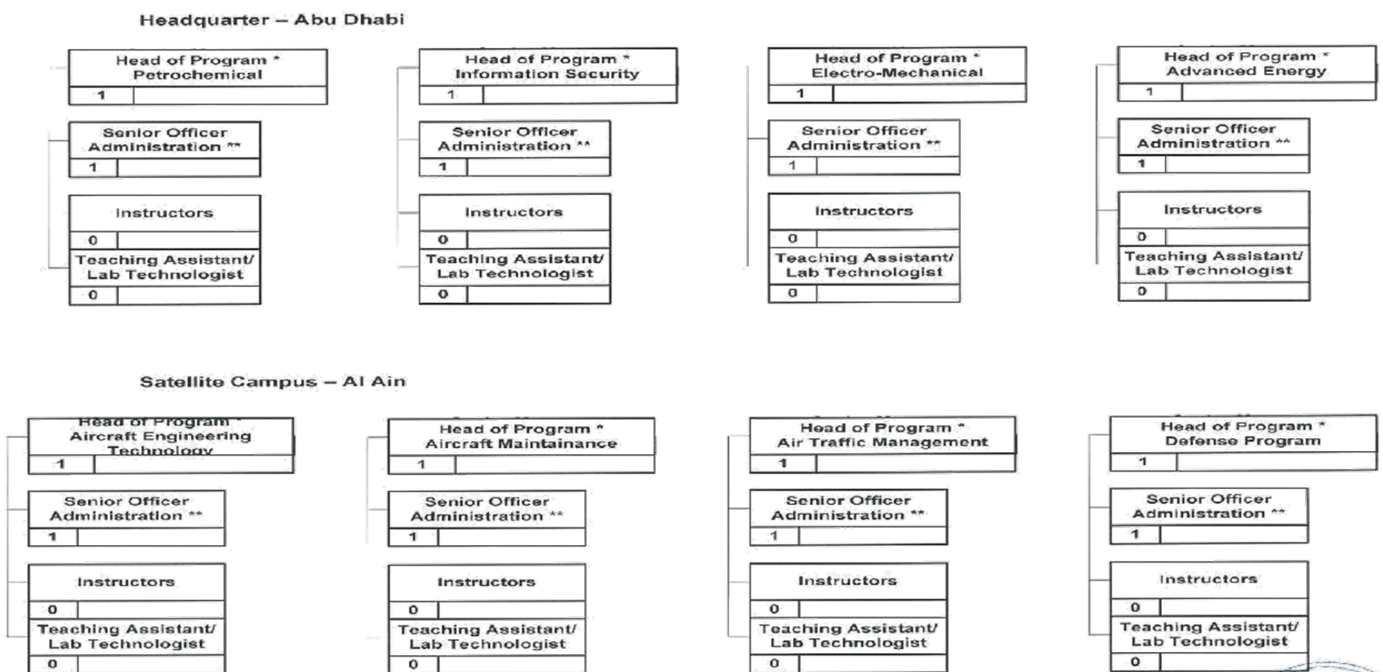
INSTITUTE OF APPLIED TECHNOLOGY
معهد التكنولوجيا التطبيقية
"Emiratization of Technological Careers"

Organization Chart



* Assignment role.
** Filled for programs with 60+ students.
All Academics positions subject to Student Numbers

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