Ain Shams University
Faculty of Engineering

Faculty of Engineering
Ain Shams University

1 St. El Sarayat
Abdo Basha Square
Al Abbassia
Cairo , Egypt

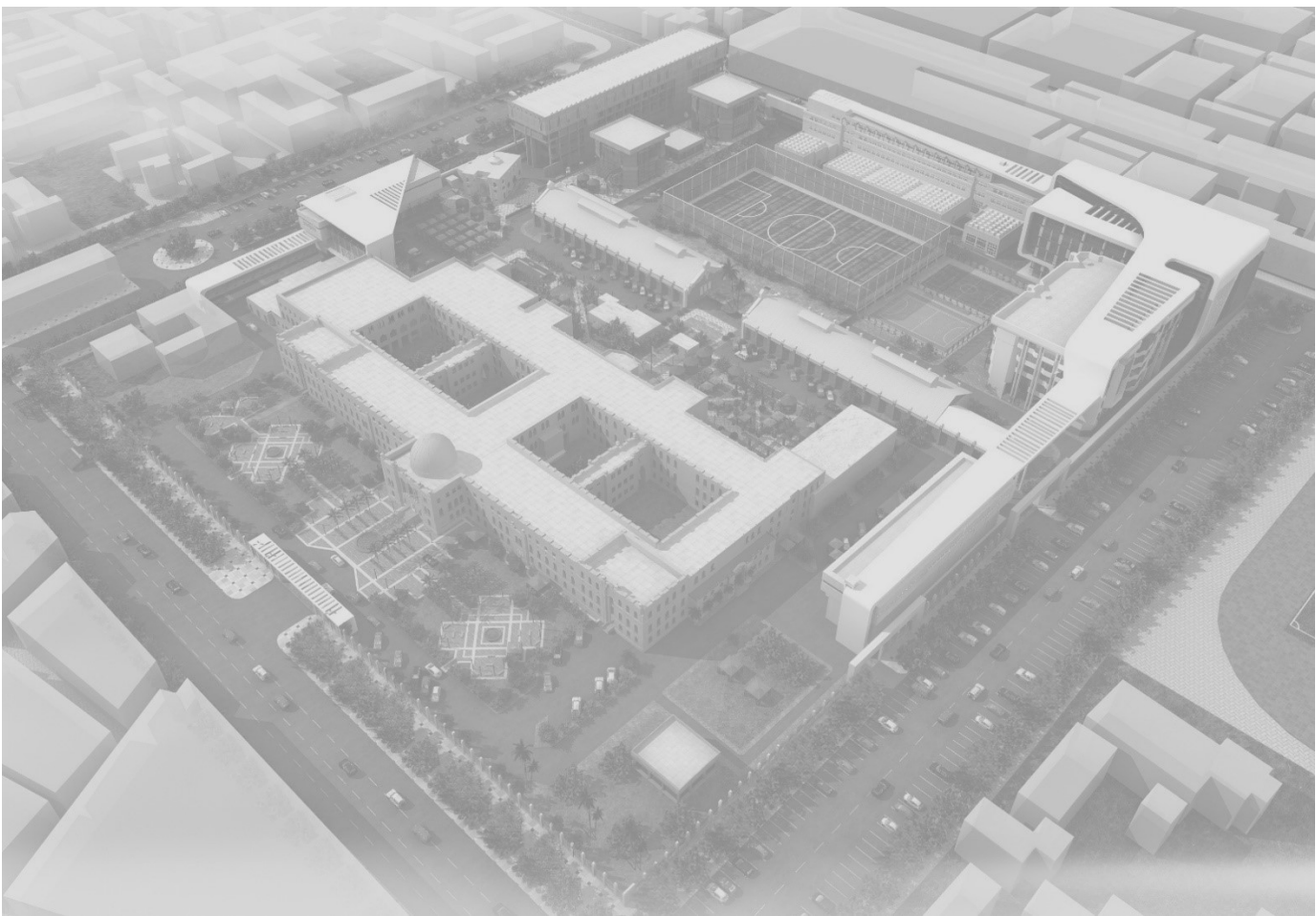
Ain Shams Univeristy
Faculty of Engineering

Mainstream Programs Student Guide

Let the Journey to the Centre of Campus begin..

1 El Sarayat St., Abbasiya, 11517,
Cairo, Egypt

The work in this publication is compiled, designed, and edited by Dr. Gamal A. Ebrahim, Department of Computer and Systems Engineering, and Dr. Ayman Farid, Department of Architecture Engineering, in March 2017. The work is reviewed by Dr. Gamal M. Hashem, Director of Continuous Improvement and Quality Assurance Unit.



Contents

Message from The Dean

Dear Students,

The Faculty of Engineering at Ain Shams University has approximately 14000 students currently enrolled in almost 200 degree programs in four clusters of disciplines: Civil Engineering, Architectural Engineering, Electrical Engineering, and Mechanical Engineering. We are transforming our university-wide pedagogy at every level towards active learning, which means students should make efforts to "discover" their subject of knowledge. They learn how to learn, and this will become an essential methodology after they graduate. We want them to be able to continue life-long learning. The Faculty of Engineering at Ain Shams University takes wide steps towards collaboration with partners around the world that enable the exchange of students and faculty members, joint research, double-degrees, and more. All academic degree programs are highly recognized by their respective professional associations.

Faculty of Engineering has been accredited by the National Authority for Quality Assurance and Accreditation of Education (NAQAAE) since June 2014. Hence, all academic programs follow the National Academic Reference Standards (NARS). We provide the opportunity for our undergraduate students to take a compulsory community services learning module. Most graduate programs are connected with industry practices and real fields of specialization. We try to create a practical learning environment. The Faculty of Engineering at Ain Shams University has to act as and be a role model for global changes in labor market.

Prof. Dr. Mohamed Ayman Ahmed Ashour
Dean of Faculty of Engineering
Ain Shams University

Message from the Vice-Dean for Students' Affairs

Dear Students,

It is my pleasure to introduce to you this guide that we do every possible effort to be concise and descriptive. A lot of accomplishments has been done in the Faculty of Engineering that can be considered as a unique teamwork model that includes every and each entity of the academic process; Faculty Administration, Faculty members, students, and employees share this success story.

As you can see all around the Faculty of Engineering, we take wide steps towards building a world-class academic environment. Additionally, there several undergoing important projects that can realize Faculty of Engineering vision. For example, we are currently updating the academic curriculum since our Engineering fields are dynamic in nature and we always seek to bring to you the state of the art of engineering education.

Field training is another important facet of the development; hence, a huge entity has been established in the Faculty to serve students in field training. Additionally, it works toward finding innovation and creativity skills of the students so that it can help students in career planning. A huge innovation and upgrading to the Faculty infrastructure has been established in the last couple of years. An up to date library has been completely renovated to serve students and Faculty members as well.

Faculty administration puts another huge effort in developing the labs in the Faculty. This important task has many facets, one of them is to increase the lab hours in the curriculum, while another equally imposing task is to upgrade the labs and build new labs. We already started in this direction and we put every possible effort to finalize this project as soon as we can to the way that mainly focus in serving our students. Many other projects are running in the Faculty to build the best teaching environment that we could ever reach. Mainly, to prepare our graduates to be leaders in all fields of engineering so that they can compete in national, reginal, and international levels.

Prof. Dr. Ayman Mohamed Hassan Wahba
Vice-Dean for Students' Affairs
Faculty of Engineering
Ain Shams University

Message from the Director of Continuous Improvement and Quality Assurance Unit

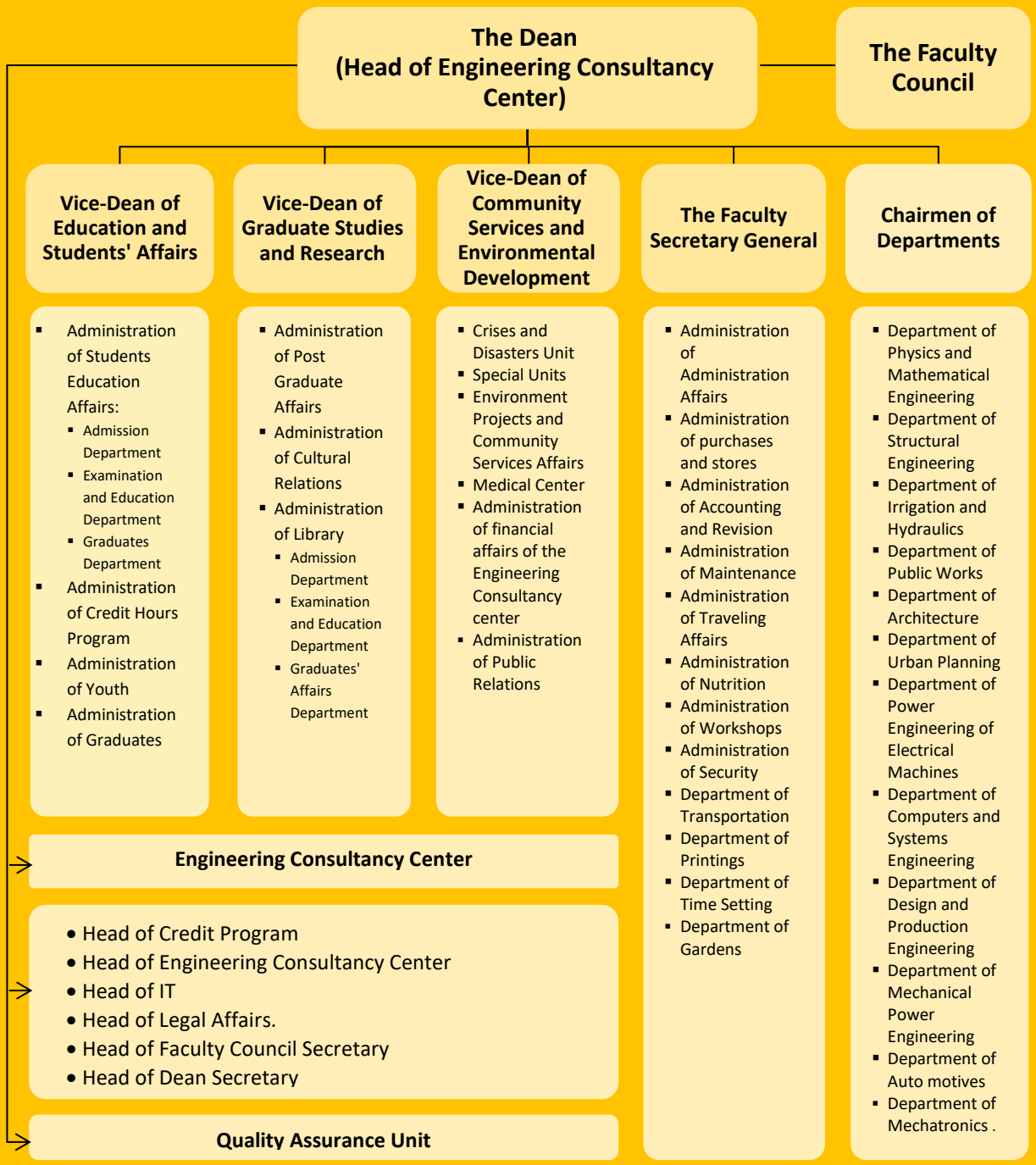
Dear Students,

It is my pleasure to welcome you, all, to the Faculty of Engineering, Ain Shams University. The faculty was accredited from the National Authority of Quality Assurance and Accreditation of Education (NAQAAE) in June 2014. Tremendous effort from all faculty employees were done to be accredited faculty. As the faculty goal is not only to be nationally accredit but also internationally. Hence, ongoing efforts is currently running towards accreditation of selected programs from Accreditation Board for Engineering and Technology (ABET). Additionally, a major effort is running towards improving the faculty international ranking in close cooperation with Quacquarelli Symonds (QS) ranking authority. The role of Continuous Improvement and Quality Assurance unit (CIQAU) is to assure first-class of education.

Nowadays, the higher education systems focus on student-centered learning, also known as learner-centered education. it broadly encompasses methods of teaching that shift the focus of instruction from teacher to student. Student-centered learning aims to develop learner's autonomy and independence by imposing the responsibility for the learning path in the hands of the student. Student-centered instruction focuses on skills and practices that enable life-long learning and independent problem-solving, which are the typical methodologies for engineering graduates.

Associate Prof. Dr. Gamal M. Hashem
Director of CIQAU
Faculty of Engineering
Ain Shams University

The Faculty Administrative Structure



Department Heads

Prof. Dr. Amr Abdelrahman
Chairman of Structural Engineering Department

Prof. Dr. Mohamed El-Tokhy
Chairman of Public Works Engineering Department

Prof. Dr. Nahla Abou El-Atta
Chairman of Irrigation and Hydraulics Engineering Department

Prof. Dr. Hesham Temraz
Chairman of Electrical Power and Machines Engineering Department

Dr. Diaa Khalil
Chairman of Electronics and Electrical Communication Engineering Department

Prof. Dr. Ashraf Salem
Chairman of Computer and Systems Engineering Department

Prof. Dr. Mahmoud Kamal
Chairman of Mechanical Power Engineering Department

Prof. Dr. Hesham Sonbol
Chairman of Design and Production Engineering Department

Prof. Dr. Sherif Hammad
Acting Chairman of Mechatronics Engineering Department

Dr. Ibrahim Omran
Acting Chairman of Automotive Engineering Department

Prof. Dr. Niveen Badra
Chairman of Engineering Physics and Mathematics Department

Prof. Dr. Yasser Mansour
Chairman of Architecture Engineering Department

Prof. Dr. Mohamed Abdelbaky
Chairman of Urban Design and Planning Department

INTRODUCTION

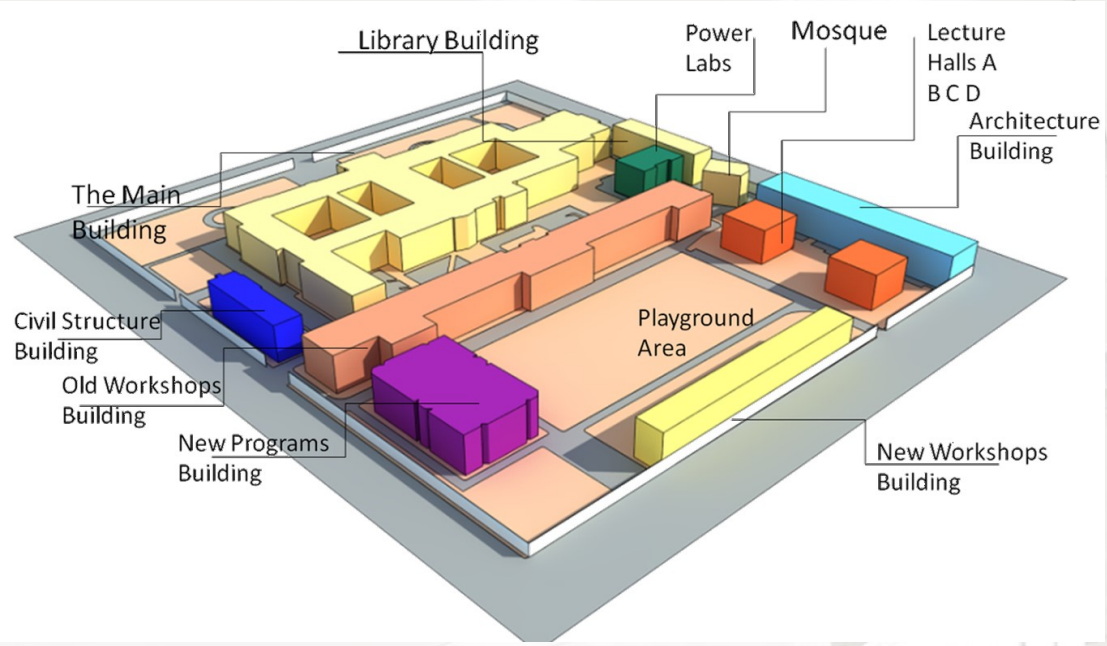
Learning at the Faculty

Ain Shams University
Faculty of Engineering

History

In 1839, the school of technical operation was established by the Egyptian government in Abdu-Basha square, Abbassiya, Cairo. Over the years, this educational landmark evolved to be The School of Applied Engineering, the higher institute of Engineering then finally, the Faculty of Engineering for Ain Shams University.

The Faculty of Engineering introduced numerous number of Egyptian symbols and public figures of sciences and culture; Ministers, Scientists, Pioneers and Entrepreneurs, leaders of multinational companies cooperating in mega projects serving humanity and academic professors. Those who enlightened Egypt and built its future that led the revolution in architecture, civil and industrial fields. the Faculty continues to update its students with the most advanced tools of education and learning processes, to enhance co-operating of professional firms to serve the community, to prepare integrated environment for students to learn more and more.



THE BUILDINGS OF THE FACULTY:

1- **The Main Building:** is a three-story building that is considered to be one of the oldest buildings in the faculty. it was constructed in 1839 with classical architectural style. It hosts the main administration offices like Dean and Vice-Dean offices; in addition to the main theater known as palatine theater.

2- **The Civil building:** is a five stories modern style building that hosts laboratories and civil department staff member rooms.

3- **The Credit-hour Building:** is the newest buildings in the faculty, built in 2004 with postmodern style. it consists of five stories, and contains CHEP main administration.

4- **The Architecture Building:** is a part of three brutalism architecture style buildings that exist on the opposite part of the Credit hour building. the building was constructed between 1969 and 1982. it consists of 5 stories and hosts different laboratories and the staff member rooms. the upper floors of the building are dedicated to the urban and architectural departments with different multipurpose halls.

5- **A, B, C and D Lecture Halls:** are the other part of the brutalism architecture style buildings that exist on the opposite part of the Credit hour building. the buildings were constructed in 1969.

6- **The old workshops building:** is one from the antique and historical buildings of the faculty. it was built according to the classic architecture. it consists of one story- different workshops with a double height structures

7- **The New Workshops building:** it was constructed according to the postmodern architecture. it consists of 5 stories, and contains workshops.

8- **The Library Building:** is a three-story building that hosts the faculty central library. The building location is near too the architecture building and it has a great plaza in front of its entrance.

9- **Power labs**: are complex of power labs dedicated to electrical power department.

Vision

The Faculty of Engineering aims to be one of the best faculties in the region in the field of Engineering education and scientific research; utilizing unique academic programs that satisfy the society needs and encourage sustainable development.

Mission

To build graduates who are capable of complying with the international technology development in all the specialization that cover the national and regional market, and can accomplish scientific and practical researches, through offering the most adequate conditions for the staff members, assistants and student. In addition, the faculty offers modern educational programs in the graduation, post graduate and continuous learning phases, along with constructing consultancy centers and up-to-date laboratories, which contribute to the community service and cover its needs.

Accreditation

In 2014, The Faculty of Engineering was certified by National Authority for Quality Assurance and Accreditation of Education (NAQAAE).

Departments

Engineering, Mathematics and Physics	Civil Engineering	Architecture Engineering	Electrical Engineering	Mechanical Engineering	Credit Hours Engineering Program
Teaching Courses of Mathematics, Mechanics, Physics, Chemistry.	Branches: -Structural Eng. -Public Works -Irrigation and Hydraulics	Branches: - Architecture - Urban Design and Planning	Branches: -Electrical Power and Machines -Electronics and Electrical Communication -Computer and Systems	Branches: -Mechanical Power -Production Eng. -Automotive. -Mechatronics	Branches: -Building Eng. -Materials Eng.-Communication Systems Eng. -Manufacturing Eng. -Energy and Renewable Energy -Computer Engineering and Software Systems - Landscape Architecture -Mechatronics Eng. and Automation

Undergraduate Students

2467 Students	2839 Students	633 Students	1756 Students	1580 Students	3700 Students

Postgraduate Students

Diploma	159 Students
Masters of Science (M.Sc.) & Masters of Engineering (M.Eng.)	4438 Students
Doctorate of Philosophy Ph.D.	500 Students

Staff Member

Professors	253
PhD Staff Member	350
Teaching Assistant	401

2 EXPLORE IDEAS

LEARNING AND EDUCATION POLICY

Admission Requirements

Students eligible to get enrolled in the study in Faculty of Engineering are those with the general certificate of secondary education (Thanaweya Amma), mathematics section, or equivalent, who have been deployed to the Faculty through the Coordination Office, or transferred from other Faculties, in accordance with the rules and conditions established annually by the Supreme Council of Universities.

Educational System

The educational system in mainstream programs is a five-year semester-based programs. All students in certain program must study the same courses during the same semester. Preparatory year is common for all programs, where the students study a set of basic science and basic engineering courses. The student is dismissed from the study if he fails two consecutive times in the preparatory year or three consecutive times in any other year.

The study in mainstream programs is free of from any tuition fees. Only, administrative fees is deployed which is around 65 USD per year in academic year 2016/2017. No other fees is required since the study in totally supported by the government.

Teaching Policy

- **Language**: English language should be used for lecturing, discussions, exams, and all verbal and electronic communications. Use of Arabic language is strictly forbidden even in one-to-one conversation between the instructor and the students.
- **Course Syllabus**: Each course syllabus should contain: course objectives, textbook, outline, material, assessments, grading policy and outcome. Outline should contain sections covered every week with reference to chapters/sections in the textbook. The instructor should give the course syllabus to the students in the first class. The syllabus serves as a contract between the instructor and the students.
- **Textbook**: The instructor is free to select/recommend a textbook but it should be international and available. The textbook information should be provided to the administration office or the unit head before the first class of the course.
- **Attendance**: Attendance is taken in lecture and tutorial classes. It is assigned a percentage based on the grading policy. Students should not be allowed to enter the class after 5 minutes from the scheduled time. No eating, drinking, or mobile use in the class. If the student wants to leave the class for any reason, he will not be allowed to come back to the class. The student's attendance should not be less than 75% during the course. Otherwise, the student should not be allowed to attend the final exam.

- **Assessment**: Assessment of the student composed of a set of activities performed by the student throughout the semester. It depends on the course and the teaching method, but in general, there is a final exam imposed on all courses that has weight of 70% to 72% of the mark. All other course work has the rest of the mark including term-project, assignments, quizzes, midterm and any other activities.
- **Grading System**: Table I shows the letter grades for the courses studied by students.

Table I. Grading System

Grading System	
Percentage	**Grade**
85 % and higher	**Distinct**
75% to less than 85%	**Very Good**
65% to less than 75%	**Good**
50% to less than 65%	**Pass**
Less than 50%	**Fail**

- **Cheating Policy**: If student is caught cheating during the midterm exam or quizzes, he will get zero in this exam. If student is caught cheating one more time, he will fail the course. Cheating during final exams is strictly prohibited and faculty policy will be strictly applied.
- **Office Hours**: For each hour (lectures or tutorials) the instructor should have an office hour. Office hours are determined in the first class and will be posted on the Instructor's office door.
- **Electronic Communication**: The students can send e-mails to the instructors to ask questions or get information.
- **Class Location / Period**: All classes (lectures, tutorials, or labs) should take place in the assigned room and time slot based on the published class schedule.
- **Cancelled Classes**: If a class is cancelled for emergency or any reason, the students should be notified and a compensation class should be arranged with them.
- **Course Outcome**: The learning outcomes are expressed for threshold levels that engineering students are expected to achieve upon graduation. It is anticipated that

many programs may exceed these levels. The instructor should submit the course specifications to fit the program matrix at least.

- **Students' Course Evaluation**: The students will fill-in a course evaluation form at the end of the semester. They will evaluate the instructor delivery, course content, grading and textbook. The unit head of the program will pay unplanned visits to the classroom to evaluate delivery.

- **Passing Courses:** The student must get a minimum of 50% (Pass grade) in order to pass a course. If the student fails more than two courses, he must repeat these courses only in one full year without studying anything else during this year. Student can fail one or two courses and advance to the next year but he must repeat these courses before graduation. The student will get a maximum of Pass grade for the courses when repeating them. Resit exams are arranged for the students who failed one or two courses during the final examination period in the semester that the course is offered. Additionally, resit exams are arranged for the last year students during October or November in the same year.

- **Appeals**: A student can submit an appeal to review his course marks within a week from the grades announcement, and after paying the required fees in accordance with the faculty regulations. In case of general complaints, a committee that includes the course instructor should review the students' marks.

Co-operative Education (Field Training)

Integrating classroom learning and progressive work experience is an educational strategy adopted by mainstream programs. The Faculty gets a set of training opportunities and offer them to the mainstream students. There is a selection policy in which the students with the largest grades have higher priority for the training opportunities. Extra-curricular activities can be also arranged so that the students can make a field visit to acquire certain knowledge for the courses they study. These visits are mutually arranged by the Faculty and the industrial companies in the specialization of the program in which the student enrolled. iHub training facility is established in the faculty, which mainly focus in finding training opportunities to students either inside the faculty or off-campus.

Graduation Requirements

To obtain the Bachelor of Science Degree in Engineering in one of the mainstream academic programs, the student must successfully get at least Pass grade in all courses for the five required by the academic program.

Academic Departments

Faculty of Engineering at Ain Shams University has 13 academic departments. Each department except Physics and Engineering Mathematics offers one undergraduate program with the same name of the department. The academic program offered by certain department represents a branch in the main specialization to which the department belongs. Additionally, some of the courses offered by the department could serve other programs. All courses offered by certain department bear the code of the department. Table II lists the names of these departments and their corresponding codes.

Table III: Main Specializations, Academic Departments, and Their Corresponding Codes

Main Specialization	Department	Department Code
Civil Engineering	Structural Engineering	CES
	Public Works	CEP
	Irrigation and Hydraulics Engineering	CEI
Mechanical Engineering	Mechanical Power Engineering	MEP
	Design and Production Engineering	MDP
	Automotive Engineering	MEA
	Mechatronics Engineering	MCT
Architecture Engineering	Architecture Engineering	ARC
	Urban Planning	UPL
Electrical Engineering	Electrical Power and Machines	EPM
	Electronics and Electrical Communication	ECE
	Computer and Systems Engineering	CSE
Physics and Engineering Mathematics		PHM

Faculty Members and Teaching Assistants

Faculty of Engineering, Ain Shams University has more than 600 Faculty members and more than 400 Teaching Assistants and Demonstrators. Table IV shows the number of Faculty members and teaching assistants assorted by rank. While, Table V shows the number of them in each department.

Table IV: Number of Faculty Members and Teaching Assistants

Rank	Number	%
Faculty Members		
Professor	253	41.69%
Associate Professor	127	21.06%
Assistant Professor	223	36.98%
Teaching Assistants and Demonstrators		
Teaching Assistant	159	36.95%
Demonstrator	242	60.35%

Table V: Number of Faculty Members and Teaching Assistants in Each Department

Department	Professor	Associate Professor	Assistant Professor	Teaching Assistant	Demonstrator
Structural Engineering	48	27	40	30	45
Public Works	27	14	20	15	22
Irrigation and Hydraulics Engineering	22	11	11	7	5
Mechanical Power Engineering	14	10	17	11	15
Design and Production Engineering	21	12	21	13	28
Automotive Engineering	1	1	8	5	8
Mechatronics Engineering	0	0	1	6	14
Architecture Engineering	19	12	17	24	16
Urban Planning	12	6	13	5	18
Electrical Power and Machines	31	15	17	17	14
Electronics and Electrical Communication Engineering	19	3	14	9	28
Computer and Systems Engineering	19	9	13	11	8
Engineering Physics and Mathematics	20	7	31	6	21
Engineering Physics and Mathematics	20	7	31	6	21

Courses Offered by Academic Departments

Each department offers a set of courses that mainly serve the program granted by the department. Additionally, some of these courses serve as required courses in other programs offered by other departments. Moreover, each academic department (except PHM and MCT) offers several elective courses for the program that is offered by the department or to programs offered by other departments. The following tables list the courses offered by each academic department.

The course codes composed of two parts, the department code concentrated with three-digits code. The department code refers to the department that offers the course, while the first digit on the left hand-side of the three-digit code is a number from 0 to 4 (corresponding to preparatory year to fourth year) that represents the year in which this course is studied.

Table VI. Courses Offered by the Department of Structural Engineering

Course Code	Course Name
CES111	Structural Analysis (1)
CES112	Theory of Structures
CES113	Theory of Structures
CES114	Civil Engineering
CES141	Properties & Testing of Materials (1)
CES142	Foundations & Testing of Materials
CES211	Structural Analysis (2)
CES221	Design of Reinforced Concrete Structures (1)
CES222	Concrete Structures
CES241	Properties & Testing of Materials (2)
CES251	Geological & Geotechnical Engineering
CES311	Structural Analysis (3)
CES321	Design of Reinforced Concrete Structures (2)
CES322	Steel Structures
CES331	Steel Structures Design (1)
CES351	Geotechnical Engineering
CES411	Structural Analysis (4)
CES414	New Construction Materials
CES415	The Concept of Using Models in Structural Analysis
CES416	Earthquake Engineering
CES417	The Finite Element Method
CES421	Design of Reinforced Concrete Structures (3)
CES425	Special Concrete Types
CES426	Masonry Structures
CES427	Advanced Design of Reinforced Concrete Bridges
CES428	Concrete Durability
CES431	Steel Structures Design (2)
CES432	Design of Civil Structures
CES435	Steel Plated Structures
CES436	Space Steel Structures

CES437	Behaviour & Construction of Steel Structures
CES438	Steel Structures Design (3)
CES441	Repair & Strengthening of Structures
CES451	Foundation Engineering
CES452	Foundation Engineering
CES453	Foundation Engineering
CES455	Soils & Rocks in Dry Regions
CES456	Soil Improvement
CES457	Geotechnical Analysis Using Computer
CES461	Management of Project Resources
CES462	Construction Technique for Concrete Structures
CES499	Project

Table VII. Courses Offered by the Department of Public Works

Course Code	Course Name
CEP111	Plane Surveying
CEP112	Survey
CEP211	Topographical Surveying
CEP311	Engineering Surveying
CEP331	Traffic Engineering
CEP341	Sanitary Engineering (1)
CEP361	Transportation Planning & Traffic Engineering
CEP364	Transport Economics
CEP371	Highways & Airports Engineering
CEP372	Highway & Traffic Engineering
CEP411	Geodetic Survey
CEP414	Hydrographic Survey & Harbour Engineering
CEP421	Geographic Information System GIS
CEP422	Remote Sensing
CEP423	Photogrammetric Surveying
CEP424	Geographic Information System GIS
CEP431	Traffic Management Systems
CEP441	Infrastructure & Utilities
CEP442	Water Purification
CEP443	Sanitary Engineering (2)
CEP444	Characteristics of Wastewater & Industrial Wastes
CEP445	Treatment of Water for Industrial Purposes
CEP451	Environmental Engineering
CEP452	Environmental Engineering
CEP461	Transportation Planning
CEP471	Highways Construction Technology
CEP472	Airport Engineering
CEP473	Maintenance of Roads & Airports
CEP481	Railway Engineering (1)
CEP482	Railway Engineering
CEP483	Railway Engineering (2)
CEP499	Project

Table VIII. Courses Offered by the Department of Irrigation and Hydraulics

Course Code	Course Name
CEI111	Civil Drawing
CEI121	Fluid Mechanics
CEI211	Irrigation & Drainage Engineering
CEI231	Hydraulics
CEI311	Design of Irrigation Works (1)
CEI411	Modern Irrigation Systems
CEI431	Networks Hydraulics
CEI432	Environmental Hydrology
CEI433	Pump Stations Engineering
CEI434	Hydraulic Engineering
CEI435	Environmental Hydraulics
CEI441	Design of Irrigation Works (2)
CEI442	Water Structures Design
CEI451	Harbour, Navigation & Shore Engineering
CEI453	Coastal Environment Engineering
CEI454	Inland Navigation
CEI461	Ground Water Hydrology
CEI471	Water Resources Engineering
CEI472	Management & Maintenance of Irrigation Projects
CEI473	Environmental Impact Assessment for Water Projects
CEI474	Water Management
CEI481	Dams Engineering
CEI499	Project

Table IX. Courses Offered by the Department of Mechanical Power

Course Code	Course Name
MEP111	Thermodynamics (1)
MEP211	Mechanical Engineering
MEP212	Thermodynamics (2)
MEP221	Heat & Mass Transfer
MEP231	Fluid Dynamics
MEP271	Technical Installations
MEP281	Measurements
MEP331	Turbomachinery (1)
MEP351	Power Stations
MEP352	Renewable Energy
MEP361	Combustion
MEP362	Internal Combustion Engines (1)
MEP371	Refrigeration & Air Conditioning
MEP381	Automatic Control (1)
MEP382	Design of Applied Measurement Systems
MEP421	Pipelines Networks
MEP431	Turbomachinery (2)
MEP451	Power Stations
MEP461	Internal Combustion Engines (2)
MEP471	Refrigeration & Air Conditioning

Table X. Courses Offered by the Department of Design and Production

Course Code	Course Name
MDP111	Manufacturing Technology (1)
MDP131	Materials Engineering & Testing
MDP161	Machine Drawing
MDP211	Manufacturing Technology (2)
MDP221	Stress Analysis
MDP251	Mechanics of Machines (1)
MDP252	Machine Construction
MDP321	Manufacturing Technology (3)
MDP322	Work Study
MDP323	Quality Systems
MDP324	Reliability Engineering
MDP325	Quality of Service Industries
MDP331	Engineering Materials (Advanced)
MDP341	Measuring Instruments
MDP351	Mechanical Vibrations & Automatic Control
MDP352	Mechanics of Machines (2)
MDP353	Automatic Control
MDP354	Mechanics of Machines (2)
MDP355	Introduction To Mechatronics
MDP357	System's Modelling & Simulation
MDP358	Automatic Control
MDP359	Mechatronics (1)
MDP361	Machine Design
MDP362	Machine Construction & Design of Mechanical Equipment
MDP363	Introduction to Computer-Aided Design & Manufacturing
MDP371	Theory of Metal Cutting
MDP372	Machines of Metal Cutting & Forming
MDP381	Theory of Metal Forming
MDP421	Industrial Organization & Quality Control
MDP422	Quality Control
MDP423	Facilities Planning
MDP424	Operations Management
MDP425	Introduction to Industrial Organization
MDP426	Introduction in Quality Systems
MDP427	Computer Applications in Industry
MDP428	Ergonomics
MDP431	Materials & Process Selection
MDP441	Measurement
MDP443	Systems Modelling
MDP444	Quality Control
MDP451	Tool Design
MDP452	Pneumatic & Hydraulic Control
MDP453	Robotics
MDP454	Mechatronics (2)
MDP455	Operations Research
MDP471	Numerical Control Machines
MDP499	Project

Table XI. Courses Offered by the Department of Automotive Engineering

Course Code	Course Name
MEA311	Automotive Engineering (1)
MEA312	Pneumatic & Hydraulic Systems
MEA321	Automotive Design (1)
MEA322	Aerodynamics of Road Vehicles
MEA341	Automotive Engines & Fuel Systems
MEA361	Automotive Measurements
MEA371	Pollution from Vehicles
MEA411	Automotive Theory (2)
MEA421	Automotive Design (2)
MEA431	Maintenance Engineering & Garage Planning
MEA441	Analysis of Car Accidents
MEA451	Vehicle Automatic Control Systems
MEA452	Brake Systems
MEA453	Simulation of Vehicle Systems
MEA461	Automotive of Vehicle Systems
MEA471	Vehicle Manufacture
MEA499	Project

Table XII. Courses Offered by the Department of Urban Design and

Course Code	Course Name
UPL241	Urban Landscaping
UPL251	Theories & History of Planning
UPL311	Urban Design (1)
UPL312	Urban Design
UPL321	Urban Planning
UPL322	Town Planning & Housing
UPL331	Design & Development of Rural Communities
UPL332	Computer Applications in Planning
UPL333	Regional Urbanization
UPL341	Landscape Architecture
UPL351	Environmental Studies
UPL361	Urban Sociology
UPL371	Economic Geography
UPL412	Urban Design (2)
UPL413	Urban Renewal
UPL421	City Management
UPL431	Urban Planning
UPL432	Sustainable Urban Development
UPL433	Rural Development
UPL434	Site Analysis Studies
UPL435	Report Preparation for The Graduation Project
UPL436	Presentation Techniques of Urban Projects
UPL453	Environmental Planning & Design
UPL461	Urban Sociology
UPL462	Human Settlements
UPL471	Urban Economy
UPL472	Feasibility Studies
UPL499	Project

Table XIII. Courses Offered by the Department of Architecture Engineering

Course Code	Course Name
ARC111	Visual Design & Design Fundamentals
ARC112	Architectural Drawing & Representation Techniques
ARC113	Architectural Design (1)
ARC121	Theory of Architecture (1)
ARC131	History of Architecture (1)
ARC151	Building Construction
ARC161	Environmental Design & Control
ARC211	Architectural Engineering
ARC212	Architectural Design (2)
ARC221	Theory of Architecture (2)
ARC231	History of Architecture (2)
ARC241	Computer Applications (1)
ARC251	Building Construction & Principles of Working Drawings
ARC261	Acoustics & Artificial Lighting
ARC311	Architectural Design (3)
ARC312	Architectural Design (4)
ARC313	Spatial Composition & Aesthetics in Architecture
ARC314	Architectural Rendering
ARC315	Interior Design
ARC321	Theory of Architecture (3)
ARC322	Theory of Architecture (4)
ARC324	Architectural Criticism & Project Evaluation
ARC341	Computer Applications (2)
ARC351	Working Drawings (1)
ARC352	Specifications & Quantity
ARC361	Environmental Design & Energy Conservation
ARC411	Architectural Design (4)
ARC412	Architectural Design (5)
ARC413	Housing in Developing Countries
ARC421	Humanities in Architecture
ARC422	Contemporary Vernacular Architecture
ARC451	Working Drawings (2)
ARC452	Advanced Technical Installations
ARC461	Housing
ARC471	Feasibility Studies & Project Management
ARC472	Professional Practice & Legislation
ARC481	Urban & Architectural Heritage
ARC491	Project Studies & Technical Report
ARC499	Project

Table XIV. Courses Offered by the Department of Electrical Power and

Course Code	Course Name
EPM111	Electrical & Mechanical Engineering
EPM112	Electrical & Electronic Engineering
EPM113	Electrical Circuits
EPM171	Electrical Measurements & Measuring Instruments
EPM211	Electromagnetic Fields
EPM212	Electrical Engineering
EPM221	Energy Conversion
EPM271	Electrical Testing (1)
EPM321	Electrical Machines (1)
EPM322	Electrical Machines (2)
EPM331	Transmission & Distribution of Electrical Energy
EPM332	Power System Analysis (1)
EPM333	Economics of Generation & Operation
EPM334	Electrical Power Engineering
EPM335	Utilization of Electrical Energy
EPM341	High Voltage Engineering
EPM351	Power Electronics (1)
EPM352	Industrial Electronics & Applications
EPM361	Power System Protection
EPM371	Electrical Testing (2)
EPM381	Automatic Control Systems
EPM421	Electrical Machines (3)
EPM422	Electrical Machines (4)
EPM423	Generalized Theory of Electrical Machines
EPM424	Special Electrical Machines
EPM431	Electric Power System Analysis (2)
EPM432	Planning of Electrical Networks
EPM441	Over-Voltages in Power Systems
EPM442	High Voltage Applications
EPM451	Power Electronics (2)
EPM452	Power Electronics
EPM461	Protection & Switchgear in Electrical Power Systems
EPM462	Applications in Protection & Switchgear Systems
EPM471	Electrical Testing (3)
EPM481	Electric Drives
EPM482	Advanced Control of Power Systems
EPM483	Computer Applications in Electric Power Engineering
EPM499	Project

Table XV. Courses Offered by the Department of Electronics and Electrical Communication Engineering

Course Code	Course Name
ECE131	Electronic Engineering
ECE241	Electronic Circuits (1)
ECE251	Signal Processing
ECE331	Electronic Devices
ECE332	Microprocessors & Applications
ECE333	Optical Electronics
ECE334	Electronic Circuits
ECE335	Electronic Engineering
ECE341	Electronic Circuits (2)
ECE342	Digital Circuits
ECE351	Communication Systems (1)
ECE352	Digital Signal Processing
ECE353	Data Communication Systems
ECE361	Electromagnetic Waves
ECE362	Applications of Electromagnetic Waves
ECE371	Electronic Measurements & Testing (1)
ECE421	Electronics For Instrumentation
ECE431	Microwave Electronic Engineering
ECE432	Selected Topics in Electronics
ECE451	Communication Systems (2)
ECE452	Telecommunication Networks
ECE453	Satellite Communications
ECE454	Optical Communication Systems
ECE455	Mobile Communications
ECE456	Selected Topics in Communication Systems
ECE457	Information Theory
ECE461	Antennas
ECE462	Selected Topics in Microwave Engineering
ECE471	Electronic Measurements & Testing (2)
ECE481	Integrated Circuits
ECE482	Integrated Circuits Technology
ECE483	Application Specific Integrated Circuits (ASICS)
ECE484	Analog Integrated Circuit Design
ECE485	Integrated Circuits Applications
ECE499	Project

Table XVI. Courses Offered by the Department of Computer and Systems Engineering

Course Code	Course Name
CSE121	Computers Programming
CSE211	Computer Organization (1)
CSE241	Logic Circuits
CSE271	Systems Dynamics & Control Components
CSE311	Computer Organization (2)
CSE312	Microprocessor Based Systems
CSE313	Microprocessor & Applications in Power Systems
CSE314	Logic Design
CSE315	Computer Organization

CSE321	Software Engineering
CSE322	Operating Systems
CSE323	Programming with Data Structures
CSE324	Computer Programming
CSE351	Electrical Testing (2)
CSE371	Control Systems (1)
CSE372	Control Systems (2)
CSE411	Distributed Computer Systems
CSE412	Selected Topics in Computer Engineering
CSE413	Microprocessor Based Systems
CSE421	Database Systems
CSE422	Systems Software
CSE431	Computer Networks
CSE432	Computer Security
CSE433	Local Area Networks
CSE434	Computer Networks
CSE441	Embedded Computer Systems
CSE442	Computer Interfacing
CSE451	Electrical Testing (3)
CSE461	Information Systems
CSE462	Biomedical Engineering
CSE463	Neural Networks
CSE464	Pattern Recognition & Image Processing
CSE465	Selected Topics in Systems Engineering
CSE466	Real Time Systems
CSE467	Modelling & Simulation
CSE468	Image Processing
CSE469	Expert Systems
CSE471	Computer Controlled Systems
CSE472	Robot Systems
CSE473	Digital Control
CSE474	Industrial Control
CSE475	Advanced Control Systems
CSE481	Artificial Intelligence
CSE482	Expert Systems
CSE483	Intelligent Control Systems
CSE499	Project

Table XVII. Courses Offered by the Department of Physics and Engineering Mathematics

Course Code	Course Name
PHM011	Mathematics (1)
PHM021	Physics (1)
PHM031	Mechanics (1)
PHM041	Chemistry
PHM111	Mathematics (2)
PHM112	Mathematics (2)
PHM121	Physics (2)
PHM122	Physics (2)
PHM131	Mechanics (2)
PHM132	Mechanics (2)
PHM211	Mathematics (3)

Curriculum

Mainstream programs are semester-based programs, which means all students study the same set of courses in the semester. Except for the set of elective courses that is offered in the third and/or fourth year depending on the academic program in which the student is enrolled. There is a preparatory year that all enrolled student must study, and the courses in this year are common to all programs. They are mainly basic science and engineering courses (Mathematics, Physics, Chemistry, Mechanics, Engineering Drawing … etc). The study in any academic program composed of a set of University requirements, Faculty requirements, general specialization requirements, and specific specialization requirements. University requirements are a set of humanities courses that are imposed by Ain Shams University to all its students. Meanwhile, Faculty requirements are the set of basic science and engineering courses that mainly depend on the academic program in which the student is enrolled. The specialization requirements are the set of courses required by the academic program. Some of the courses in the specialization requirements are elective courses.

• University Requirements (Humanities)

All students must study the University requirements, which represent a set of compulsory courses of humanities, social sciences, and general culture courses. These courses do not follow the coding method utilized in coding the rest of courses in the curriculum. Their course code always starts with HUM, and because some of them are taught in different years for the different programs, then, the year digit is set to "x". The two remaining digits represent a serial number. Table XVIII lists the University requirements courses that must be studied by all students in all programs.

Table XVIII. University Requirements for All Academic Programs

Course Code	Course Name
HUMx11	Technical English Language
HUMx12	Technical Report Writing
HUMx21	Management & Marketing
HUMx31	Engineering Economy
HUMx32	Project Management
HUMx41	Legislations & Contracts
HUMx42	Environmental Impact of Projects

- **Faculty Requirements**

The student must study a set of compulsory courses set by the Faculty of Engineering that represent the Faculty requirements. This set of courses consists of basic science and engineering courses. These courses must be studied by all students and the courses that should be studied by the student depend on the program in which the student is enrolled.

- **Basic Science Courses:** The list of basic science courses studied by the student depends on his program according to Table XIX.

Table XIX. Faculty Requirements – Basic Science Courses

Course Code	Course Name	Program
PHM011	Mathematics (1)	All Programs
PHM021	Physics (1)	All Programs
PHM031	Mechanics (1)	All Programs
PHM041	Chemistry	All Programs
PHM111	Mathematics (2)	• Structural Engineering • Public Works • Irrigation and Hydraulics Engineering
PHM112	Mathematics (2)	• Electrical Power and Machines Engineering • Electronics and Electrical Communication Engineering • Computer and Systems Engineering • Mechanical Power Engineering • Production Engineering • Automotive Engineering • Mechatronics Engineering
PHM121	Physics (2)	• Electrical Power and Machines Engineering • Electronics and Electrical Communication Engineering • Computer and Systems Engineering
PHM122	Physics (2)	• Mechanical Power Engineering • Production Engineering • Automotive Engineering • Mechatronics Engineering
PHM131	Mechanics (2)	• Electrical Power and Machines Engineering • Electronics and Electrical Communication Engineering • Computer and Systems Engineering
PHM132	Mechanics (2)	• Mechanical Power Engineering • Production Engineering • Automotive Engineering • Mechatronics Engineering
PHM211	Mathematics (3)	• Electrical Power and Machines Engineering • Electronics and Electrical Communication Engineering • Computer and Systems Engineering

- **Basic Engineering Courses:** All students must study the set of basic engineering courses shown in Table XX irrespective of the program in which they are enrolled.

Table XX. Faculty Requirements – Basic Engineering Courses

Course Code	Course Name
CSE011	Computer Technology
MDP021	Engineering Drawing & Projection
MDP022	Production Technology & Engineering History

3 DIG DEEPER

ACADEMIC PROGRAMS IN DETAILS

As discussed earlier, Faculty of Engineering, Ain Shams University has four main specialization; Civil Engineering, Architecture Engineering, Electrical Engineering, and Mechanical Engineering. Each of these specialization is sub-divided into specific specializations. Both main specialization and specific specialization require the student to study a set of courses in addition to the university and faculty requirements to earn his Bachelor degree. Faculty of Engineering has four main specializations in the mainstream undergraduate level:

- Civil Engineering
- Architecture Engineering
- Electrical Engineering
- Mechanical Engineering

Civil Engineering

Civil Engineering main specialization has three programs: Structure, Public Works, and Irrigation and Hydraulics. All Civil Engineering students must study the courses listed in Table XXI that represent the general specialization courses in addition to specific courses that are program-specific as mentioned earlier.

Table XXI. Civil Engineering: General Specialization Courses

Course Code	Course Name
CEI111	Civil Drawing
CEP111	Plane Surveying
CES111	Structural Analysis (1)
EPM111	Electrical & Mechanical Engineering
CEI121	Fluid Mechanics
CES141	Properties & Testing of Materials (1)
ARC211	Architectural Engineering
CEI211	Irrigation & Drainage Engineering
CEP211	Topographical Surveying
CES211	Structural Analysis (2)
CES221	Design of Reinforced Concrete Structures (1)
CEI231	Hydraulics
CES241	Properties & Testing of Materials (2)
CES251	Geological & Geotechnical Engineering
CEI311	Design of Irrigation Works (1)
CEP311	Engineering Surveying
CES311	Structural Analysis (3)
CES321	Design of Reinforced Concrete Structures (2)
CES331	Steel Structures Design (1)
CEP341	Sanitary Engineering (1)
CES351	Geotechnical Engineering
CEP361	Transportation Planning & Traffic Engineering
CEP371	Highways & Airports Engineering

Structural Engineering Program

The labs serve this program also provide consultancy services industrial sectors for maintaining high standards in structural engineering field. The vision of this program is to build a vibrant learning environment founded on value-based academic principles, wherein all involved shall contribute effectively and efficiently. The courses are designed to lay emphasis on various specializations of structural engineering.

- Specific Specialization Courses and Technical Electives

Table II shows the specific specialization courses required by this program, while table III shows the set of electives courses that the student needs to study four of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

Table XXII. Civil Engineering: Structural Engineering Specific Specialization Courses

Course Code	Course Name
CES411	Structural Analysis (4)
CES421	Design of Reinforced Concrete Structures (3)
CES431	Steel Structures Design (2)
CES441	Repair & Strengthening of Structures
CES451	Foundation Engineering
CES499	Project

Table XXIII. Civil Engineering: Structural Engineering Electives Courses

Course Code	Course Name
CES414	New Construction Materials
CES415	The Concept of Using Models in Structural Analysis
CES416	Earthquake Engineering
CES417	The Finite Element Method
CES425	Special Concrete Types
CES426	Masonry Structures
CES427	Advanced Design of Reinforced Concrete Bridges
CES428	Concrete Durability
CES435	Steel Plated Structures
CES436	Space Steel Structures
CES437	Behaviour & Construction of Steel Structures
CES455	Soils & Rocks in Dry Regions
CES456	Soil Improvement
CES457	Geotechnical Analysis Using Computer
CES461	Management of Project Resources

- **Academic Specialization**

Based on the career prospects, the courses are planned with our experienced faculty members. The courses and curriculum are modified regularly to meet the standards of reputed foreign universities and to cope up with recent developments, the curriculum mainly covers the following topics:

- Structural and Stress Analysis
- Theory of Structures
- Reinforced Concrete Design
- Structural Steel Design
- Earthquake Engineering
- Geotechnical Engineering
- Properties and Testing of materials
- Construction Management

- Career Opportunities

The graduate of this program has various job opportunities either in design or in construction field. In design environment, a Structural Engineer will typically be in the employment of a consulting engineering practice in an office environment preparing the plans and specifications for structures as buildings, towers, stadia and bridges. On the other hand, in the construction field, the Structural Engineer will typically work for a civil engineering contractor supervising the erection of the structure concerned.

- Labs

The department of structural engineering has well-equipped labs in the specialized areas with all modern equipment to cater the needs of undergraduate and postgraduate students. The available labs in the department are:

- **Material Testing Lab**
- **Structural Analysis Lab**
- **Reinforced Concrete Testing Lab**
- **Steel Testing Lab**
- **Geotechnical Lab**

Public Works Programs

The Public Works program is one of the oldest programs in the Faculty of Engineering, Ain Shams University, and indeed is one of the oldest in this specialty in Egyptian universities. The vision of this program is to be one of the best academic programs to be acclaimed leadership regionally and internationally in civil engineering education and research through unique academic programs that meet the needs of the community and contribute to sustainable development disciplines**.**

The mission of the department hosting the program is to produce comprehensively prepared and innovative graduates who are able to interact with the challenges created by the global economy in different civil engineering disciplines. These disciplines are established to cover the requirements of the society in terms of governmental authorities, public sectors, and private sectors. The department offers programs at the undergraduate, graduate, and professional levels as well as continuing education programs that help participants to acquire updated knowledge. It also provides research and consultancy in different engineering fields to serve the requirements of all sectors of the society.

- Specific Specialization Courses and Technical Electives

Table IV shows the specific specialization courses required by this program, while table V shows the set of electives courses that the student needs to study four of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

Table XXIV. Civil Engineering: Public Works Specific Specialization

Course Code	Course Name
CEP414	Hydrographic Survey & Harbour Engineering
CEP421	Geographic Information System GIS
CES432	Design of Civil Structures
CES453	Foundation Engineering
CEP481	Railway Engineering (1)
CEP499	Project

Table XXV. Civil Engineering: Public Works Electives Courses

Course Code	Course Name
CEP411	Geodetic Survey
CEP422	Remote Sensing
CEP423	Photogrammetric Surveying
CEP431	Traffic Management Systems
CEP443	Sanitary Engineering (2)
CEP444	Characteristics of Wastewater & Industrial Wastes

CEP445	Treatment of Water for Industrial Purposes
CEP451	Environmental Engineering
CEP461	Transportation Planning
CEP471	Highways Construction Technology
CEP472	Airport Engineering
CEP473	Maintenance of Roads & Airports
CEP483	Railway Engineering (2)

- ## Career Opportunities

Graduates of this program have a variety of opportunities to work in several fields such as:

- Consultancy offices and contracting companies in the areas of: building, surveying, water and sewage networks, road construction and railways, transportation planning and traffic engineering.
- Ministry of Housing, Utilities, and Urban Communities.
- Ministry of Transport
- Ministry of Environmental Affairs
- Environmental safety

- ## Labs

Surveying Labs: The department has a number of the latest and advanced labs for surveying and measuring instruments supported by the computing, plotting, and digitizing facilities.

Sanitary Engineering Lab: The lab contains all the latest equipments in the fields of water analysis and the measurement of the chemical components for different types of water and liquids to achieve the best treatment and to save the health of man and environment.

Highway Engineering Lab: The lab is equipped with the latest and most modern testing facilities to perform experiments for pavement materials. The lab plays a major role in conducting experiments for the quality control of pavement materials and highway construction.

Transportation Engineering and Traffic Lab: The lab is equipped with a number of instruments for traffic survey and classification. Video cameras, colored TV, and video recorders for recording different traffic conditions at road intersections are also available. The lab is equipped with computers and supporting software specialized in transportation planning and traffic analysis.

Irrigation of Hydraulics Engineering

This program handles a set of main topics in four academic years (in addition to the preparatory year): civil drawing, fluid mechanics, irrigation and drainage systems, hydraulics, design of irrigation structures, groundwater hydrology, environmental hydrology, harbor, shore engineering, modern irrigation systems, water resources engineering, pump stations, dams, environmental impact assessment for water projects, and water management.

The mission of the irrigation and hydraulics program is to develop technical expertise capable of understanding the physical environment related to water sciences and its application. It aims to develop well-educated civil engineers with a special expertise in water-related engineering projects. The program also aims to prepare its graduates to appreciate sustainable integrated water systems and environment-related issues. This will support the development of talented engineers who can meet the present and future challenges.

- Specific Specialization Courses and Technical Electives

Table IV shows the specific specialization courses required by this program, while table V shows the set of electives courses that the student needs to study four of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

Table XXVI. Civil Engineering: Irrigation and Hydraulics Engineering Specific Specialization

Course Code	Course Name
CEI431	Networks Hydraulics
CEI432	Environmental Hydrology
CEI441	Design of Irrigation Works (2)
CEI442	Water Structures Design
CEI451	Harbour, Navigation & Shore Engineering
CES452	Foundation Engineering
CEI499	Project

Table XXVII. Civil Engineering: Irrigation and Hydraulics Engineering Elective

Course Code	Course Name
CEI411	Modern Irrigation Systems
CEP424	Geographic Information System GIS
CEI433	Pump Stations Engineering
CEI434	Hydraulic Engineering
CEI435	Environmental Hydraulics
CES438	Steel Structures Design (3)
CEP442	Water Purification
CEI453	Coastal Environment Engineering

CEI454	Inland Navigation
CEI461	Ground Water Hydrology
CEI471	Water Resources Engineering
CEI472	Management & Maintenance of Irrigation Projects
CEI473	Environmental Impact Assessment for Water Projects
CEI474	Water Management
CEI481	Dams Engineering
CEP482	Railway Engineering

- Career Opportunities

The graduates of this program have a great job opportunity to lead all sustainable water-related projects, including improving Egypt's water resources, implementing Egypt's ongoing massive infrastructure projects, securing water supplies, upgrading Egypt's irrigation systems, developing the needed ports, saving coastal and marine environment, protecting water sources against pollution, and designing the adequate structures for protection against the dangers of unexpected floods, storms, and wave actions. Many governmental authorities can employ our graduates such as

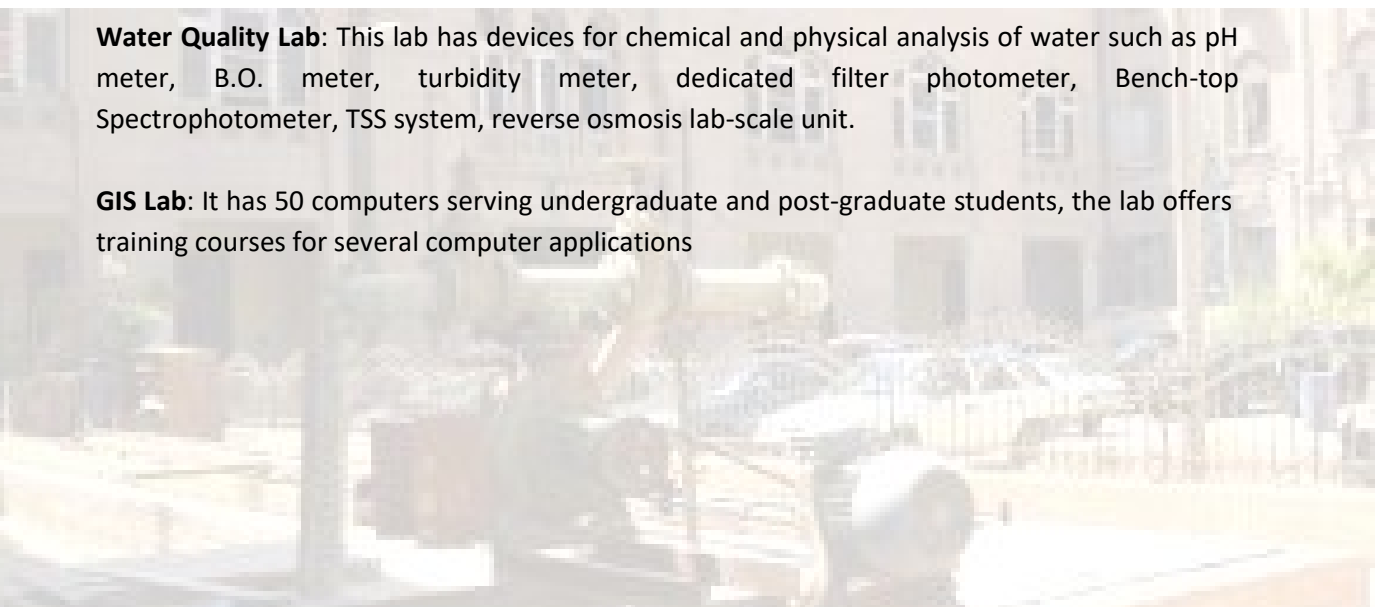
- Ministry of Water Resources and Irrigation
- Ministry of Housing, Utilities, and Urban Communities.
- Ministry of Environmental Affairs, the Holding Company for Water and Wastewater, etc. The private sector also attracts many graduates to do design and execution works inside and outside Egypt.

- Labs

Undergraduate Lab: It hosts a set of equipments that used in experiments for hydraulic properties, open channels, Bernoulli's applications, flow through pipes, pump performance.

Water Quality Lab: This lab has devices for chemical and physical analysis of water such as pH meter, B.O. meter, turbidity meter, dedicated filter photometer, Bench-top Spectrophotometer, TSS system, reverse osmosis lab-scale unit.

GIS Lab: It has 50 computers serving undergraduate and post-graduate students, the lab offers training courses for several computer applications



Mechanical Engineering

As discussed earlier, Mechanical Engineering has four academic programs:

- Mechanical Power
- Production
- Automotive
- Mechatronics

All Mechanical Engineering students must study the following courses of general specialization courses in addition to specific courses that are program-specific.

Table XXVI. Civil Engineering: Irrigation and Hydraulics Engineering Specific Specialization

Course Code	Course Name
MDP111	Manufacturing Technology (1)
MEP111	Thermodynamics (1)
CES112	Theory of Structures
EPM112	Electrical & Electronic Engineering
MDP131	Materials Engineering & Testing
MDP161	Machine Drawing
MDP211	Manufacturing Technology (2)
EPM212	Electrical Engineering
MEP212	Thermodynamics (2)
MDP221	Stress Analysis
MEP221	Heat & Mass Transfer
MEP231	Fluid Dynamics
MDP251	Mechanics of Machines (1)
MDP252	Machine Construction
MEP281	Measurements

Mechanical Power Engineering Program

Mechanical engineers should be curious about how things are made and work. Mechanical engineering covers the design, analysis, testing, and manufacturing of products that are used in every aspect of modern society. Mechanical engineers conceive, plan, design, and direct the production, distribution, and operation of a wide variety of devices, machines, and systems. Moreover, they can work in environmental control and materials processing, transportation, and handling. This discipline is mainly concerned with thermo-fluid sciences that are the basis for energy conversion and power generation. In addition, mechanical power and energy engineers are concerned with pollution control, energy management, heating, ventilation and air-conditioning, transport phenomena, combustion, and fluid flow

- Specific Specialization Courses and Technical Electives

Table IV shows the specific specialization courses required by this program, while table V shows the set of electives courses that the student needs to study four of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

Table XXVIV. Mechanical Power Engineering Specific Specialization Courses

Course Code	Course Name
MEP331	Turbomachinery (1)
EPM334	Electrical Power Engineering
MEP351	Power Stations
MDP354	Mechanics of Machines (2)
MEP361	Combustion
MDP362	Machine Construction & Design of Mechanical Equipment
MEP362	Internal Combustion Engines (1)
MEP471	Refrigeration & Air Conditioning
MEP481	Automatic Control (2)
MEP499	Project

Table XXIX. Mechanical Power Engineering Technical Electives

Course Code	Course Name
MDP331	Engineering Materials (Advanced)
MEP352	Renewable Energy
MDP355	Introduction to Mechatronics
MDP363	Introduction to Computer-Aided Design & Manufacturing
MEP421	Pipelines Networks
MDP425	Introduction to Industrial Organization
MDP426	Introduction in Quality Systems
MEP482	Modelling & Simulation of Thermal Power Systems
MDP331	Engineering Materials (Advanced)
MEP352	Renewable Energy
MDP355	Introduction to Mechatronics
MDP363	Introduction to Computer-Aided Design & Manufacturing
MEP421	Pipelines Networks

- Career Opportunities
    - Developing power stations, boilers, gas or steam turbines, internal combustion engines, refrigeration systems, and safety control systems for this equipment.
    - Enhancing liquid, vapor, and gas network piping and ducting systems.
    - Developing methods for reducing pollutant emissions from different systems.
    - Improving the maintenance and the performance of combustion equipment, turbo-machinery, and refrigeration systems.
    - Working in power stations and petrochemical plants.
    - Working in management in industries.
    - Working in establishments concerned with cars, ships, energy generation or aerospace and refrigeration and air conditioning Work that involves safety and environmental concerns.

Production Engineering Program

The mechanical engineers should be curious about how things are made and work. Mechanical Engineering covers the design, analysis, testing and manufacturing of products that are used in every facet of modern society. Mechanical engineers conceive, plan, design and direct the production, distribution and operation of a wide variety of devices, machines and systems, environmental control and materials processing, transportation and handling.

The vision is to be recognized as the prominent Mechanical Engineering program in Egypt and Africa. Design and production mechanical engineers analyze their design using the principles of motion, energy, and momentum to ensure that the product functions safely, efficiently, reliably, and manufactured at a competitive cost with minimized environmental hazards. This is achieved by combining the study of science, mathematics, engineering fundamentals, design, management and quality principles. The program covers the fields of solid and fluid mechanics, engineering design, production technology, economics, and management. Basic studies are devoted to the mechanical properties of materials, machine design, dynamics and control, and instrumentation.

- Specific Specialization Courses and Technical Electives

Table XXX shows the specific specialization courses required by this program, while table XXXI shows the set of electives courses that the student needs to study three of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

Table XXX. Production Engineering Specific Specialization Courses

Course Code	Course Name
MDP321	Manufacturing Technology (3)
MDP322	Work Study
MDP341	Measuring Instruments
MDP352	Mechanics of Machines (2)
MDP353	Automatic Control
MDP361	Machine Design
MDP371	Theory of Metal Cutting
MDP372	Machines of Metal Cutting & Forming
MDP381	Theory of Metal Forming
MDP422	Quality Control
MDP423	Facilities Planning
MDP424	Operations Management
MDP441	Measurement
MDP451	Tool Design
MDP471	Numerical Control Machines
MDP499	Project

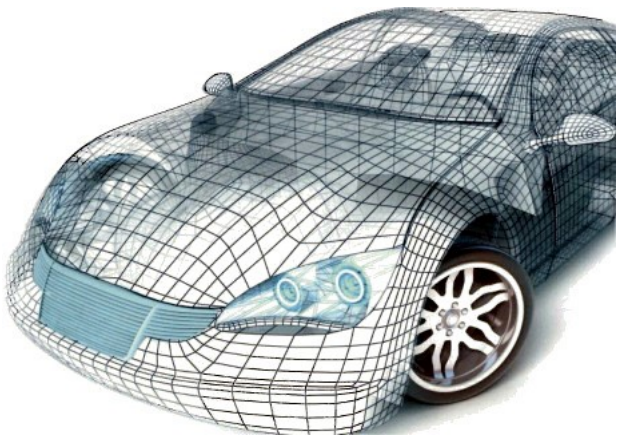
Table XXXI. Production Engineering Technical Electives

Course Code	Course Name
MDP323	Quality Systems
MDP324	Reliability Engineering
MDP325	Quality of Service Industries
MDP427	Computer Applications in Industry
MDP428	Ergonomics
MDP431	Materials & Process Selection
MDP443	Systems Modelling
CEP452	Environmental Engineering
MDP455	Operations Research
CSE461	Information Systems

- Career Opportunities

The private and governmental firms, where engineering is required to design, manufacture, operate, develop or maintain mechanical systems and equipment such as industrial machinery, automotive, aerospace, power generation, and air conditioning equipment. In all phases of industrial, manufacturing, and service firms. It qualifies them to perform different managerial and technical functions that require a scientific and engineering background. A whole spectrum of industrial systems and service systems. Industrial systems include: automotive, aerospace, apparel, appliances, basic metals, beverages, building materials, ceramics, chemicals, computers, electronics, equipment, fabricated metals, food processing, glass, heavy machinery, paper, petroleum refining, pharmaceuticals, plastics, power utilities, publishing, textiles, tire and rubber, and wood and furniture. Service systems include communications, education, financial services, government, repair and maintenance, retail trade, transportation, wholesale trade, and warehousing.

Automotive Engineering Program



Mechanical engineers should be curious about how things are made and work. Mechanical engineering covers the design, analysis, testing, and manufacturing of products that are used in every facet of modern society. Mechanical engineers conceive, plan, design, and direct the production, distribution, and operation of a wide variety of devices, machines, and systems as well as environmental control and materials processing, transportation, and handling. The program enables students to develop the following thoroughly:

- Understanding of mechanical engineering principles and expertise that is uniquely automotive in nature.
- Understanding based on the Mechanical Engineering program.
- Basic engineering principles and including studies in mathematics and the physical sciences.

Later years build upon acquired knowledge and include specialized topics such as automotive safety, alternative fuels, advanced manufacturing, automotive powertrain and vehicle dynamics, automotive combustion technology, automotive suspension and undercarriage, automotive NVH and aerodynamics, automotive electrical and electronic systems, advanced materials and joining, and vehicle emission control. Engineering students are also required to undertake studies in courses designed to assist them develop the communication skills necessary to work effectively.

- Specific Specialization Courses and Technical Electives

Table XXXII shows the specific specialization courses required by this program, while table XXXIV shows the set of electives courses that the student needs to study four of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

Table XXXII. Automotive Engineering Specific Specialization Courses

Course Code	Course Name
MEA312	Pneumatic & Hydraulic Systems
MEA321	Automotive Design (1)
MEA341	Automotive Engines & Fuel Systems
MDP351	Mechanical Vibrations & Automatic Control
MEA361	Automotive Measurements
MEA411	Automotive Theory (2)
MDP421	Industrial Organization & Quality Control
MEA421	Automotive Design (2)
MEA431	Maintenance Engineering & Garage Planning
MEA451	Vehicle Automatic Control Systems`
MEA499	Project

Table XXXIV. Automotive Engineering Technical Electives

Course Code	Course Name
MDP331	Engineering Materials (Advanced)
MEP352	Renewable Energy
MDP355	Introduction to Mechatronics
MDP363	Introduction to Computer-Aided Design & Manufacturing
MEP421	Pipelines Networks
MDP425	Introduction to Industrial Organization
MDP426	Introduction in Quality Systems
MEP482	Modelling & Simulation of Thermal Power Systems
MDP331	Engineering Materials (Advanced)
MEP352	Renewable Energy
MDP355	Introduction to Mechatronics
MDP363	Introduction to Computer-Aided Design & Manufacturing
MEP421	Pipelines Networks

- Career Opportunities

Careers in the automotive and other high-tech industries. However, being based on a Mechanical Engineering degree, graduates in Automotive Engineering will retain flexibility in the choice of engineering industry for their careers. In most cases, graduates will also be able to work wherever mechanical engineers are employed.

Mechatronics Engineering Program

The Mechatronics Engineering major degree at Ain Shams University had opened its doors to undergraduate students in the fall of 2004. Mechatronics is an interdisciplinary field of Mechanical, Electronics, computer science, and control engineering. The aim of this program is to graduate Mechatronics engineers, who are capable of penetrating Egyptian, regional, and international markets with their knowledge, skills, professionalism, and ethics. The Mechatronics program has a large connection and interaction with local, regional, and global industries.

This program is designed to enrich the student's basic theoretical and practical knowledge of mechatronic system components. It also develops the student's ability to use state-of-the-art technologies to find affordable, reliable and innovative solutions. The program aims to develop the student's ability to conduct Research and Development (R&D) activities to create innovative mechatronic solutions. The field of specialization setups and operates automated and/or autonomous production lines which are based on embedded systems, PLCs and SCADA systems. Through that, the student carries out modern troubleshooting and maintenance techniques relevant to what we call machine health monitoring (MHM).

- Specific Specialization Courses and Technical Electives

Table XXXV shows the specific specialization courses required by this program, while table XXXVI shows the set of electives courses that the student needs to study three of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

Table XXXV. Mechatronics Engineering Specific Specialization Courses

Course Code	Course Name
CSE314	Logic Design
CSE315	Computer Organization
CSE324	Computer Programming
ECE334	Electronic Circuits
ECE335	Electronic Engineering
EPM352	Industrial Electronics & Applications
MDP357	System Modelling & Simulation
MDP358	Automatic Control
MDP359	Mechatronics (1)
MEP382	Design of Applied Measurement Systems
CSE413	Microprocessor Based Systems
MDP452	Pneumatic & Hydraulic Control
MDP453	Robotics
MDP454	Mechatronics (2)
MDP471	Numerical Control Machines
CSE473	Digital Control
MDP499	Project

Table XXXVI. Mechatronics Engineering Technical Electives

Course Code	Course Name
ECE421	Electronics for Instrumentation
CSE434	Computer Networks
CSE441	Embedded Computer Systems
CSE442	Computer Interfacing
CSE468	Image Processing
CSE469	Expert Systems
CSE475	Advanced Control Systems
ECE482	Integrated Circuits Technology
ECE485	Integrated Circuits Applications

Architecture Engineering

Architecture Engineering has two academic programs: Architecture and Urban Design and Planning. All Architecture Engineering students must study the following courses of general specialization courses in addition to specific courses that are program-specific.

Table XXXVII. Architecture Engineering General Specialization Courses

Course Code	Course Name
ARC111	Visual Design & Design Fundamentals
ARC112	Architectural Drawing & Representation Techniques
CEP112	Survey
ARC113	Architectural Design (1)
CES113	Theory of Structures
ARC121	Theory of Architecture (1)
ARC131	History of Architecture (1)
CES142	Foundations & Testing of Materials
ARC151	Building Construction
ARC161	Environmental Design & Control
ARC212	Architectural Design (2)
ARC221	Theory of Architecture (2)
CES222	Concrete Structures
ARC231	History of Architecture (2)
ARC241	Computer Applications (1)
UPL241	Urban Landscaping
ARC251	Building Construction & Principles of Working Drawings
UPL251	Theories & History of Planning
ARC261	Acoustics & Artificial Lighting
MEP271	Technical Installations

Architecture Engineering Program

Architecture Engineering aspires to be regionally and internationally recognized in distinctive areas of sustainable development and information technology and to produce creative and leading architects who are well prepared for the challenges of the information age at the scientific and professional level. The mission of the department hosting this program is to provide design education that is driven by a professional and technology-oriented focus and highly committed to sustainability. The program is therefore based on the following intentions:

- To stimulate design creativity and critical thinking.
- To augment the intellectual capacity to develop architectural solutions in an environment based on scientific research, technological innovation and sustainability.
- To prepare students to acquire the individual skills and ethics required for long-term learning and competent professional practice.
- To equip students with the required basic knowledge of engineering sciences and interpersonal skills to understand, coordinate with, and lead other engineering disciplines in the architectural profession.

- Specific Specialization Courses and Technical Electives

Table XXXVII shows the specific specialization courses required by this program, while table XXXVIV shows the set of electives courses that the student needs to study four of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

Table XXXVIII. Architecture Engineering Specific Specialization Courses

Course Code	Course Name
ARC311	Architectural Design (3)
ARC321	Theory of Architecture (3)
UPL321	Urban Planning
ARC322	Theory of Architecture (4)
CES322	Steel Structures
ARC341	Computer Applications (2)
ARC351	Working Drawings (1)
ARC352	Specifications & Quantity
ARC411	Architectural Design (4)
ARC451	Working Drawings (2)
ARC461	Housing
ARC471	Feasibility Studies & Project Management
ARC472	Professional Practice & Legislation
ARC491	Project Studies & Technical Report
ARC499	Project

Table XXXVIV. Architecture Engineering Technical Electives

Course Code	Course Name
UPL312	Urban Design
ARC313	Spatial Composition & Aesthetics in Architecture
ARC314	Architectural Rendering
ARC315	Interior Design
ARC324	Architectural Criticism & Project Evaluation
UPL331	Design & Development of Rural Communities
ARC361	Environmental Design & Energy Conservation
ARC413	Housing in Developing Countries
UPL413	Urban Renewal
ARC421	Humanities in Architecture
ARC422	Contemporary Vernacular Architecture
ARC452	Advanced Technical Installations
UPL461	Urban Sociology
ARC481	Urban & Architectural Heritage

- Career Opportunities

Graduates will have job opportunities in the field of architecture design, interior design, landscape architecture, tender decumbent, as well as executive architecture projects.

Urban Design and Planning Program

The Urban Design program is the academic discipline concerned with interpreting the spatial organization and dynamics of urban areas. The interest is in comparing, evaluating, and inventing new ways to maintain the balance between public and private, the built and natural environment, and local and global perspectives. The Department of Urban Design and Planning is the home of both professions and offers a prime professional degree in urban planning and a post-professional degree in urban design. Urbanism movements are underpinned as practical action to shape the urban environment in sustainable ways through local community participation and several stakeholders. The participation takes place in the evaluation process of academic performance.

The program handles the following main courses in two academic years: urban planning, urban design, city planning, landscape architecture, architecture design, environmental studies, urban socio-economics studies, and urban economic. The graduates have unique job opportunities in Regional Strategic Planning, Detailed Planning, Urban Design and Landscape Architecture, as well as Architecture projects.

- Specific Specialization Courses and Technical Electives

Table XXXIX shows the specific specialization courses required by this program, while table XXXX shows the set of electives courses that the student needs to study four of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

Table XXXIX. Urban Design and Planning Specific Specialization Courses

Course Code	Course Name
UPL311	Urban Design (1)
ARC312	Architectural Design (4)
UPL322	Town Planning & Housing
UPL332	Computer Applications in Planning
UPL341	Landscape Architecture
UPL351	Environmental Studies
CEP372	Highway & Traffic Engineering
ARC412	Architectural Design (5)
UPL412	Urban Design (2)
UPL431	Urban Planning
CEP441	Infrastructure & Utilities
UPL453	Environmental Planning & Design
UPL499	Project

Table XXXX. Urban Design and Planning Technical Electives

Course Code	Course Name
UPL333	Regional Urbanization
UPL361	Urban Sociology
UPL371	Economic Geography
UPL421	City Management
UPL432	Sustainable Urban Development
UPL433	Rural Development
UPL434	Site Analysis Studies
UPL435	Report Preparation for The Graduation Project
UPL436	Presentation Techniques of Urban Projects
UPL462	Human Settlements
UPL471	Urban Economy
UPL472	Feasibility Studies
UPL333	Regional Urbanization
UPL361	Urban Sociology

- Career Opportunities

The graduated has unique job opportunities in Regional Strategic Planning, Detailed Planning, Urban Design and Landscape Architecture, as well as Architecture projects.




Electrical Engineering

Electrical Engineering has three academic programs:

- Electrical Power and Machines
- Electronics and Electrical Communication
- Computer and Systems

All Electrical Engineering students must study the following courses of general specialization courses in addition to specific courses that are program-specific.

Table XXXXI. Electrical Engineering: General Specialization Courses

Course Code	Course Name
EPM113	Electrical Circuits
CES114	Civil Engineering
CSE121	Computers Programming
ECE131	Electronic Engineering
EPM171	Electrical Measurements & Measuring Instruments
CSE211	Computer Organization (1)
EPM211	Electromagnetic Fields
MEP211	Mechanical Engineering
EPM221	Energy Conversion
CSE241	Logic Circuits
ECE241	Electronic Circuits (1)
ECE251	Signal Processing
CSE271	Systems Dynamics & Control Components
EPM271	Electrical Testing (1)

Electrical Power and Machines Engineering Program

Electrical power and machines engineering program teaches courses in four main areas: Power System, High Voltage, Electrical Machines, and Power Electronics. Our students should be able to:

- Think in a creative and innovative way to analyze and solve engineering problems.
- Use the state-of-the-art techniques, skills, and tools necessary to analyze and design the electrical power system components. This is including electrical power generation, transmission and distribution.
- Apply different techniques to ensure power quality supplies to different loads.
- Design and implement different control techniques for different components of the electric power systems at low and high voltage levels.

- Specific Specialization Courses and Technical Electives

Table XXXIX shows the specific specialization courses required by this program, while table XXXX shows the set of electives courses that the student needs to study four of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

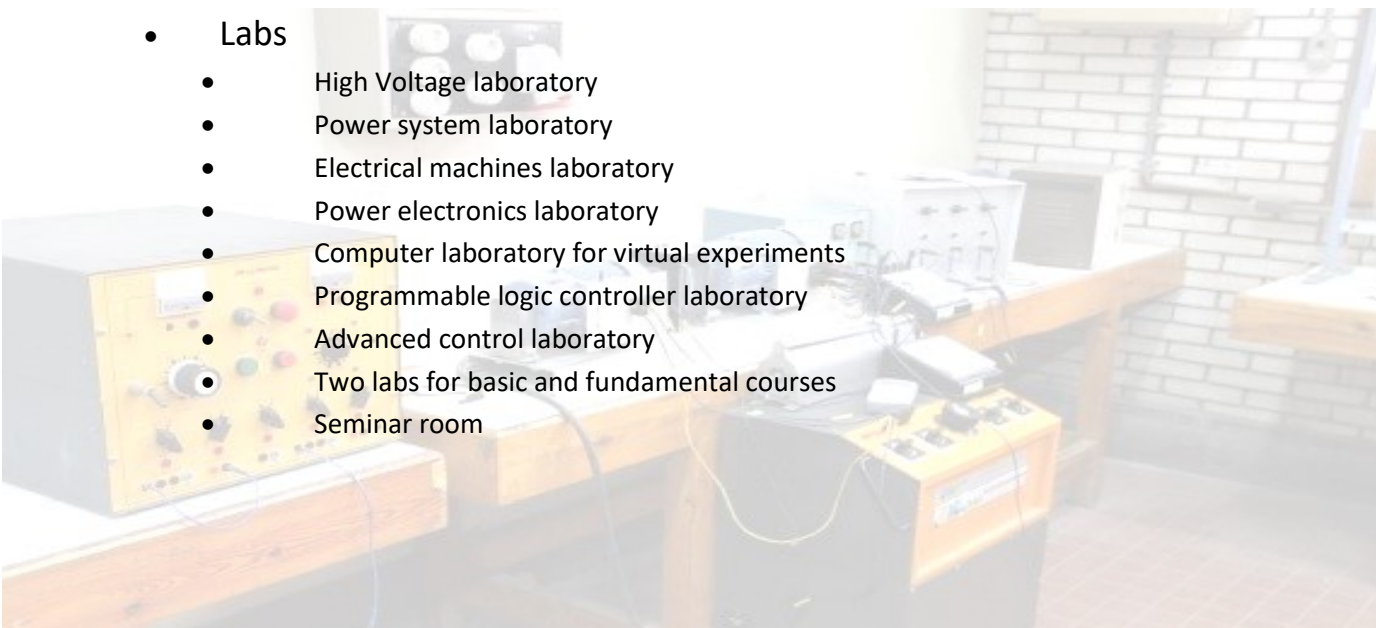
Table XXXXII. Electrical Power and Machines Specific Specialization Courses

Course Code	Course Name
EPM321	Electrical Machines (1)
EPM322	Electrical Machines (2)
EPM331	Transmission & Distribution of Electrical Energy
EPM332	Power System Analysis (1)
EPM333	Economics of Generation & Operation
EPM341	High Voltage Engineering
EPM351	Power Electronics (1)
EPM371	Electrical Testing (2)
EPM381	Automatic Control Systems
EPM421	Electrical Machines (3)
EPM422	Electrical Machines (4)
EPM431	Electric Power System Analysis (2)
EPM451	Power Electronics (2)
EPM461	Protection & Switchgear in Electrical Power Systems
EPM471	Electrical Testing (3)
EPM499	Project

Table XXXXIII. Electrical Power and Machines Specific Specialization Courses

Course Code	Course Name
CSE313	Microprocessor & Applications in Power Systems
EPM335	Utilization of Electrical Energy
EPM361	Power System Protection
EPM423	Generalized Theory of Electrical Machines
EPM424	Special Electrical Machines
EPM432	Planning of Electrical Networks
EPM441	Over-Voltages in Power Systems
EPM442	High Voltage Applications
EPM462	Applications in Protection & Switchgear Systems
EPM481	Electric Drives
EPM482	Advanced Control of Power Systems
EPM483	Computer Applications in Electric Power Engineering

- Labs
  - High Voltage laboratory
  - Power system laboratory
  - Electrical machines laboratory
  - Power electronics laboratory
  - Computer laboratory for virtual experiments
  - Programmable logic controller laboratory
  - Advanced control laboratory
  - Two labs for basic and fundamental courses
  - Seminar room



Electronics and Electrical Communication Engineering Program

This program aims to give our students the ability to mix electronic circuits and systems. He or she will also gain knowledge in signals, communications systems and networks, and photonic and microwave devices and circuits.

- Specific Specialization Courses and Technical Electives

Table XXXXIV shows the specific specialization courses required by this program, while table XXXXV shows the set of electives courses that the student needs to study five of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

Table XXXXIV. Electronics and Electrical Communication Engineering Specific Specialization

Course Code	Course Name
ECE331	Electronic Devices
ECE332	Microprocessors & Applications
ECE333	Optical Electronics
ECE341	Electronic Circuits (2)
ECE351	Communication Systems (1)
ECE361	Electromagnetic Waves
ECE371	Electronic Measurements & Testing (1)
ECE431	Microwave Electronic Engineering
ECE451	Communication Systems (2)
ECE452	Telecommunication Networks
ECE461	Antennas
ECE471	Electronic Measurements & Testing (2)
ECE481	Integrated Circuits

Table XXXXV. Electronics and Electrical Communication Engineering Technical Electives

Course Code	Course Name
ECE342	Digital Circuits
ECE352	Digital Signal Processing
ECE362	Applications of Electromagnetic Waves
ECE421	Electronics for Instrumentation
ECE432	Selected Topics in Electronics
ECE453	Satellite Communications
ECE454	Optical Communication Systems
ECE455	Mobile Communications
ECE456	Selected Topics in Communication Systems
ECE457	Information Theory
ECE462	Selected Topics in Microwave Engineering
ECE482	Integrated Circuits Technology
ECE483	Application Specific Integrated Circuits (ASICS)
ECE484	Analog Integrated Circuit Design
ECE485	Integrated Circuits Applications

- Career Opportunities

Graduates have unique job opportunities in the following field of specialization:

- Integrated Circuit Design Engineer
- IC fabrication engineer
- Communication systems design engineer
- Communication systems implementation engineer
- Communication systems operation engineer
- Antenna design engineer
- Photonics design engineer
- IT Engineer

Computer and Systems Engineering Program

The Computer and Systems Engineering program prepares highly qualified engineers, who are vital to the development of state-of-the-art, computer-based products, to efficiently fulfill the growing needs of the local and international markets. CSE graduates should:

- Think in a creative and innovative way to find computer-based solutions to engineering problems.
- Apply their knowledge of science to design and create computer-based systems that are safe, reliable, and practical.
- Have a strong background in software design, especially in the ways that software and hardware interact.
- Utilize digital computers in instrumentation and process control applications

- Specific Specialization Courses and Technical Electives

Table XXXXIV shows the specific specialization courses required by this program, while table XXXXV shows the set of electives courses that the student needs to study four of them to get his Bachelor degree based on the selection criteria listed in the bylaw.

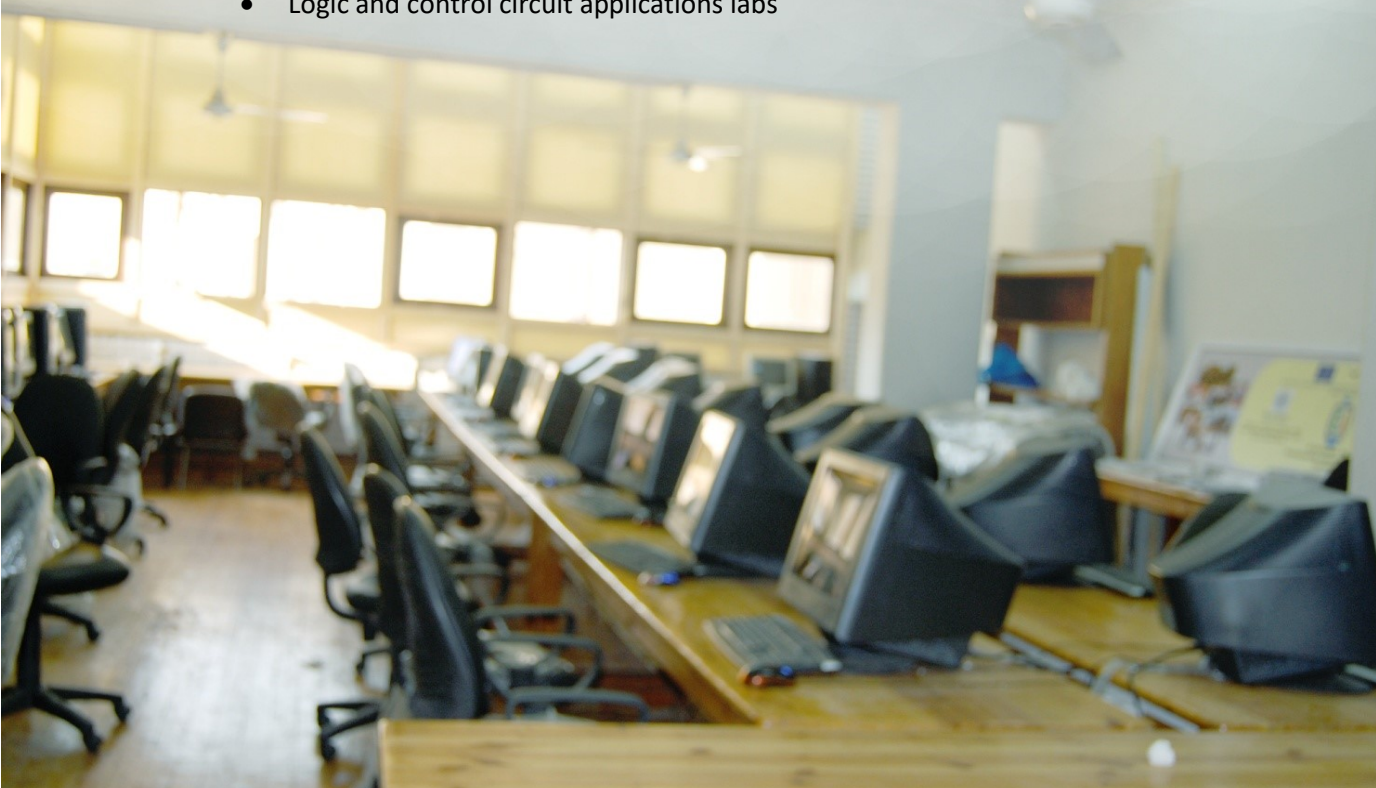
Table XXXXVI. Computer and Systems Engineering Program Specific Specialization Courses

Course Code	Course Name
CSE311	Computer Organization (2)
CSE312	Microprocessor Based Systems
CSE321	Software Engineering
CSE322	Operating Systems
CSE323	Programming with Data Structures
CSE351	Electrical Testing (2)
ECE353	Data Communication Systems
CSE371	Control Systems (1)
CSE372	Control Systems (2)
CSE421	Database Systems
CSE422	Systems Software
CSE431	Computer Networks
CSE451	Electrical Testing (3)
CSE471	Computer Controlled Systems
CSE481	Artificial Intelligence
CSE499	Project

Table XXXXVII. Computer and Systems Engineering Program Technical Electives

Course Code	Course Name
CSE411	Distributed Computer Systems
CSE412	Selected Topics in Computer Engineering
CSE432	Computer Security
CSE433	Local Area Networks
EPM452	Power Electronics
CSE462	Biomedical Engineering
CSE463	Neural Networks
CSE464	Pattern Recognition & Image Processing
CSE465	Selected Topics in Systems Engineering
CSE466	Real Time Systems
CSE467	Modelling & Simulation
CSE472	Robot Systems
CSE474	Industrial Control
CSE482	Expert Systems
CSE483	Intelligent Control Systems

- Facilities and Labs
  - Two seminar rooms equipped with smart boards and data shows.
  - Two computer programming labs
  - Software engineering lab
  - Computer networks lab
  - Control systems lab
  - Embedded systems lab
  - Logic and control circuit applications labs



4 GET INVOLVED

Facilities and Activities

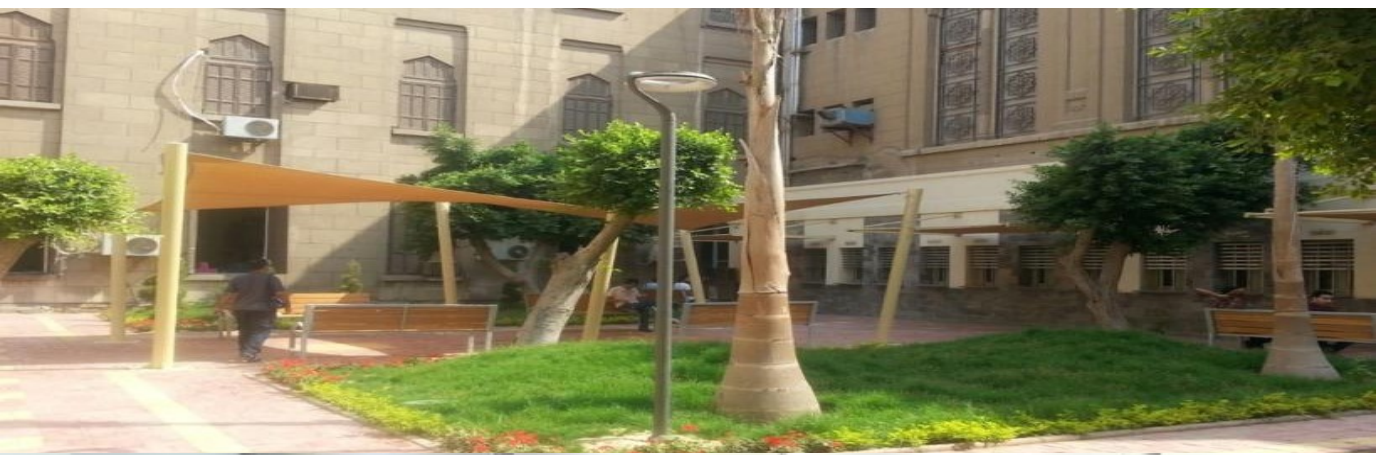
Facilities

Students’ Affairs Administration

The students' affairs administration is chaired by the Vice-Dean for education and students' affairs and is located in the main building. This administration has representatives at the main ground floor of the main building of the Faculty of Engineering. The representatives in accomplishing the following tasks:

- Archiving of the students' files.
- Issuing the students' identity cards.
- Electronic recording of the students' information.
- Issuing the students' records at the end of each semester.
- Issuing the students' graduation certificates.
- Processing the students' appeals and requests

Therefore, Green areas and waiting areas were developed to offer shaded and cozy seating in front of Student Affairs and Postgraduate Affairs departments.



The student affairs' front Plaza

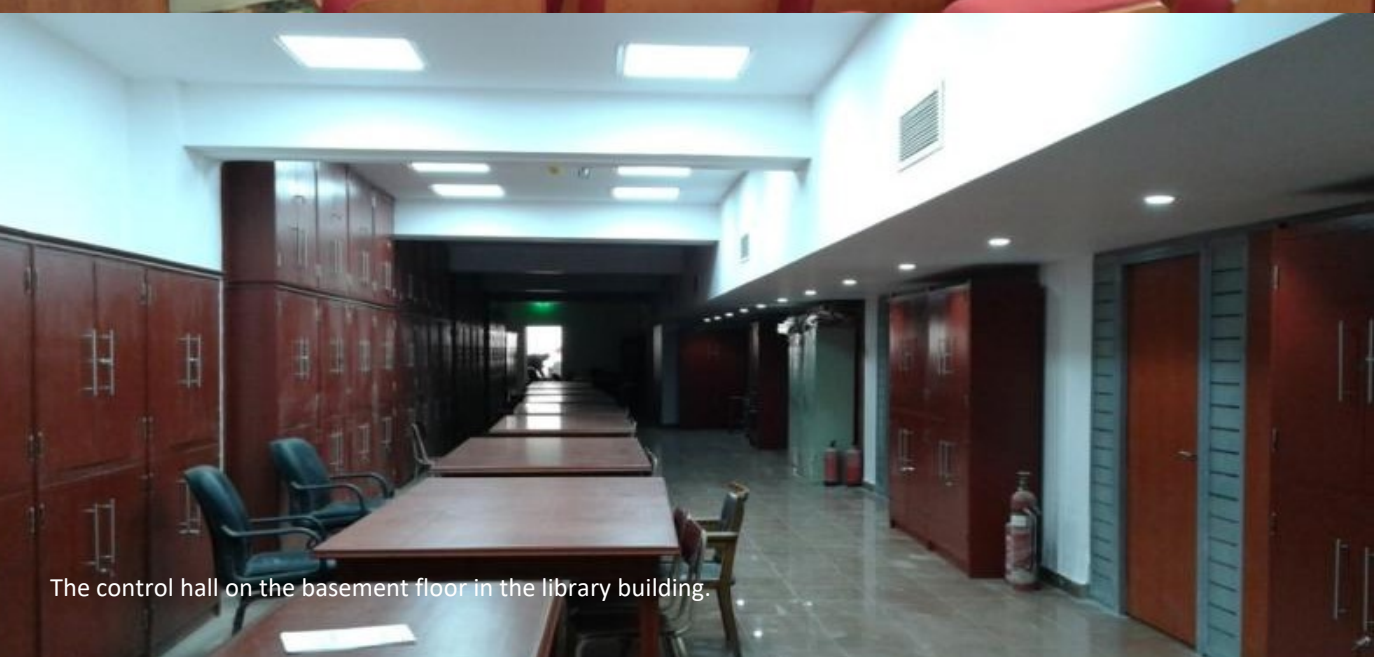
The Faculty Library

The Faculty library provides a service specially designed to fulfill the requirements of all academic programs. It is open for all Faculty members for reference use and borrowing. The main library has a shelf space for over 40700 books on all subjects forming part of the Faculty curriculum. It has 353 technical periodicals (the Faculty receives 23 periodicals yearly in a regular basis). Additionally, it has more than 3340 Ph.D. and M.Sc. theses resulted from all Faculty departments' activities.

The students' library has multiple copies of textbooks, amounting to over 13000, available for short-term borrowing to students. According to the Engineering Faculties libraries development project, annexed to the Ministry of Higher Education, the library is inter-connected through the Internet with all the libraries of engineering faculties nationwide. The library was completely renovated in the past year to fulfill the requirements of the faculty, the library contains around 44500 books that serve both students and faculty members, the student's library contains around 14985 books 5120 in Arabic and the rest are in English, while the faculty staff library contains 29605 books 26802 of them in English. The library is a part of the Egyptian University Libraries Union, which allows students to have access to all library database contents as well as the libraries of all other Faculties either in Ain Shams University or on any other Egyptian university via this portal: http://srv4.eulc.edu.eg.

The library main reading hall.

The library conference room.



The control hall on the basement floor in the library building.

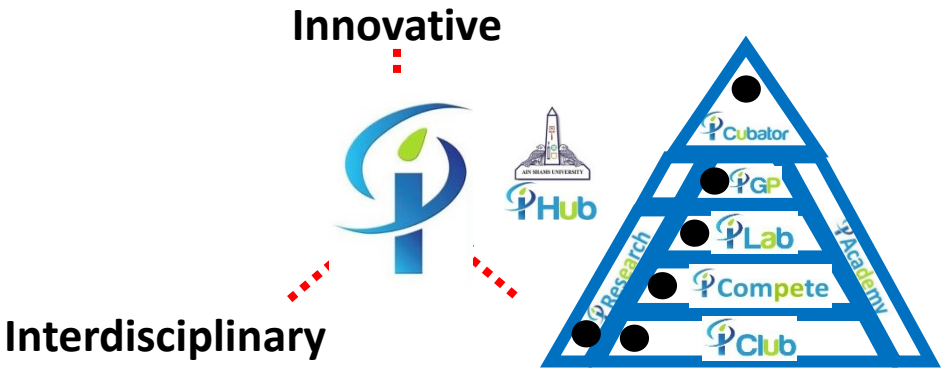
Sports Area

The Faculty of Engineering has three unique soccer fields, one of them has the international standards in terms of its dimension. While the other two are small multi-purpose stadium. All of them are used by students as regulated by the Faculty administration. Additionally, competitions are held in these play areas between Faculty of Engineering teams and other Faculty's teams.

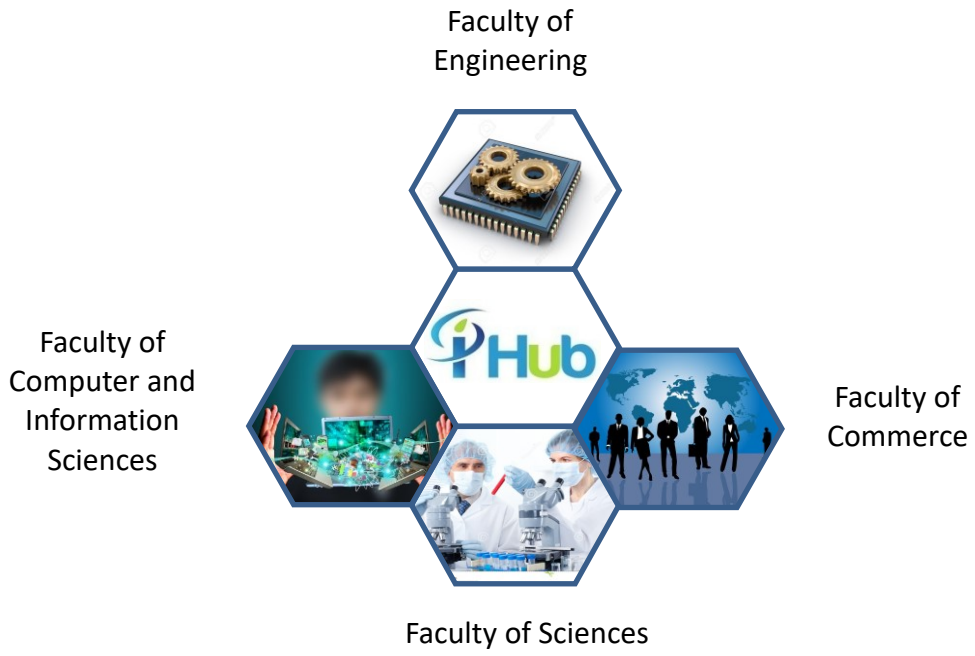
Achievements on the Level of Trainings

- **Global Training Technology Center**

It aims to be a center for innovation in technology and entrepreneurship, as to form a link between academic study and labor market.

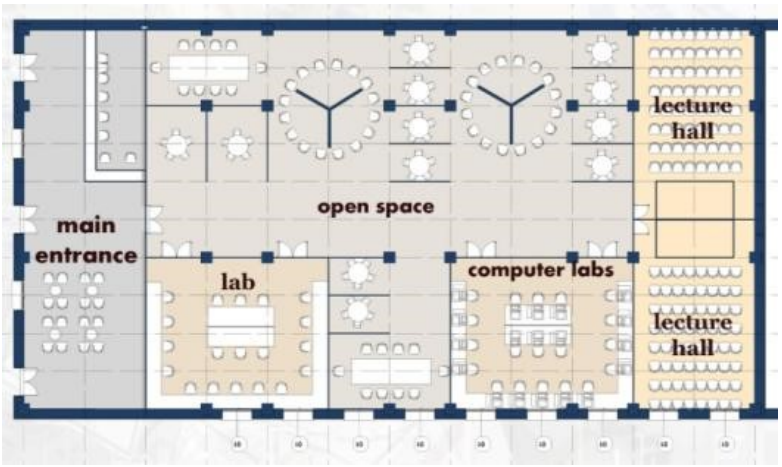


The center offers training programs to serve students and graduates at the same time, these training programs aim to develop the creative sense of the trainees in order to integrate them into creative and innovative works that would serve the industrial field and the community. Depends on the overlap between the different disciplines in various fields and at various levels.



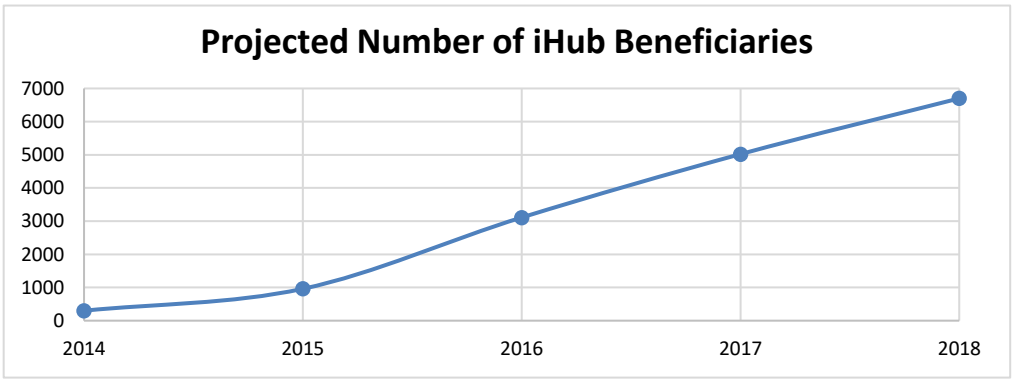
The center is nearly 1000 m^2 area, it works as the headquarters for the students to practice their activities in the future, and the college is preparing the headquarters of the center to accommodate the necessary training activities.

Proposal for the second phase after finishing the new building.



Proposal for the center first phase in the restaurant area at the old building

Statistic shows the percentages of joining the innovation center and the target ratios in the coming years



An event at the global training center.

Trainees during the preparation for an event in the global training center.

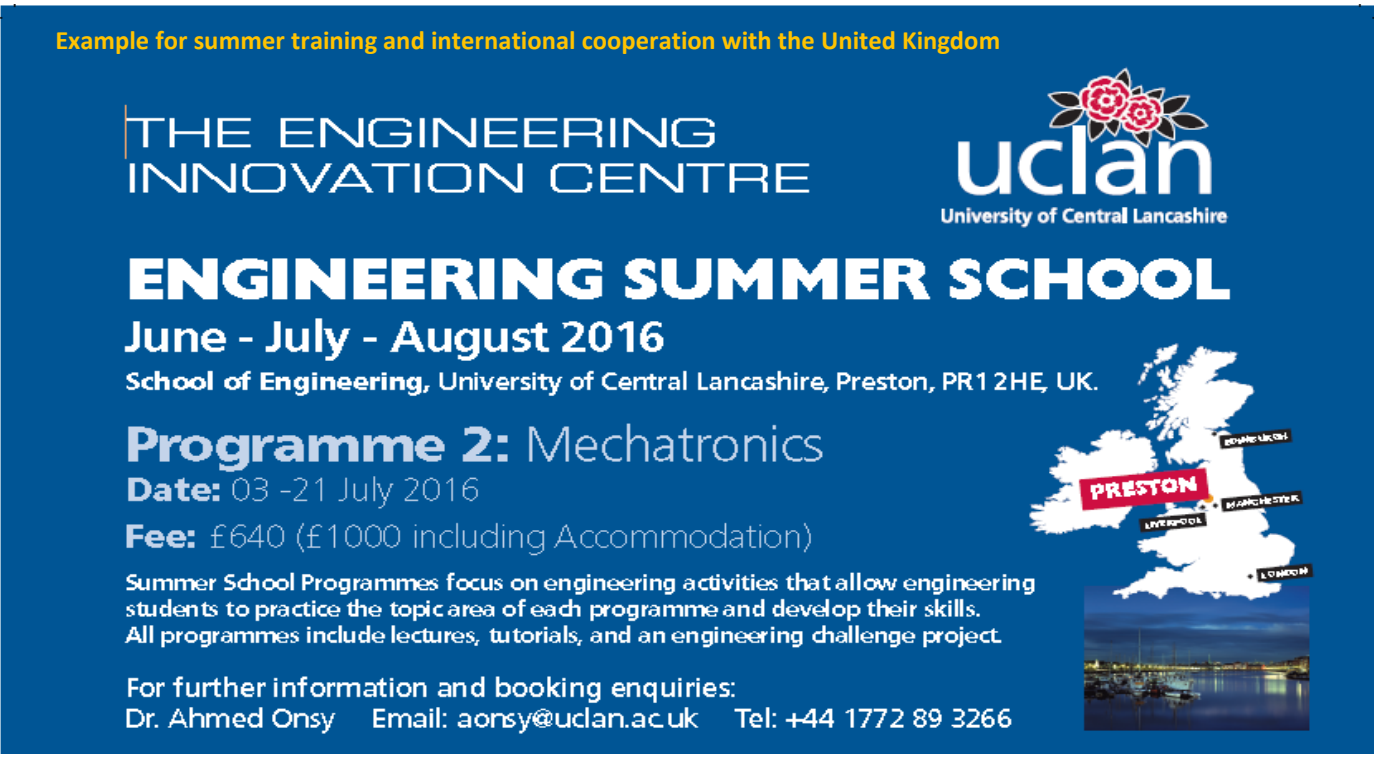
Trainees during an event in the global training center.

Student Services Developments Level

- **Summer training programs through international cooperation**

Faculty of Engineering has provided multiple summer training programs with many foreign countries.

Example for summer training and international cooperation with the United Kingdom



Another Example for summer training and international cooperation with the United Kingdom

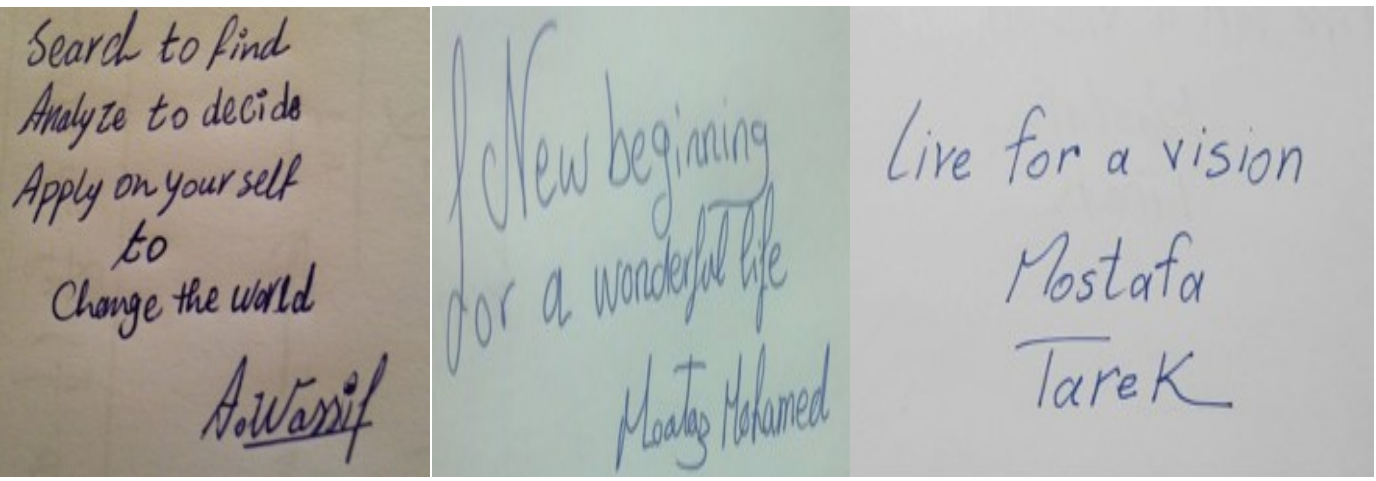
Achievements on the level of capability, skills and training development.

The Employability and Career Development Center's headquarters, located on the third floor of the Credit building

Employability and Career Development Center (ECDC)

ECDC is a Center constructed through the collaboration between Ain Shams University and the American University, it has a permanent headquarter in Faculty of Engineering and another headquarter in Ain Shams University. It provides special training programs for students in order to develop their capabilities in the professional and employment fields. The center aims to guide the trainee to his excellence and weaknesses points, and how to raise points of excellence and overcome weaknesses.

Announcement of The Employment Fair which will be held at Faculty of Engineering for the second half of the academic year 2015-2016



A sample of trainees' opinions after the training sessions for the first half of academic year 2015-2016

Student Services Developments Level

Achievements on the level of graduation projects, local and international cooperation projects

TUM Combined Research Project

The unstudied development of the construction sector in Egypt, growth and the rapid extension of the cities affect badly the public health and quality of life for Egyptian citizens. The land use management, water drainage systems, traffic and air quality.... etc. reflect negative impacts on ecosystems which in turn results to desertification and the loss of land. Hence, there is an urgent need to make a high transformation in the cities growth management and proper planning, to manage the construction required materials resources, and to introduce new methods and construction materials emerging with high efficiency on existing systems. Engineers in charge of the construction sectors must take care of the important dimensions of the aspects of sustainability in architecture and urban design. So that the research project based with the Technical University of Munich TUM is a local research cadres, that convey modern construction techniques using wood and other local materials.

Cooperation with the Technical University of Munich TUM began in 2015 through a combined research project funded by the German Academic Exchange Service DAAD with a value of 36.440,00 euros per year, to support scientific exchanges between the two parties and the transfer of the practical experiences and technology of the wood usage for building In Egypt. The first round began by the travel of 12 researcher students from Egypt to join group works with researchers from the Technical University of Munich TUM.

A group visit of Egyptian and German students to the afforestation forest in Serapeum area in Ismailia.

Egyptian students' teamwork at the Technical University in Munich (5-5-2015)

Egyptian students' teamwork at the Technical University in Munich (5-5-2015)

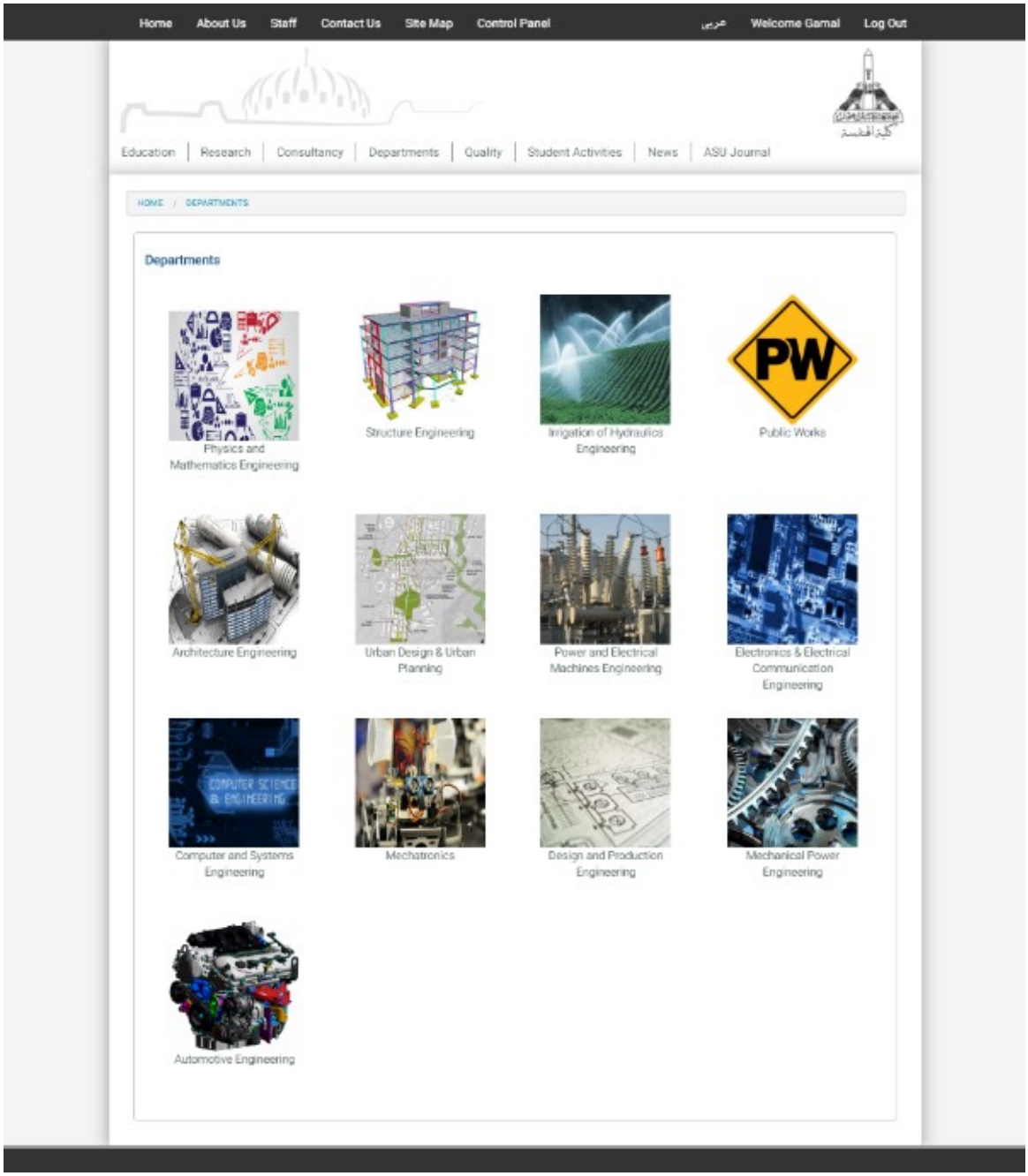
Egyptian students' teamwork with the graduation projects' jury (23-7-2015)

ASU-ENG Information Systems

Faculty of Engineering have a solid understanding of the importance of information systems in each aspect in the academic environment. Hence, a comprehensive web portal has been created that has all information and services needed for the student, parents, and staff members. Learning Management System (LMS) is one of the available service at the portal for all students mainly to have their course materials posted regularly on it with a dedicated protected access to the courses he enrolled in them. More importantly, a comprehensive Student Information System (SIS) is currently being developed. The following figure shows the contents of the Portal that are updated in a regular basis and can be accessed via the link https://eng.asu.edu.eg. Portal is considered the one-place that contains all information that might be needed by students. As shown, each icon can take the student to a specific piece of information that is actually needed during student's academic life.

Faculty of Engineering Portal

For example, if you clicked on the Departments, it will provide you all the needed information for the set of departments as shown. Additionally, all important information concerning your academic life in ASU-ENG can be accessed via the Important Information icon from the Portal main page as shown.



Academic Departments

E-Mail Services

Developed in Cooperation with the University and Microsoft Corporation to Serve Undergraduate and Postgraduate Students.

New features offered by Microsoft Corporation for the official e-mail users (December 2015).

نعلم أنك لن تقبل إلا بأحدث وأفضل التطبيقات التي ستساعدك على النجاح. لذلك، وكجزء من برنامج جامعتك، يمكنك الآن تنزيل Office 365 ProPlus على جهازك وحتى ٥ حواسيب وأجهزة ماك وعلى الأجهزة المحمولة الأخرى بما في ذلك حواسيب Windows اللوحية وأجهزة iPad® مجاناً. لن يساعدك Office على أن تبقى فعّالاً وتنجز فروضك بشكل أسرع فحسب، بل سيساعدك أيضاً على تطوير مهاراتك التي ستحتاجها عند الانضمام لسوق العمل.

هناك المزيد، مع خيار حفظ أعمالك في السحابة، ستتمكن من الوصول إلى المستندات الخاصة بك من أي مكان وفي أي وقت تريد، عبر كافة الأجهزة.

تفضل بزيارة aka.ms/officeforfree لتنزيله الآن.

مع Office 365 ProPlus، ستحصل على فرصة الاستفادة من مجموعة واسعة من الأدوات التي تمكنك من:

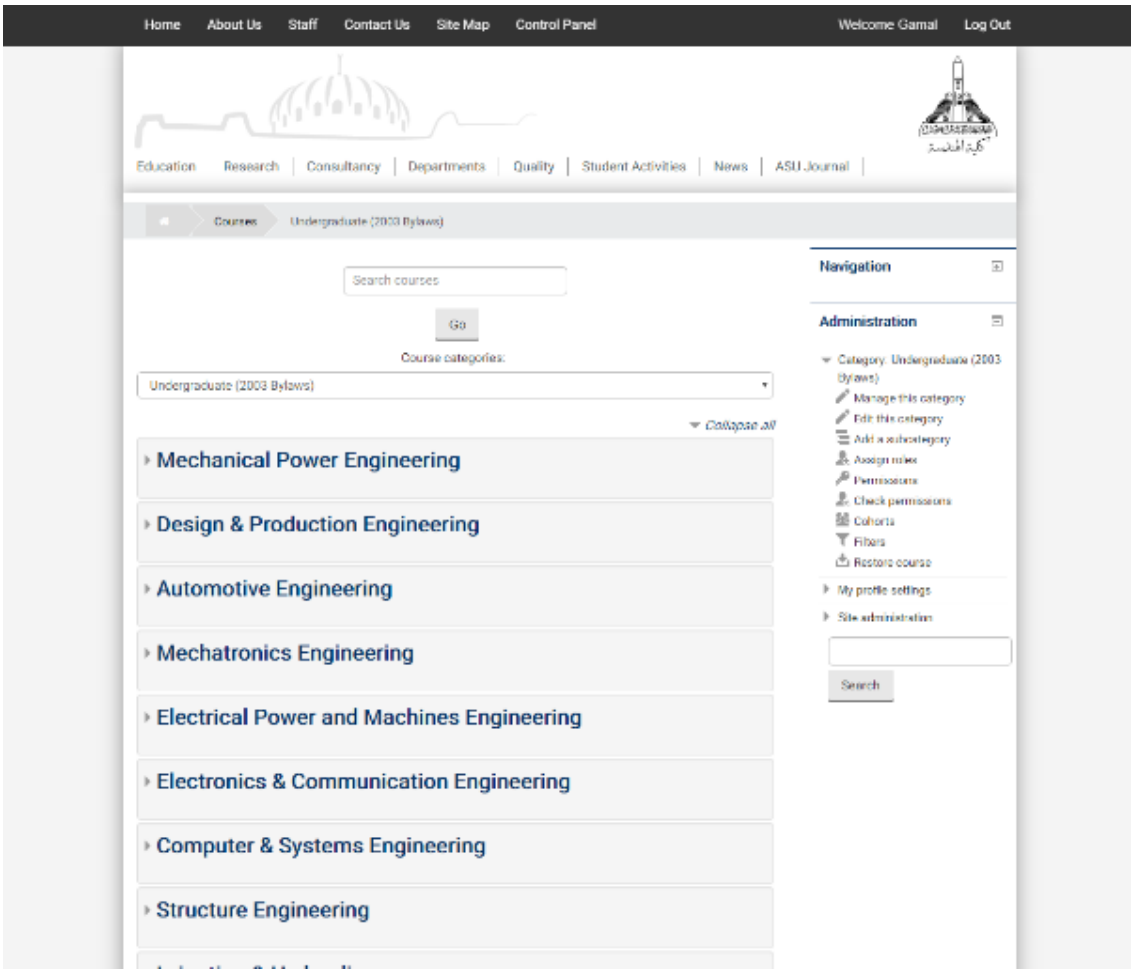
Word	تحويل الأفكار إلى مستندات ذات مظهر احترافي	Excel	تحقيق رؤى ذات قيمة كبيرة مع أدوات تحليل قوية
PowerPoint	تحويل الأفكار إلى عروض ذات تأثير عميق	OneNote	جمع المعلومات في مكان واحد ليسهل الوصول إليها
Outlook	إدارة الجداول والمهام مع زملائك	Lync	التواصل والتعاون بسهولة تامة مع زملائك من مختلف المواقع
Publisher	إنشاء منشورات عالية الجودة ومواد تسويقية	Access	التعقب والإبلاغ عن المعلومات الهامة

اكتشف كيف يمكن أن يجعل Office حياتك أكثر سهولة ومتعة من خلال زيارة aka.ms/study-play-be

يتاح Publisher وAccess لأجهزة الكمبيوتر الشخصية فقط. أما تطبيق OneNote لأجهزة Mac فهو متاح للتنزيل من Mac App Store. بعد إصدار Office 2013 متاحاً للأجهزة التي تعمل بنظام Windows، بينما يتاح إصدار Office 2011 لأجهزة Mac

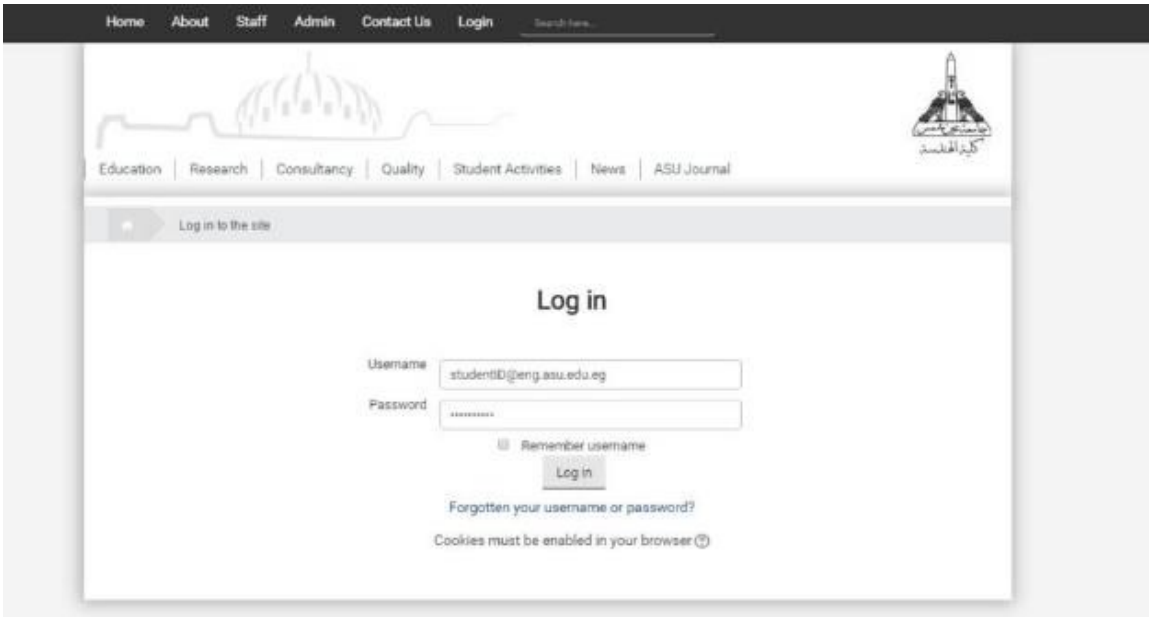
Learning Management System

Faculty administration pays special attention to the learning management system that helps students and staff members to intercommunicate effectively in terms of course material, assignment, term-work marks … etc. Hence, LMS is setup to have a page for each course studied during the semester. The student can access his courses from the main web-page by clicking on the MyCourses icon, which takes him to a list of all courses in as shown.



Learning Management System

The student can only access the courses that he currently enrolled on them. All access requires the student to login with his university e-mail as shown in the following figure.



LMS Login Page

University e-mail is created automatically for the student when he first enrolled to the Faculty, and he retains this e-mail until he graduates. All electronic services provided to students requires the use of university e-mail, hence, it must be activated and used by the student.

Appendix: Contact List

Position	Contact E-Mail
Dean's Office	Dean@eng.asu.edu.eg
Vice-Dean for Environmental Affairs and Community Services	VDCommunity@eng.asu.edu.eg
Vice-Dean for Students' Affairs	VDStdAffairs@eng.asu.edu.eg
Vice-Dean for Postgraduate Studies and Research	VDResearch@eng.asu.edu.eg
Department of Structural Engineering	amr_abdelrahman@eng.asu.edu.eg
Department of Public Works	mohamed_eltokhy@eng.asu.edu.eg
Department of Irrigation and Hydraulics Engineering	nahla_abdelhamid@eng.asu.edu.eg
Department of Mechanical Power Engineering	mkamal@eng.asu.edu.eg
Department of Design and Production Engineering	hesham_senbel@eng.asu.edu.eg
Department of Automotive Engineering	ibrahim_omran@eng.asu.edu.eg
Department of Mechatronics Engineering	sherif.hammad@eng.asu.edu.eg
Department of Architecture Engineering	yasser_mansour@eng.asu.edu.eg
Department of Urban Planning	mohamed_a_ibrahim@eng.asu.edu.eg
Department of Electrical Power and Machines	hesham_temraz@eng.asu.edu.eg
Department of Electronics and Electrical Communication Engineering	diaa_khalil@eng.asu.edu.eg
Department of Computer and Systems Engineering	ashraf.salem@eng.asu.edu.eg
Department of Engineering Physics and Mathematics	niveen_badra@eng.asu.edu.eg
Head of Continuous Improvement and Quality Assurance Unit	gamal_hashem@eng.asu.edu.eg

Web-Page https://eng.asu.edu.eg

Phone (+20 2) 26824445
(+20 2) 24662793
(+20 2) 26830841

Fax (+20 2) 26850617

Address Faculty of Engineering, Ain Shams University
1 El Sarayat Street, Abbassia 11517
Cairo, Egypt