الأكاديمية الدولية للهندسة وعلوم الإعلام
INTERNATIONAL ACADEMY FOR ENGINEERING & MEDIA SCIENCE

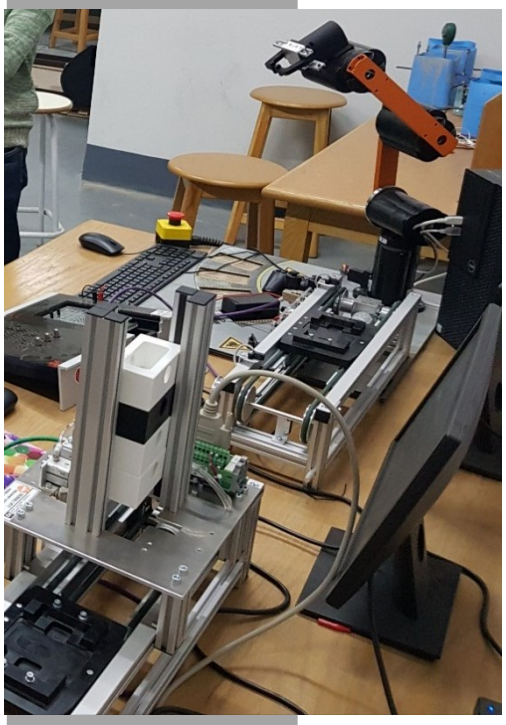
Undergraduate

Bylaw and Curriculum

Media Engineering Major

Academy for Engineering and Media Science

(Credit Hour System)



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March 2020

In the name of Allah,

Most merciful most gracious

Undergraduate

Bylaw and Curriculum

Media Engineering Major

International Academy for Engineering and Media Science

Approved by the Executive Council in 9/2/2020

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Contents

Introduction

The Ministerial Decree number 604 established the International Academy for media science (IAMS) in 2002 with one degree-granting Media Major. The study in media major started in the academic year 2002-2003. The Ministerial decree number 1429 added major of Engineering in 2006. The Academy name then changed to be "International Academy for engineering and media science (IAEMS)". The study in engineering major started in the academic year 2006-2007.

In 2012, the business administration major added to the academy. The Ministerial decree number 2767 established this. The study in Business Administration major started in the academic year 2012-2013.

The academy offers their study programs to all Egyptian students and to Arabic students. It strives for quality learning, development consciousness, economic solidarity, social responsibility, and environmental balance in Egypt and the Arabic world.

Generally, the academy curricula apply the credit hour system in all study programs. This system is one of the good teaching systems. Accordingly, the academic year divided into two main semesters of 15 weeks each; fall semester and spring semester, in addition to one non-compulsory Summer Semester of 7 weeks.

Generally, the courses of the Engineering curriculum divided into three requirements; Academy requirements, major requirements and program requirements. Each requirements have a group of mandatory courses and a group of elective courses.

Finally, this curriculum designed to follow all the modern terms of teaching and learning systems.

Prof. F. A. Torkey,

Academy President.

Chapter 1

Study and Examination System

1-1 General Concepts and Terminology

Article 1: The Official Name

These regulations shall be cited as "***Academic Curriculum for the Media Engineering Major"***

Article 2: Terminology

The following terms have the associated meaning beside each:

Ministry	: Ministry of Higher Education.
Academy	: International Academy for Engineering and Media Science.
Academy Council	: Administration Academy Council.
Executive Council	: Executive Council of the Academy
Regulations	: Academic Regulations of the Media Engineering Major.
Major Dean	: Dean of the Media Engineering Major.
Credit hour	: A standard unit of measurement used to specify course load per semester in relation to other courses.
Contact hour	: Actual amount of time elapsed in a lecture, laboratory, etc.
Academic program	: Knowledge that leads to a scientific degree.
Study plan	: The courses list that is required for a study program to gain a scientific degree.
Academic year	: The academic year consists of three semesters; fall and spring semesters in addition to an elective summer semester.
Study load	: The group of semester credit hours that the student registers.
Scientific degree	: The awarded B.Sc. after completing graduation requirements.

Article 3: Applying

Applying of these regulations shall be applicable to the regular students registered for a scientific degree at the Academy by the next year after issuing the ministerial decree.

Article 4: Majors Departments

The Media Engineering Major includes the following Scientific Departments:

1. Basic Science.
2. Architecture Engineering.

3. Civil Engineering.
4. Electrical Power and Machines Engineering .
5. Communication Engineering.
6. Computer Engineering and AI

It is also possible to establish new Departments after completing all the required legal procedures.

1-2 Admission Regulations

Article 5: General Admission Requirements

The Academy fully complies with the admission regulations of the Private Institutions of the Ministry of Higher Education. Students applying for admission at an Academy Major must meet the following requirements:

1- Should be Egyptian. Non-Egyptian students can also accepted according to the related rules organized by the ministry of higher education.
2- Must graduate from the general secondary school or equivalent. Students join Majors through a competitive process, based mainly on the results of the secondary school Final Exam (*Thanaweya Amma*).
3- Should pass the Admission Exam.
4- Should be healthy.
5- Must enroll as a full-time student.
6- All kinds of required fees must paid in full.

Article 6: Admission Documents

The following documents are required for Admission:

1- An original copy of the results of the secondary school certificate.
2- An original copy of the birth certificate.
3- Twelve recent passport size photos of size 4X6.
4- A signed medical investigation document from the academy medical center.
5- Military Service Form No.2 for Egyptian male students for less than 19 years old and No 6 for 19 and above years old. Or an exemption certificate
6- Sports Incentive Certificate for eligible students.
7- Any other document(s) that might required by the Major.

Article 7: Scientific Degree Awarding

According to the request of the Academy Councils, the Academy awards the Bachelor's degree in Media Engineering in one of the following fields

1. Architecture Engineering.
2. Civil Engineering.

3. Electrical Power and Machines Engineering.
4. Communication Engineering.
5. Computer Engineering and AI

1-3 Study and Registration System

Article 8: Educational System

The Academy applies the credit-hour system in all programs. Accordingly, the academic year divided into two main semesters of 15 weeks each; fall semester and spring semester, in addition to one non-compulsory Summer Semester of 7 weeks.

Article 9: Study Languages

The study languages in the academy are Arabic and English languages.

Article 10: Credit hours / Contact hours

The Credit Hour is a standard unit of measurement used to specify course load per semester in relation to other courses. The Contact Hour is the actual real time of a lecture, laboratory, etc.

Each credit hour equates to:

50 contact minuets per week of theoretical lectures,

100 contact minuets per week of either tutorial or practical classes.

Article 11: Academic Programs

The study plan in each Major contains one or more academic programs, which lead to a Bachelor's degree in the major field of program. The Major should offer one or more groups for each course in the academic program. These course groups should offered in different time slots, location and lecturer. The academic program leads to a scientific degree. The student should be able to choose a group of elective courses that improve his/her skills in minor specialization within the major specialization of the program.

Article 12: Student ID card

Each student in the Academy has got a stamped ID card signed by Academy Director. The card contains the student data and photo. It not allowed a student to attend a lecture, laboratory, or workshop without this card. if it is lost, the student should pay the fees to have a new one.

Article 13: Transfer of Students

The ministry of higher education regulates the transfer of students' procedure each academic year. In all cases, the head of the central department in the ministry must be approve the application form.

Article 14: Minimum Credit Hours Required for Graduation

The minimum number of credit hours required for graduation is 144 Cr. These credits distributed among the academy requirements, the major requirement and the program requirements.

Article 15: Course Coding

Each course has a unique code. This code contains information about the Major and specialization of the study program. It also contains information about the level of the course in the study program. As shown in the following figure, the course code consists of two parts; course letter (three uppercase letters specify the course specialization) and course 4-digit number. Each digit in the number has a special meaning as follows:

- D_4 specifies the Major code; 0 for Academy requirement courses, and 2 for the Major of Media Engineering.
- D_3 specifies the code of the scientific department in the Major that offers this course. The value of this digit may have a number from1 to 9.
- D_2 specifies the group level inside the department. The value of this digit may have a number from 0 to 9.
- D_1 specifies the course level inside the group, either mandatory or elective. The value of this digit may have a number from 0 to 9.

Article 16: Academic Program Curriculum

The curriculum of all academic programs in the Academy includes the following group of courses:

(a) **Mandatory Academy requirements:** Is a group of 15 credit hours courses to develop the personality of students. They *completed* by all students as part of the graduation requirements for the chosen field of specialization.

(b) **Elective Academy requirements:** are 6 credit hours group of designated courses that students can *select from* in order to complete the Academy elective courses requirements in their program.

(b) **Elective Academy requirements:** are 6 credit hours group of designated courses that students can *select from* in order to complete the Academy elective courses requirements in their program.

(c) **Major Requirements:** offered by the Major council and approved by the Academy executive council. These requirements are 42 Cr., distributed over 33 Cr. mandatory hours and 9 Cr. elective hours as specified by the Major council.

(d) **Academic program requirements:** offered by the Major council and approved by the Academy executive council. The requirements are 81 Cr., distributed over 66 Cr. mandatory and 15 Cr. elective hours as specified by the Major council.

Article 17: Academic Advising

The Academic Advisor is a Major member who assigned the responsibility of monitoring and coaching a group of students as well as assisting them in developing their study plans and schedules.

The Academic Advisor assists students in other academic issues or problems encountered throughout their study period. The Academic Advisor also validates the Registration/Add/Drop forms.

Article 18: Registration

Registration dates published in the academic calendar and semester schedules for both new and continuing students. At registration, students will meet with the Academic Advisors to select courses appropriate to their study plan. The Academic Advisors will assist and validate the students' completion of the Registration Form.

The student considered enrolled after he or she presents all the required documents to the Registration Office and pays the outstanding fees.

The Admission and Registration Office generates individual student academic files for all students. This file contains the student's official documents: Semester Enrollment Forms, Semester Academic Transcript, and other documents including medical certificates, academic warnings, Add and Drop Forms, etc. The student's academic file updated at the end of each semester.

The academic advisor must have copies of these files to follow up the students' academic progression with the academic advisors.

Article 19: Course Prerequisite

Successful completion of the course applicable prerequisite course(s) is necessary for registration in a course. This rule violated in justifiable conditions advised by a recommendation from the Major Dean and approved by the Academy director.

Article 20: Study Load

The student is responsible for the study load that is adequate to his/her abilities and study level. The Academic Advisor examines the student's records to advise him/her to take a number of courses appropriate to his academic achievement at the Major with consideration to the following:

1. The maximum number of credit hours is 18 per week during the fall and spring semesters. This number of credit hours may however reach 21 if the Student's GPA is 3 or more. This may change if the student expected to graduate in the semester and advised by the student's academic advisor.
2. The minimum number of credit hours is 12 per week during the fall and spring semesters except for graduating students where the student can register for a number of credit hours less than 12 depending on the remaining credit hours in his/her last semester.
3. In the summer semester, the maximum number of credit hours is 6. This number may be increased to 9 credits if this will allow the student to be graduated. Each course group should not be less than 10 students.
4. The Major council must approve other cases of violating the maximum and minimum limits.

Article 21: Course Registration, Add and Drop Deadlines

With due observance of maximum and minimum study load, the following is to be considered.

1. Semester registration completed during the first week of the semester and classes start at the beginning of the second week.
2. Student may Add, and/or Drop any course before the deadline, which is the third week of any semester.
3. Summer Semester Course(s) Registration during the first week. Add and Drop completed before the end of the second week, and classes start at the beginning of third day in the first week.

Students should fill in the Registration, Add and Drop Forms and have them approved by the Academic Advisors. These forms then submitted to the Admission and Registration Office.

Article 22: Courses Withdrawal

Students can withdraw from any course after an approval by the academic advisor and before the withdrawal deadline (the 8th week for the fall and spring semesters, and 3th week for the summer semester). The minimum study load observed. A grade of "*W*" for that course will appear on the student transcript and will excluded from the GPA, if the student did not exceed the attendance limit.

If the withdrawal is done after the withdrawal deadline period, a grade of "*F*" will appear on the student transcript indicating failure in the course.

Article 23: Semester Withdrawal

1. A student can withdraw from a complete semester after having an advisor's signature for semester withdrawal. The withdrawal form submitted before the end of the 8th week for the fall and spring semesters, and 4th week for the summer semester. The Major council must approve this withdrawal**.**
2. The Major council may consider the semester withdrawal request form that submitted after the withdrawal period mentioned in the first paragraph and the council has to take the suitable decision.
3. The total number of withdrawn semesters must not exceed four semesters.
4. The continuing student who does not apply for registration during the period of registration and add/drop considered absent.
5. In all cases, the semester fees paid and not be transferred.

Article 24: Study Cease

A continuing student who registered for a semester and breaks his/her study plan, and does not apply for semester withdrawal considered absent. She/he prohibited from taking all the semester examinations and given grade "*F*" in all semester courses. In this case, the semester fees paid.

Article 25: Changing Study Program

A student who decides to change his/her program of study, or apply for a new program, in the same Major should discuss the program change with his/her Academic Advisor and the Major Dean. The student must complete a request form for program change and get it approved from the Major Dean. If approved, credit earned in the previous program *may* credited toward the new program upon evaluation by the Major Dean.

Article 26: Credit Transfer

Upon the recommendation of the relevant Major council and the approval of the ministry of higher education, students allowed transfer some credits previously completed at other universities or Majors according to the following conditions:

1. Transferred credits are part of the degree requirements.
2. The transferred credits must appear in the student’s transcript.
3. In all cases, it is not allowed to transfer credits if the student in his/her final level.

Article 27: Distant Learning

It allowed some theoretical courses to teach through blended distant learning facilities. These include television, internet, etc. In all cases, the final examination administered on campus at the Academy. All related regulations of the blended learning followed, including the face-to-face meetings, reports, case studies, and others.

Article 28: Student Attendance Policy

A student is required to attend all classes for all courses in which he/she registers. A student who is absent for more than 20% of the hours required for a course is given an academic warning. A student, who is absent for more than 25% of the contact hours required for a course without a valid excuse acceptable to the Major council, or a medical excuse, will be prohibited from taking all the following examinations scheduled for that course and shall be given grade "*F*".

Article 29: Warned Student Registration

Student who has an academic warning registers in the lower limit of studies academic load in the following semester. With the approval of the Major Dean and according to the advice of the academic advisor, this student may register in certain conditions for more than the lower limit of studies load.

Article 30: Maximum Study Period

The applied study system allows the students to complete their study program in the minimum time. However, the following restrictions should considered:

1. The maximum period of the study program is 16 main semesters, including the withdrawn semesters without counting the summer semesters.
2. The Academy council may allow a student to exceed these maximum specified periods in justifiable cases subject to a recommendation from the Major council.

Article 31: Special Credit Students

Special Credit Students defined as students who wish to enroll in a course(s) to get some experience in the field of these courses but not pursue a degree, diploma, or certificate. Special Credit Students register officially at the Academy and pay regular course tuition fees, but not assigned Academic Advisors. Students who wish to audit courses shall admitted, upon space availability basis, and shall not displace credit-seeking students. In this case, the student must pay the course tuition fees and no credit awarded, and no examinations administered. A grade "*AU*" recorded to indicate ‘Audit’.

Article 32: Deregistration

The academy council may stop registration for a student for one or at most two academic years. Under certain conditions, the head of the central department in the ministry of higher education may approve to Pause registration for more than two academic years, but not more than the double of the study years.

It is also possible, for the Academy council to stop registration for one semester for medical or family reasons. However, the central department of the ministry of higher education should also approve this and in this case, the student should pay semester's fees.

Article 33: Foreign Students

The ministry of higher education manages the registration of foreign students. In this case, the student pay the tuition fees in foreign currency.

Article 34: Exemption Cases

The academy dedicated not less than 5% of the total tuition fees for fees exemption. Thus, this ratio cannot be decrease unless approval from the ministry of higher education. The exemption done according to the academy council policy, especially in case of social disasters.

Article 35: Internship

Students in the academy must have two 3-week internship periods. This internship is independent of the courses practical parts and supervised by both the academy staff and the trainers. Students should complete at least 60 credit hours before attending the internship. At the end of each internship period, the student submit a report to discussed and evaluated. The internship grade is registered and included in the student transcript.

Article 36: Study Level

The following table indicates the student position and the study level according to the completed credit hours.

Percentage of the earned Credit hours	Student Level	Study Level
From 0% to 20%	Freshman	0
More than 20% to 40%	Sophomore	1
More than 40% to 60%	Junior	2
More than 60% to 80%	Senior-1	3
More than 80% to 100%	Senior-2	4

Article 37: Registration Suspension

Student who terminates his/her registration at the Academy has no right to register again except after submitting a new Application Form, and an official request stating clearly the reasons of his/her re-register, which must be approved by the Major council. In all cases, the approval of ministry of higher education is required. In case of approval, the student treated as a continued student according to his/her previous position before the Registration Termination.

Article 38: Dismissal from the Academy

A student dismissed from the Academy in one or more of the following cases:

1. If student gets three academic warnings and not able to reach the GPA of 2 during four semesters.
2. If student does not finish his/her studies in the maximum period.
3. If a decision taken against the student because of Conduct and/or Behavior Violation.
4. If student absent from study for four semesters without legal reason.

1-4 Examination Regulations

Article 39: The Course

The course is a subject of study (body of knowledge) given during one or two semester(s) and ends with a final examination. Students registered in a course divided into one or more groups, where each group assigned an instructor. The Major Dean assigns a coordinator for each course that has many groups. The *course coordinator* coordinates with the group instructors concerning the contents of the course, textbooks, examinations and grades.

The course instructor should inform students at the beginning of each semester of the course assessment and evaluation methodology, as well as the time of periodical examination.

Article 40: Semester Coursework

The work and activities of a student for a course evaluated by two marks; *semester Coursework mark* and *Final Exam mark*. The semester coursework mark is the mark that represent the student effort during the semester and contains examinations marks applied, training projects, and different academic activities of the course. All assignments, reports and researches returned to the student after correction completion and grades registration.

If a student absents him/herself from an examination thabefore, without a valid reason acceptable to the course instructor, shall have a zero grade for this examination. This zero grade is included in the calculation of the

semester coursework mark. The course instructor may consider a make-up examination for the absent student if his/her absence excuse is acceptable.

Article 41: Final Examination

The course final examination is a general examination in the course, and it held at the end of each semester. The Final Examination can and may include theoretical, applicable, oral, and laboratory examinations according to the needs of the course. The course final examination mark is the mark, which the student gets at the end of the semester examination for each course.

Article 42: Final Course mark

The final course mark is the sum of the semester coursework mark and the final examination mark for each course recommended according to the following percentages:

60% of the maximum course mark is dedicated for the semester work and 40% for the final examination.

Student must get 25% of the final examination mark to pass the course.

However, the final course mark must be an integer number.

Article 43: Course Maximum Mark

The maximum mark for each course is 100 marks. If marking done to a different maximum, the final mark scaled to 100. No floating numbers are accepted.

Article 44: Evaluations and Grades

The following table indicates how to convert a percentage into a 4.0 Grade Point Average (GPA).

Percentage	Symbol	Points
95% - 100%	A+	4.0
90% - 94%	A	3.75
85% - 89%	B+	3.4
80% - 84%	B	3.0
75% - 79%	C+	2.75
70% - 74%	C	2.5
65% - 69%	D+	2.25
60% - 64%	D	2
Less than 60%	F	0.0

Symbol	Evaluation	Explanation
I	Incomplete	Must remove by the end of eighth week of the next term.
W	Withdrawal	Changed to "*F*" if the withdrawal done after the specified deadline.
AU	Audit	No credit awarded, and no examinations are required.
S	Satisfactory	Pass course without grade
TC	Transferred	Transferred course
EX	Exempt	Exempt course
CO	Continued	Continued course for more than one semester.

Article 45: Course Grade Points

The Course Grade Points (CGP) calculated by the number of credit hours required for the course multiplied by the points corresponding to the final mark of the relevant course.

Article 46: Results

The course instructor is responsible for the correction of the examination papers of his/her course, for the revision of the grades and their registration in their respective transcripts and for handing them over to the Dean within a maximum period of 72 hours after the date of holding the final examination for that course.

No grade announced to any student before paying the fees and handing the results over to the Department of Admission and Registration.

Article 47: Semester Grade Point Average

The semester Grade Point Average (GPA) is a numerical academic evaluation method of the student's work during a semester. It is calculated by dividing the grade point total by the total number of credit hours earned for all courses taken within one semester and rounded up to the nearest two digits after the decimal point.

Article 48: Grade Point Average

The Grade Point Average (GPA) is a numerical academic evaluation method of the student's work during a semester. Generally, the GPA is calculated by dividing the grade point total by the total number of credit hours earned for all courses taken within one semester and rounded up to the nearest two digits.

When a student completes all the study program requirements, the cumulative Grade Point Average (GPA) indicates the assessment of all courses taken throughout the entire study period.

When a student completes all the study program requirements, the cumulative Grade Point Average (GPA) indicates the assessment of all courses taken throughout the entire study period.

The cumulative GPA calculated by dividing the Grade Point total by the total number of credit hours earned for all courses of the academic program, excluding the failed courses. In calculating the cumulative GPA, decimals beyond 2 places are truncated, and afterwards rounded up to one decimal place**.** The GPA may range from 0.0 to a 4.0.

The percentage is calculated by the formula: ***Percentage* = 20 x (1+ *GPA*)**.

Article 49: Assessment Method

The mark percentage of the practical and theoretical courses should be as follows:

Theoretical Courses	Practical Courses		
25%	15%	Midterm Exam.	Semester Coursework Mark 50%
25%	15%	Quizzes	
10%	10%	Punctuality and Participation	
-	20%	Practical (Lab, workshop, …)	
40%	40%	Final Exam (may include Oral)	Final Mark 50%
100%	100%	Sum	

Article 50: Incomplete Grade

An Incomplete Grade is a temporary grade of "*I*" that given for incomplete course work due to justified circumstances. The course instructor may accept the student's request if the student submits his/her request for an Incomplete Grade before the final exam and his/her semester course work mark not less than 50% of the full semester coursework mark. The fees must also paid.

It is the student's responsibility to contact the instructor regarding work to be completed for the removal of the "*I*" grade. The student must complete the required course work before the end of the following semester, or else the "*I*" changed to grade "*F*".

Article 51: Absence from Final Examination

Student who does not attend the final examination will have a mark of zero. Upon urgent necessity, the student might give a make-up examination before the end of the following semester at most. The student's mark then adjusted according to his/her result in this make-up examination. The decision to administer a make-up examination taken by the Major council according to the academic advisor.

limit of credit hours in the following semester. If academic warnings issued in three semesters and/or for two consecutive semesters, the Academy council may suspend students.

Article 53: Course Repeat

If a student fails in any Mandatory course, he/she has to retake this course when it is available and sit for a re-examination, but the Elective courses can be retaken and/or changed. The student must pay the regular course repeat tuition fees. The grades of failed courses not calculated in the GPA but appear in the student's academic transcript. It is possible for a student to repeat a course in which he/she has passed before with lower grade to improve his/her GPA. In this case, and after paying the regular course repeat tuition fees, the course credit hours calculated once and the new grade will recorded on the student's transcript.

Article 54: Academic Integrity

Any form of plagiarism, cheating, falsification, impersonation, evidence of concealment or fabrication of results not tolerated in the Academy. The minimum penalty for such violations is failing the course in which this violation is committed. In certain conditions, the penalty may reach dismissal from the Academy for One Semester or more based on the circumstances. This is according to the law number 52, 1970.

Article 55: Marks Sheet

For each group of students registered in a course there must be a Final Mark Sheet in which the student’s final marks and grades recorded. This sheet displays the student’s name, academic scores in the registered courses, Final Examination attendance record, the semester coursework marks, Final Examination mark and grades, in addition to other academic remarks.

Article 56: Final Examinations Preparations

Without violating these regulations, the Major council states the necessary preparations for the Final Examinations.

Article 57: Degree Plan Form

To be eligible for graduation, students must apply for a "*Degree Plan Form*" one semester before the graduation semester. This form maps out all completed courses as well as the remaining courses relevant to the study program. It insures that all the degree requirements have completed. The form must conducted under the supervision of the Academic Advisor. Copies of this form supplied to the main Registration Office. This form must also include a student financial clearance statement.

Article 58: Degree Requirements

Students awarded the Bachelor or Licentiate Degree after completing the following requirements:

1. The fulfillment of the minimum credit hours requirements in the program study plan as specified in the curriculum of the relevant Major.
2. Achieving a final GPA grade of at least 2.0 in order to awarded the relevant academic degree.
3. The completion of studies within the specified period applicable to the study program.
4. Submitting a financial clearance statement.
5. The fulfillment of the military training period.

Article 59: Student Transcript

Student transcript is the legal document that contains the academic record of the student. It contains the numbers, grades, and codes of the earned courses. It also contains the major, specialization and the grade point average (GPA) of the student. The transcript signed from both the Major Dean and the academy director.

Article 60: Graduation Grades

The graduation grades calculated as follows:

Grade	GPA
Excellent	From 3.5 to 4
Very Good	From 3 to < 3.5
Good	From 2.5 to < 3
Pass	From 2 to < 2.5

Students with a cumulative GPA of 3.5 and above are included in the honor list, if the student has not failed in any course during his/her study in the academy and finished not less than 70% of the program requirements in the academy.

Chapter 2

Study Programs and Scientific Departments

2-1 Study Programs

The Major of Media Engineering comprises four study programs. Each program study plan contains 144 credit hours. These credits distributed among the Academy requirements, Major requirements and study program requirements. The academic advisor helps the student making his study table in each semester.

According to the request of the Academy Councils, the Academy awards the Bachelor's degree in Media Engineering in one of the following fields:

1. Architecture Engineering.
2. Civil Engineering.
3. Electrical Power and Machines Engineering.
4. Communication Engineering.
5. Computer Engineering and AI

The following table indicates the distribution of the credit hours for all academic programs.

Total	Elective	Mandatory	Requirements	No
21	6	15	Academy Requirements	1
42	9	33	Major Requirements	2
81	15	66	Program Requirements	3
144	Total credits for any study program:			

2-2 Scientific Departments

The English program Media Engineering Major comprises of Six scientific departments. They are:

1. Basic Science.
2. Architecture Engineering.
3. Civil Engineering.
4. Electrical Power and Machines Engineering.
5. Communication Engineering.
6. Computer Engineering and AI.

The staff members in each department in the major supervises a group of courses that belong to its field of specialization. The staff members are responsible to develop the course specs and follow up the reports and files of these courses.

Chapter 3

National Academic Reference Standards

3-1 According to NARS 2018 The Engineering Graduate must:

1. Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real life situations;

2. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation;

3. Behave professionally and adhere to engineering ethics and standards;

4. Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance;

5. Recognize his/her role in promoting the engineering field and contribute in the development of the profession and the community;

6. Value the importance of the environment, both physical and natural, and work to promote sustainability principles;

7. Use techniques, skills and modern engineering tools necessary for engineering practice;

8. Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post- graduate and research studies;

9. Communicate effectively using different modes, tools and languages with various audiences; to deal with academic/professional challenges in a critical and creative manner;

10. Demonstrate leadership qualities, business administration and entrepreneurial skills.

3-2 COMETENCIES OF ENGINEERING GRADUATE

According to the National Academic Reference Standards (NARS-2018), The Engineering Graduate

must be able to (A-Level):

A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.

A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.

A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.

A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.

A5. Practice research techniques and methods of investigation as an inherent part of learning.

A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.

A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.

A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

The following are the courses for each department:

Chapter 4

Academy Requirements

The Academy requirements are integrated learning experience that aim to develop students' capacity for innovation and social responsibility. Throughout the Academy requirements courses, the Academy aims to develop student's skills; where students are studying culture courses helping them realize there capabilities and enhance skills critical to problem-solving, critical thinking, persistence toward excellence, as well as social responsibility.

This indicated in the following table:

No.	Field	Courses
1	Languages, skills and management	Arabic Language English language Business administration fundamentals Computer skills Computer applications
2	Arts, culture and history	Human writes Thinking philosophy Arts fundamentals Egyptology Egyptian history
3	Media Cultures	Media ethics Media and policy Media and Society International media

Chapter 4

Major Requirements

Engineering Major

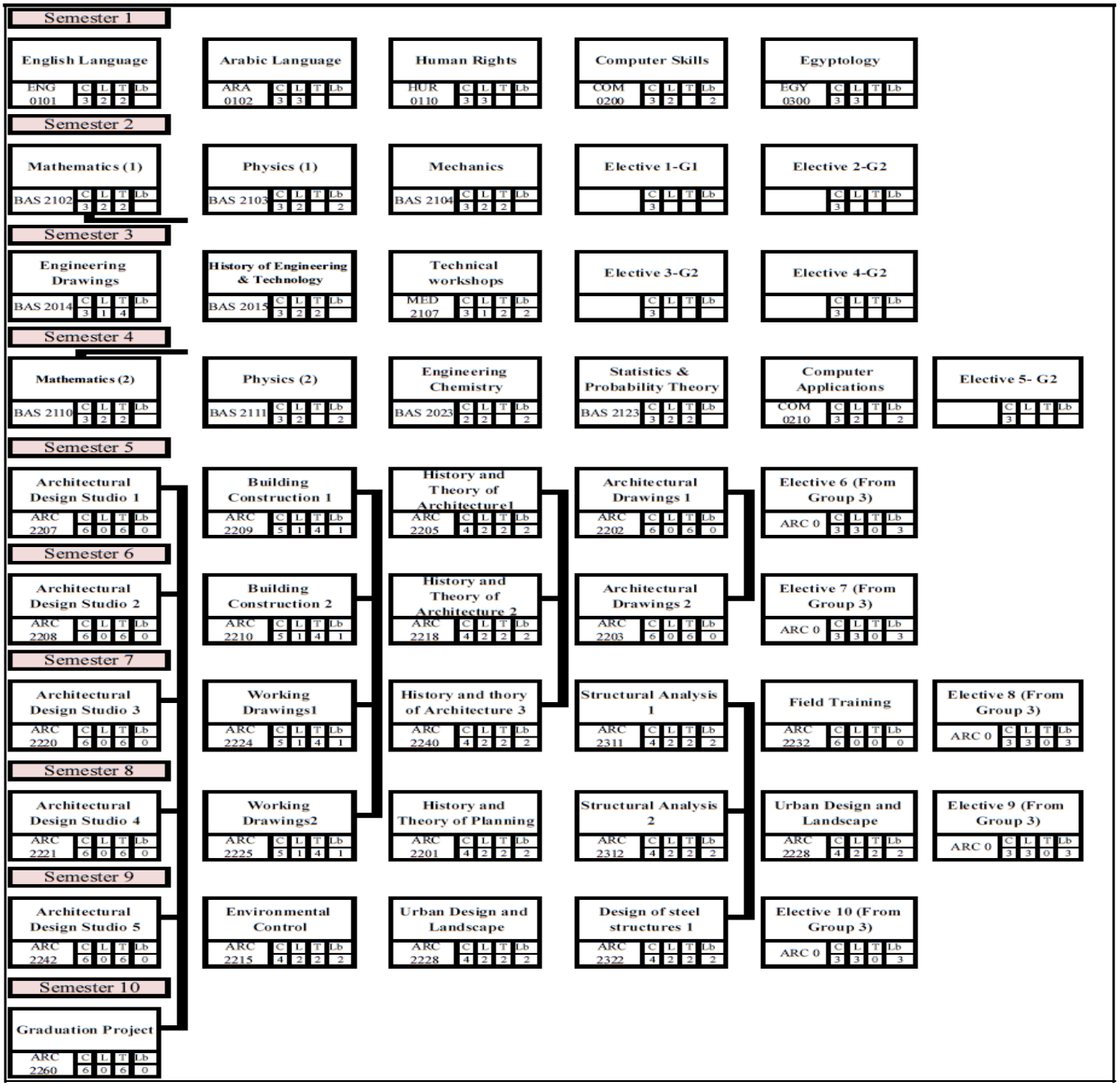
The Major requirements study plan contains mandatory courses. These courses represent the essential and general scientific background for all students in the Major to help them choose the suitable academic program. The following are the data of the Major requirements courses.

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
Mandatory Courses								**33**	**Credit Hours**
BAS 2102	Mathematics 1			2	2	0	0	4	3
BAS 2103	Physics 1			2	0	2	0	4	3
BAS 2104	Mechanics			2	2	0	0	4	3
MED 2105	Engineering Drawing			1	4	0	0	5	3
MED 2106	History of Engineering & Tech			2	2	0	0	4	3
MED 2107	Technical Workshop			1	2	2	0	5	3
BAS 2110	Mathematics 2	BAS 2102	Mathematics 1	2	2	0	0	4	3
CO 210	Computer Applications			2	0	2	0	4	3
BAS 2111	Physics 2	BAS 2103	Physics 1	2	0	2	0	4	3
BAS 2112	Engineering Chemistry			2	0	2	0	4	3
BAS 2123	Statistics & Probability Theory			2	2	0	0	4	3
			Subtotal:	**20**	**16**	**10**	**0**	**46**	**33**
Elective Courses								**9**	**Credit Hours**
CAI 2601	Principles of Computer Engin			2	0	2	0	4	3
ELE 2531	Principles of Mechatronics			2	2	0	0	4	3
ARC 2532	Principles of Architecture Eng			2	2	0	0	4	3
ELE 2533	Principles of Electronic Engin			2	2	0	0	4	3
CEN 2366	Principles of Civil Engineering			2	2	0	0	4	3
ELP 2367	Principles of Electrical Engine			2	2	0	0	4	3
			Subtotal:	**12**	**10**	**2**	**0**	**24**	**18**

Chapter 5

Major Requirements

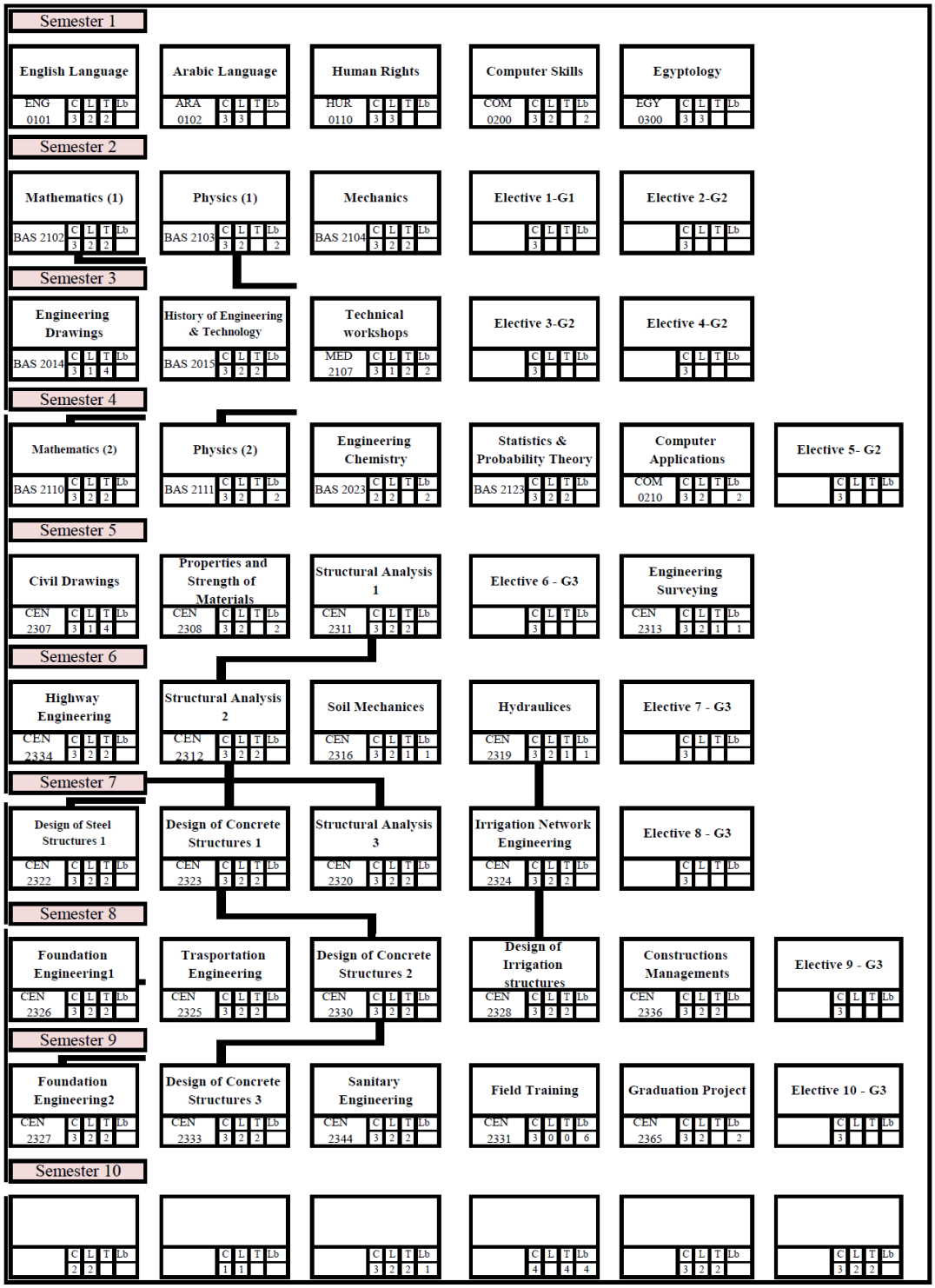
Architecture Departmet



C= Credit Hours
L= Lecture Hours

T= Tutorial Hours
Lb= Lab Hours

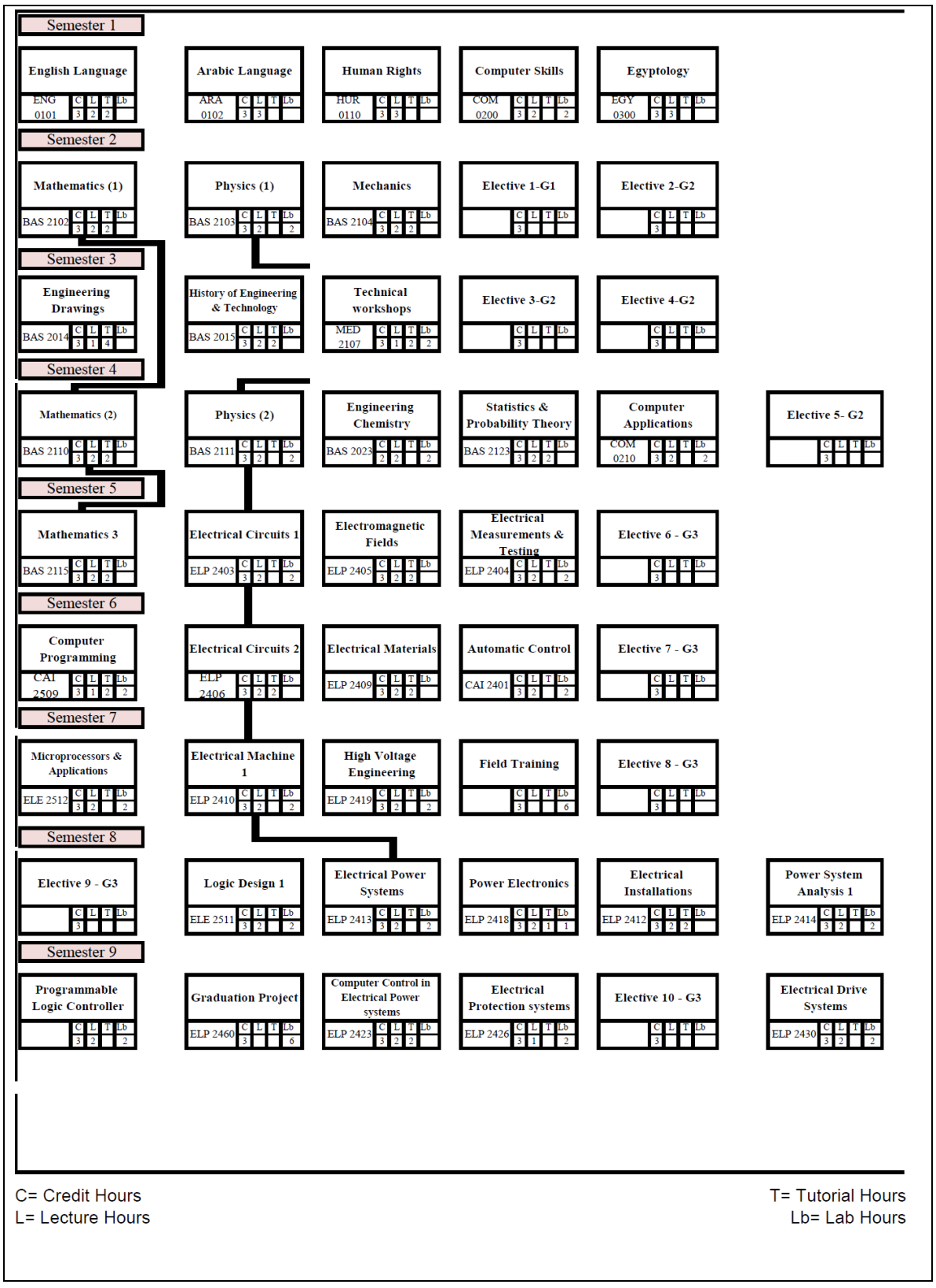
Civil courses tree



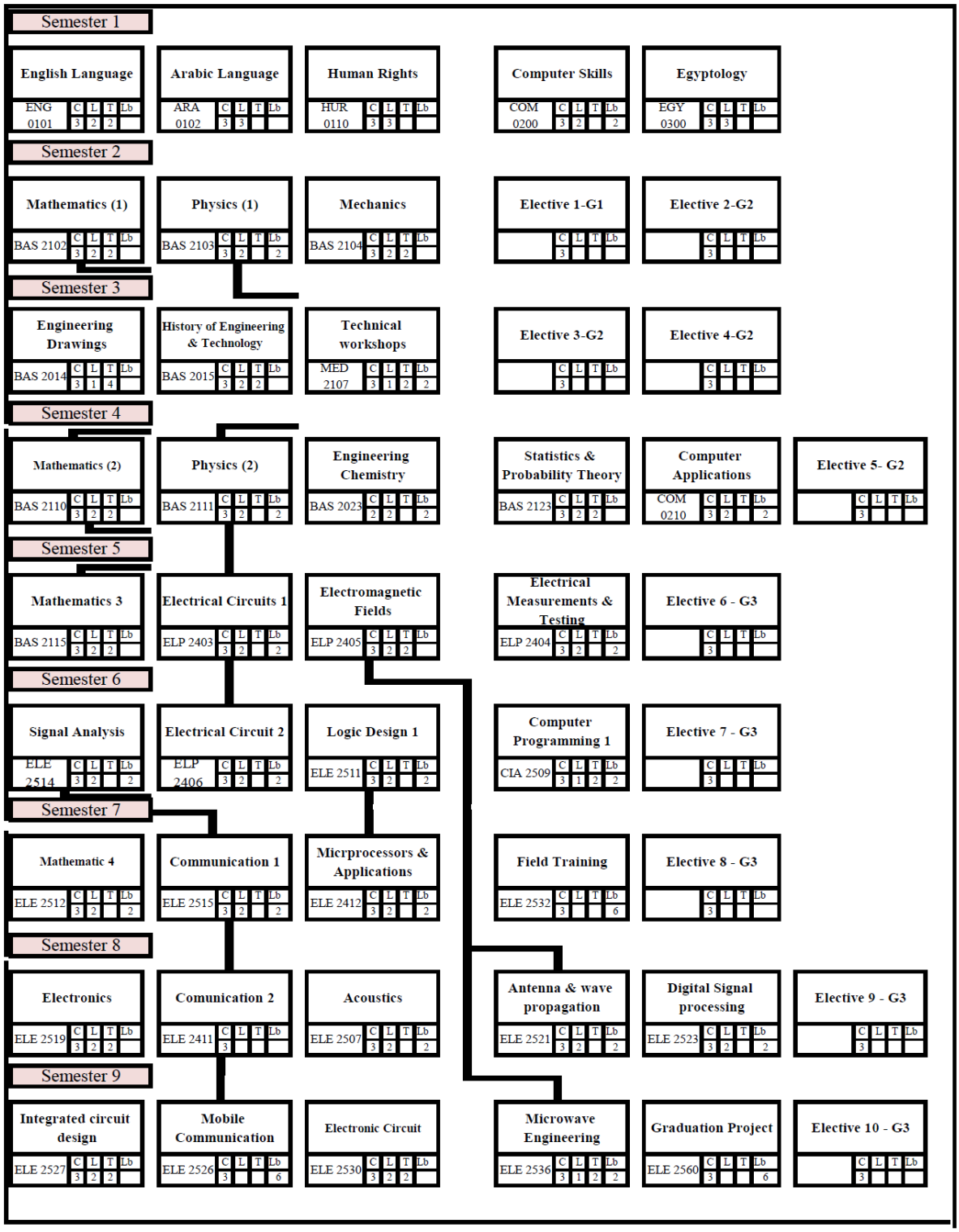
Credit Hours
Lecture Hours

T= Tutorial Hours
Lb= Lab Hours

Power Courses Tree

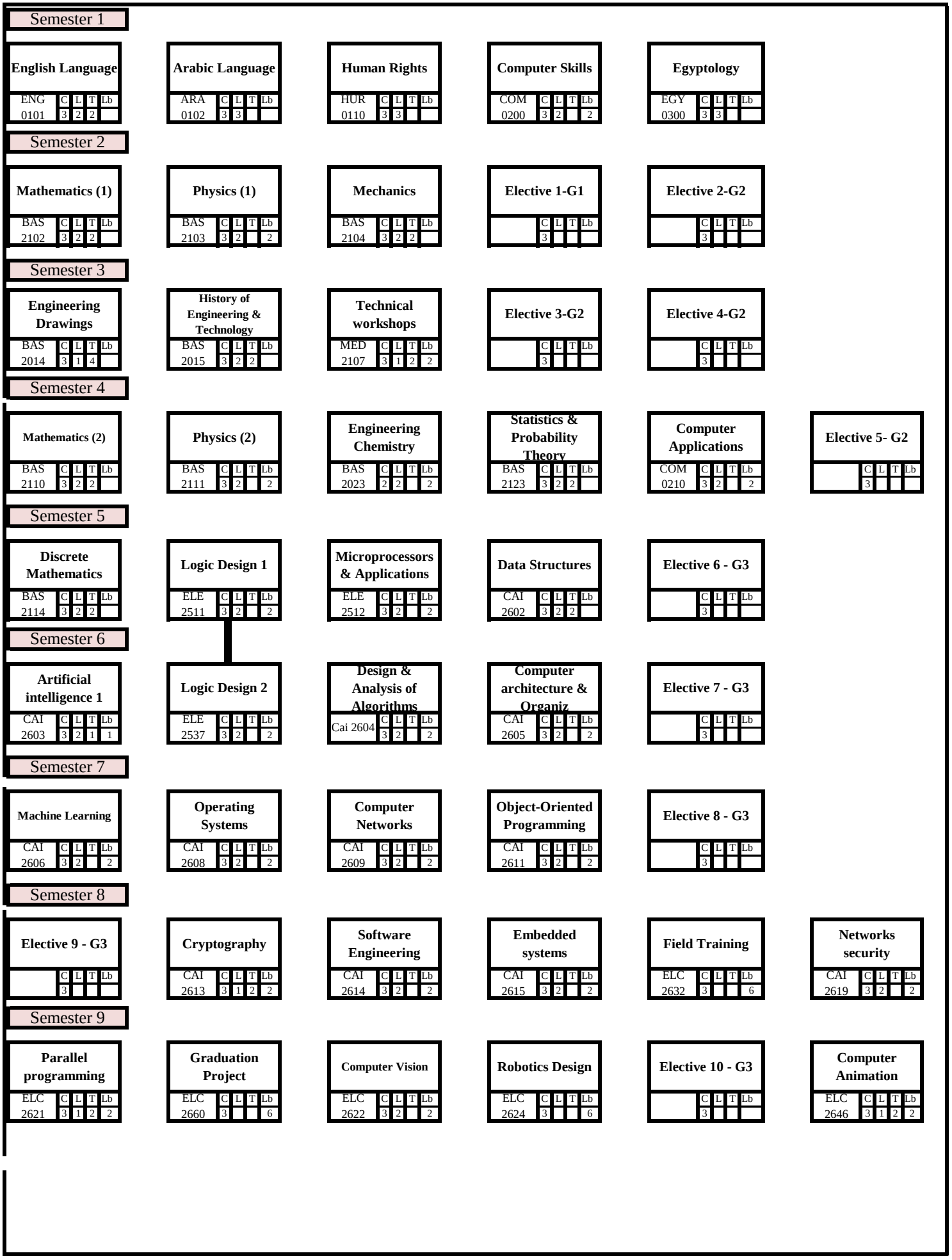


Communication power Courses Tree



Credit HoursL= Lecture Hours T= Tutorial HoursLb= Lab Hours

Computer Engineering and AI Courses Tree



C= Credit Hours
L= Lecture Hours
T= Tutorial Hours
Lb= Lab Hours

5-3 Major of Electrical Power and Machine Departement Requirments

Table 1 Electrical Courses

Code	Course Title	Cr.	Lec	Ex	Lab	Pre-req.
BAS 2115	Mathematics 3	3	2	2		
ELP 2403	Electrical Circuits 1	3	2		2	BAS 2111
ELP 2404	Electrical Measurements & Testing	3	2		2	
ELP 2409	Electrical Materials	3	2	2		
ELE 2504	Electromagnetic Fields	3	2	2		
ELP 2406	Electrical Circuits 2	3	2		2	
ELE 2511	Logic Design 1	3	2		2	
CAI 2509	Computer Programming	3	1	2	2	
ELE 2512	Microprocessor & Applications	3	2		2	
CAI 2401	Automatic Control	3	2		2	

30 CR

Special Speceficartion Requirments

متطلبات التخصص الدقيق (القوى الكهربية) وتمثل ٣٦ ساعة معتمدة اجبارية و١٥ ساعة اختيارية بمجموع ٥١ ساعة معتمدة بما يمثل ٣٥ % من متطلبات الدرجة.

Mandatory courses

Code	Course Title	Cr.	Lec	Ex	Lab	Pre-req.
ELP 2412	Electrical Installations	3	2	2		
ELP 2410	Electrical Machine 1	3	2		2	ELP 2406
ELP 2413	Electrical Power Systems	3	2		2	ELP 2410
ELP 2419	High Voltage Engineering	3	2		2	
ELP 2414	Electrical Power System Analysis 1	3	2		2	
ELP 2418	Power Electronics	3	2	1	1	
ELP 2420	PLC	3	2		2	
ELP 2460	Graduation Project	3			6	
ELP 2430	Electrical Drive Systems	3	2		2	
ELP 2423	Computer Control in Electrical Power systems	3	2	2		
ELP 2426	Electrical Protection systems	3	2		2	
ELP 2416	Field Training	3			6	

مقررات اختيارية (يتم اختيار ١٥ ساعة)

Code	Course Title	Cr.	Lec	Ex	Lab	Pre-req.
ELP 2424	Electrical Power System Analysis ٢	3	2		2	ELP 2414
ELP 2411	Electrical Machines 2	3	2		2	ELP 2410

ELP 2402	Digital Control Systems	3	2		2	ELP 2401
ELP 2429	Energy Utilization in Buildings and Manufacture	3	2		2	
ELP 2433	Technology of renewable energy	٣	٢	٢		
ELP 2415	Microcontroller & Applications	3	2		2	
ELP 2421	Power Electronics Applications	3	2		2	
ELP 2422	Special Electrical Machines	3	2		2	
ELE 2527	Integrated Circuit Design	3	2	2		
ELP 2431	Technology of Robotics	3	2		2	

15 Cr

Academy Requirements Study Plan

The Academy requirements study plan contains 15 mandatory credits and 6 elective credits. All Academy students must take the 15 mandatory credits. Each student can choose 6 elective credits from the available elective course list. The Academy council assigns a committee for each course to develop its specs, and to follow up its reports and files according to the Academy internal quality assurance system.

Course Code	Course Name	Pre. Code	Prerequisite Name	Lec.	Tut.	Lab.	WS	Sum	Cre. Hours
Mandatory Courses								**15**	Credit Hours
ENG 0 101	English Language			2	2	0	0	4	3
ARA 0 102	Arabic Language			3	0	0	0	3	3
HUR 0 110	Human Rights			3	0	0	0	3	3
COM 0 200	Computer Skills			2	0	2	0	4	3
EGY 0 300	Egyptology			3	0	0	0	3	3
	Partial Sum:			**13**	**2**	**2**	**0**	**17**	**15**
Elective Courses								**6**	Credit Hours
BUS 0 310	Business Administration Fundamentals			3	0	0	0	3	3
PSY 0 320	Thinking Philosophy			3	0	0	0	3	3
EGY 0 330	Egyptian History			3	0	0	0	3	3
MDA 0 400	Media Ethics			3	0	0	0	3	3
MDA 0 410	Media and Politics			3	0	0	0	3	3
MDA 0 420	Media and Society			3	0	0	0	3	3
RTV 0 430	International Media			3	0	0	0	3	3
ART 0 500	Basics of Arts			3	0	0	0	3	3
	Partial Sum:			**24**	**0**	**0**	**0**	**24**	**24**

Chapter 5

Study Plans For The Academic Programs of

Engineering Major

2001 Architecture Engineering

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
Mandatory Courses								**66**	**Credit Hours**
ARC 2201	History and Theory of Planning			2	2	0	0	4	3
ARC 2202	Architectural Drawings 1			0	6	0	0	6	3
ARC 2203	Architectural Drawings 2			0	6	0	0	6	3
ARC 2205	History and Theory of Architecture			2	2	0	0	4	3
ARC 2207	Architectural Design Studio 1			0	6	0	0	6	3
ARC 2208	Architectural Design Studio 2	ARC 2207	Architectural Design St	0	6	0	0	6	3
ARC 2209	Building Construction 1			1	4	0	0	5	3
ARC 2210	Building Construction 2	ARC 2209	Building Construction 1	1	4	0	0	5	3
ARC 2215	Environmental Control			2	2	0	0	4	3
ARC 2218	History and Theory of Architecture			2	2	0	0	4	3
ARC 2220	Architectural Design Studio 3	ARC 2208	Architectural Design St	0	6	0	0	6	3
ARC 2221	Architectural Design Studio 4	ARC 2220	Architectural Design St	0	6	0	0	6	3
ARC 2224	Working Drawings1	ARC 2210	Building Construction 2	1	4	0	0	5	3
ARC 2226	Housing			2	2	0	0	4	3
ARC 2228	Urban Design and Landscape			2	2	0	0	4	3
ARC 2232	Field Training			0	0	0	6	6	3
ARC 2240	History and thory of Architecture 3			2	2	0	0	4	3
ARC 2242	Architectural Design Studio 5	ARC 2221	Architectural Design St	0	6	0	0	6	3
ARC 2260	Graduation Project			0	6	0	0	6	3
CEN 2311	Structural Analysis 1			2	2	0	0	4	3
CEN 2312	Structural Analysis 2	CEN 2311	Structural Analysis 1	2	2	0	0	4	3
CEN 2322	Design of steel structures 1			2	2	0	0	4	3
			Partial Sum:	**23**	**80**	**0**	**6**	**109**	**66**
Elective Courses								**15**	**Credit Hours**
ARC 2213	Landscape and Site Planning			2	2	0	0	4	3
ARC 2223	Building Construction 3	ARC 2210	Building Construction 2	1	4	0	0	5	3

ARC	2225	Working Drawings2	ARC 2224	Working Drawings1	1	4	0	0	5	3
ARC	2231	Building & Urban Legislation			2	2	0	0	4	3
ARC	2234	Interior design			2	2	0	0	4	3
ARC	2235	Recent Building Technology			2	2	0	0	4	3
ARC	2236	Architecture, Culture and Heritag			2	2	0	0	4	3
ARC	2237	Architecture in Hot Arid Zone			2	2	0	0	4	3
ARC	2238	Architecture Criticism			2	2	0	0	4	3
ARC	2239	Green Architecture			2	2	0	0	4	3
ARC	2245	Architecture & Human Behavioral			2	2	0	0	4	3
ARC	2246	Maintenance & Preservation of B			2	2	0	0	4	3
ARC	2247	Advanced & Recent Theories of			2	2	0	0	4	3
ARC	2248	Environmental System: Site Plan			2	2	0	0	4	3
ARC	2249	Project Evaluation & Analysis			2	2	0	0	4	3
ARC	2250	Environmental Impacts Assessm			2	2	0	0	4	3
ARC	2251	Renewable Energy Systems			2	2	0	0	4	3
ARC	2252	Advanced Finishing Materials			2	2	0	0	4	3
ARC	2253	Advanced Technical Installations			2	2	0	0	4	3
ARC	2254	Housing Policies			2	2	0	0	4	3
ARC	2255	Studies in Urban Landscape Arc			2	2	0	0	4	3
ARC	2256	Cities Planning			2	2	0	0	4	3
ARC	2257	Urban Conservation & Rehabitati			2	2	0	0	4	3
ARC	2258	Sustainability in Architecture			2	2	0	0	4	3
ARC	2259	Thermal Environmental Systems			2	2	0	0	4	3
CEN	2323	Design of Concrete Structures 1			2	2	0	0	4	3
CEN	2338	Photogrammetric Surveying			2	2	0	0	4	3
CEN	2341	Contracts, Quantities and Specifi			2	2	0	0	4	3
				Partial Sum:	**54**	**60**	**0**	**0**	**114**	**84**

2002 Civil Engineering

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs

Mandatory Courses — 66 Credit Hours

CEN	2307	Civil Engineering Drawing			1	4	0	0	5	3
CEN	2308	Properties and strength of materi			2	0	2	0	4	3
CEN	2311	Structural Analysis 1			2	2	0	0	4	3
CEN	2312	Structural Analysis 2	CEN 2311	Structural Analysis 1	2	2	0	0	4	3
CEN	2313	Surveying Engineering			2	1	1	0	4	3

CEN	2316	Soil Mechanics				2	1	1	0	4	3
CEN	2318	Fluid Mechanics				2	1	1	0	4	3
CEN	2319	Hydraulics				2	1	1	0	4	3
CEN	2320	Structural Analysis 3	CEN 2312	Structural Analysis 2		2	2	0	0	4	3
CEN	2322	Design of steel structures 1				2	2	0	0	4	3
CEN	2323	Design of Concrete Structures 1				2	2	0	0	4	3
CEN	2324	Irrigation and Drainage Networks	CEN 2319	Hydraulics		2	2	0	0	4	3
CEN	2325	Transportation and Traffic Engine				2	2	0	0	4	3
CEN	2326	Foundation Engineering 1				2	2	0	0	4	3
CEN	2327	Foundation Engineering 2	CEN 2326	Foundation Engineering		2	2	0	0	4	3
CEN	2328	Design of Irrigation Structures	CEN 2324	Irrigation and Drainag		2	2	0	0	4	3
CEN	2330	Design of Concrete Structures 2	CEN 2323	Design of Concrete Stru		2	2	0	0	4	3
CEN	2332	Field Training				0	0	0	6	6	3
CEN	2334	Highway Engineering				2	2	0	0	4	3
CEN	2336	Construction Management				2	2	0	0	4	3
CEN	2344	Sanitary Engineering				2	2	0	0	4	3
CEN	2360	Graduation Project				2	0	2	0	4	3
				Partial Sum:		**41**	**36**	**8**	**6**	**91**	**66**

Elective Courses — 15 Credit Hours

CEN	2306	Engineering Geology				2	2	0	0	4	3
CEN	2310	Concrete technology	CEN 2308	Properties and strengt		2	2	0	0	4	3
CEN	2333	Design of Concrete Structures 3	CEN 2330	Design of Concrete Stru		2	2	0	0	4	3
CEN	2335	Problematic Soil				2	2	0	0	4	3
CEN	2337	Dynamics of Structures				2	2	0	0	4	3
CEN	2338	Photogrammetric Surveying				2	2	0	0	4	3
CEN	2339	Environmental Engineering				2	2	0	0	4	3
CEN	2340	Water Resources Engineering				2	2	0	0	4	3
CEN	2341	Contracts, Quantities and Specifi				2	2	0	0	4	3
CEN	2342	Harbor Engineering and Offshore				2	2	0	0	4	3
CEN	2346	Geotechnical Engineering				2	2	0	0	4	3
CEN	2347	Dams and Reservoirs Engineerin				2	2	0	0	4	3
CEN	2348	Water structures				2	2	0	0	4	3
CEN	2349	Advanced Strength of Materials				2	2	0	0	4	3
CEN	2351	Repair and strengthening of Conc	CEN 2349	Advanced Strength of		2	2	0	0	4	3
CEN	2353	Applications in Structural Engine				2	2	0	0	4	3
CEN	2354	Advanced Structural Analysis				2	2	0	0	4	3
CEN	2355	Design of Steel Bridges				2	2	0	0	4	3

CEN	2356	Prestressed Concrete				2	2	0	0	4	3
CEN	2358	High Rise Buildings				2	2	0	0	4	3
CEN	2359	Geographic Information Systems				2	2	0	0	4	3
CEN	2361	Repair and Maintenance of Road	CEN	2334	Highway Engineering	2	2	0	0	4	3
CEN	2363	Applications in Highways Engine	CEN	2334	Highway Engineering	2	2	0	0	4	3
CEN	2364	Applications in Sanitary Engineer	CEN	2344	Sanitary Engineering	2	2	0	0	4	3
					Partial Sum:	**48**	**48**	**0**	**0**	**96**	**72**

2003 Electrical Power and Machines Engineering

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs

Mandatory Courses — 66 Credit Hours

BAS	2115	Mathematics 3	BAS	2110	Mathematics 2	2	2	0	0	4	3
CAI	2401	Automatic Control				2	1	2	0	5	3
ELP	2403	Electrical Circuits 1	BAS	2111	Physics 2	2	1	2	0	5	3
ELP	2404	Electrical Measurements & Testin				2	1	2	0	5	3
ELP	2406	Electrical Circuits 2	ELP	2403	Electrical Circuits 1	2	1	2	0	5	3
ELP	2409	Electrical Materials				2	2	0	0	4	3
ELP	2410	Electrical Machines 1	ELP	2406	Electrical Circuits 2	2	1	2	0	5	3
ELP	2412	Electrical Installation				2	2	0	0	4	3
ELP	2413	Electrical Power Systems	ELP	2410	Electrical Machines 1	2	1	2	0	5	3
ELP	2414	Power System Analysis 1				2	1	2	0	5	3
ELP	2418	Power Electronics				2	1	1	0	4	3
ELP	2419	High Voltage Engineering				2	1	2	0	5	3
ELP	2420	Programmable Logical Controller				2	1	2	0	5	3
ELP	2423	Computer Control in Electrical P				2	2	0	0	4	3
ELP	2426	Electrical Protection systems				2	1	2	0	5	3
ELP	2430	Electrical Drive Systems				2	1	2	0	4	3
ELP	2432	Field Training				0	0	0	6	6	3
ELP	2460	Graduation Project				0	0	6	0	6	3
ELE	2504	Electromagnetic Fields				2	2	0	0	4	3
CAI	2509	Computer Programming				1	2	2	0	5	3
ELE	2511	Logic Design 1				2	1	2	0	5	3
ELE	2512	Microprocessors & Applications				2	1	2	0	5	3
					Partial Sum:	**39**	**13**	**35**	**6**	**93**	**66**

Elective Courses — 15 Credit Hours

ELP	2402	Digital Control Systems	CAI	2401	Automatic Control	2	1	2	0	5	3
ELP	2411	Electrical Machines 2	ELP	2410	Electrical Machines 1	2	2	2	0	5	3
ELP	2415	Microcontrollers & Applications				2	1	2	0	5	3
ELP	2421	Power Electronics Applications				2	1	2	0	5	3
ELP	2422	Special Electric Machine				2	1	2	0	5	3
ELP	2424	Power System Analysis 2	ELP	2414	Power System Analysis 1	2	1	2	0	5	3
ELP	2429	Energy Utilization in Buildings an				2	1	2	0	5	3
ELP	2433	Technology of RenewableEnergy				2	2	0	0	4	3
ELE	2514	Signal Analysis				2	0	2	0	4	3
ELE	2527	Integrated Circuits Design				2	2	0	0	4	3
ELC	2624	Robotics Design				2	1	4	0	7	3
					Partial Sum:	**20**	**4**	**22**	**0**	**46**	**33**

2004 Communication Engineering

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs

Mandatory Courses — 66 Credit Hours

BAS	2115	Mathematics 3	BAS	2110	Mathematics 2	2	2	0	0	4	3
BAS	2118	Mathematics 4	BAS	2115	Mathematics 3	2	2	0	0	4	3
ELP	2403	Electrical Circuits 1	BAS	2111	Physics 2	2	1	2	0	5	3
ELP	2404	Electrical Measurements & Testin				2	1	2	0	5	3
ELP	2406	Electrical Circuits 2	ELP	2403	Electrical Circuits 1	2	1	2	0	5	3
ELE	2504	Electromagnetic Fields				2	2	0	0	4	3
ELE	2507	Acoustics				2	2	0	0	4	3
CAI	2509	Computer Programming				1	2	2	0	5	3
ELE	2511	Logic Design 1				2	1	2	0	5	3
ELE	2512	Microprocessors & Applications				2	0	2	0	4	3
ELE	2514	Signal Analysis				2	0	2	0	4	3
ELE	2515	Communications 1	ELE	2514	Signal Analysis	2	0	2	0	4	3
ELE	2519	Electronics				2	0	2	0	4	3
ELE	2521	Antenna & Wave Propagation		2405		2	0	2	0	4	3
ELE	2522	Communications 2	ELE	2515	Communications 1	2	2	0	0	4	3
ELE	2523	Digital Signal Processing	ELE	2514	Signal Analysis	2	0	2	0	4	3
ELE	2526	Mobile Communications	ELE	2522	Communications 2	2	2	0	0	4	3
ELE	2527	Integrated Circuits Design				2	2	0	0	4	3
ELE	2530	Electronic Circuits	ELE	2519	Electronics	2	2	0	0	4	3
ELE	2532	Field Training				0	0	0	6	6	3

ELE	2536	Microwave Engineering	ELE	2504	Electromagnetic Field	2	2	0	0	4	3
ELE	2560	Graduation Project				0	0	6	0	6	3
					Partial Sum:	**39**	**20**	**28**	**6**	**93**	**66**

Elective Courses — 15 Credit Hours

ELP	2409	Electrical Materials				2	2	0	0	4	3
ELP	2415	Microcontrollers & Applications				2	0	2	0	4	3
ELE	2501	Information & Coding Theory				2	2	0	0	4	3
ELE	2502	Information Security				2	2	0	0	4	3
ELE	2503	Optical Communications				2	2	0	0	4	3
ELE	2505	Optoelectronics				2	0	2	0	4	3
ELE	2506	VLSI Technology				2	2	0	0	4	3
CAI	2520	Computer Organization & Archite				2	2	0	0	4	3
ELE	2524	Satellite Communication	ELE	2515	Communications 1	2	2	0	0	4	3
ELE	2537	Logic Design 2	ELE	2511	Logic Design 1	2	0	2	0	4	3
CAI	2609	Computer Networks				2	0	2	0	4	3
					Partial Sum:	**22**	**14**	**8**	**0**	**44**	**33**

2005 Computer Engineering and AI

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs

Mandatory Courses — 66 Credit Hours

BAS	2114	Discrete Mathematics				2	2	0	0	4	3
ELE	2511	Logic Design 1				2	0	2	0	4	3
ELE	2512	Microprocessors & Applications				2	0	2	0	4	3
ELE	2537	Logic Design 2	ELE	2511	Logic Design 1	2	0	2	0	4	3
CAI	2602	Data Structures				2	2	0	0	4	3
CAI	2603	Artificial intelligence 1				2	1	1	0	4	3
CAI	2604	Design & Analysis of Algorithms				2	0	2	0	4	3
CAI	2605	Computer architecture & Organiz				2	0	2	0	4	3
CAI	2606	Machine Learning				2	0	2	0	4	3
CAI	2608	Operating Systems				2	0	2	0	4	3
CAI	2609	Computer Networks				2	0	2	0	4	3
CAI	2611	Object-Oriented Programming				1	2	2	0	5	3
CAI	2613	Cryptography				1	2	2	0	5	3
CAI	2614	Software Engineering				2	0	2	0	4	3
CAI	2615	Embedded systems				2	0	2	0	4	3

CAI	2619	Networks security					2	0	2	0	4	3
ELC	2621	Parallel programming					2	0	2	0	4	3
ELC	2622	Computer Vision					2	0	2	0	4	3
ELC	2624	Robotics Design					0	0	6	0	6	3
ELC	2632	Field Training					0	0	6	0	6	3
ELC	2646	Computer Animation					1	2	2	0	5	3
ELC	2660	Graduation Project					0	0	6	0	6	3
						Partial Sum:	**35**	**11**	**51**	**0**	**97**	**66**

Elective Courses — 15 Credit Hours

ELE	2523	Digital Signal Processing	ELE	2514	Signal Analysis		2	0	2	0	4	3
CAI	2607	Web Programming					2	0	2	0	4	3
CAI	2618	Internet of things					2	0	2	0	4	3
ELC	2623	Image processing					2	0	2	0	4	3
ELC	2633	Parallel and distributed systems					2	0	2	0	4	3
ELC	2634	Cloud Computing					2	0	2	0	4	3
ELC	2637	Biometrics					1	2	2	0	5	3
AIE	2649	Neural Networks					2	0	2	0	4	3
AIE	2650	Artificial Intelligence 2	CAI	2603	Artificial intelligence 1		2	2	0	0	4	3
						Partial Sum:	**17**	**4**	**16**	**0**	**37**	**27**
						Total:	**338**	**290**	**168**	**24**	**820**	**579**

Statistics:

The percentage of the lecture hours to the total contact hours:	**41.2%**
The percentage of the tutorial hours to the total contact hours:	**35.4%**
The percentage of the laboratory hours to the total contact hours:	**20.5%**
The percentage of the workshop hours to the total contact hours:	**2.9%**

Scientific Departments Courses in the

Engineering Major

Each department in the Branch scientifically supervises a group of courses that belong to its field of specialization. The department is responsible to develop the course specs and follow up the reports and files of these courses.

21 Department of Basic Science

This department scientifically supervises the following group of courses:

Course Code	Course Name	Lec.	Tut.	Lab.	WS	Sum	Credit Hours
BAS 2102	Mathematics 1	2	2	0	0	4	3
BAS 2103	Physics 1	2	1	2	0	5	3
BAS 2104	Mechanics	2	2	0	0	4	3
MED 2105	Engineering Drawing	1	4	0	0	5	3
MED 2106	History of Engineering & Technology	2	2	0	0	4	3
MED 2107	Technical Workshop	1	2	2	0	5	3
BAS 2110	Mathematics 2	2	2	0	0	4	3
BAS 2111	Physics 2	2	1	2	0	5	3
BAS 2112	Engineering Chemistry	2	3	2	0	5	3
BAS 2114	Discrete Mathematics	2	2	0	0	4	3
BAS 2115	Mathematics 3	2	2	0	0	4	3
BAS 2118	Mathematics 4	2	2	0	0	4	3
BAS 2123	Statistics & Probability Theory	2	2	0	0	4	3
No. of Courses in the Department: 13	***Partial Sum:***	**24**	**25**	**8**	**0**	**57**	**39**

22 Department of Architecture Engineering

This department scientifically supervises the following group of courses:

Course Code	Course Name	Lec.	Tut.	Lab.	WS	Sum	Credit Hours
ARC 2201	History and Theory of Planning	2	2	0	0	4	3
ARC 2202	Architectural Drawings 1	0	6	0	0	6	3
ARC 2203	Architectural Drawings 2	0	6	0	0	6	3
ARC 2205	History and Theory of Architecture1	2	2	0	0	4	3
ARC 2207	Architectural Design Studio 1	0	6	0	0	6	3
ARC 2208	Architectural Design Studio 2	0	6	0	0	6	3
ARC 2209	Building Construction 1	1	4	0	0	5	3
ARC 2210	Building Construction 2	1	4	0	0	5	3
ARC 2213	Landscape and Site Planning	2	2	0	0	4	3
ARC 2215	Environmental Control	2	2	0	0	4	3
ARC 2218	History and Theory of Architecture 2	2	2	0	0	4	3
ARC 2220	Architectural Design Studio 3	0	6	0	0	6	3
ARC 2221	Architectural Design Studio 4	0	6	0	0	6	3
ARC 2223	Building Construction 3	1	4	0	0	5	3

ARC 2224	Working Drawings1	1	4	0	0	5	3
ARC 2225	Working Drawings2	1	4	0	0	5	3
ARC 2226	Housing	2	2	0	0	4	3
ARC 2228	Urban Design and Landscape	2	2	0	0	4	3
ARC 2231	Building & Urban Legislation	2	2	0	0	4	3
ARC 2232	Field Training	0	0	0	6	6	3
ARC 2234	Interior design	2	2	0	0	4	3
ARC 2235	Recent Building Technology	2	2	0	0	4	3
ARC 2236	Architecture, Culture and Heritage	2	2	0	0	4	3
ARC 2237	Architecture in Hot Arid Zone	2	2	0	0	4	3
ARC 2238	Architecture Criticism	2	2	0	0	4	3
ARC 2239	Green Architecture	2	2	0	0	4	3
ARC 2240	History and thory of Architecture 3	2	2	0	0	4	3
ARC 2242	Architectural Design Studio 5	0	6	0	0	6	3
ARC 2245	Architecture & Human Behavioral Studies	2	2	0	0	4	3
ARC 2246	Maintenance & Preservation of Buildings	2	2	0	0	4	3
ARC 2247	Advanced & Recent Theories of Architecture	2	2	0	0	4	3
ARC 2248	Environmental System: Site Planning	2	2	0	0	4	3
ARC 2249	Project Evaluation & Analysis	2	2	0	0	4	3
ARC 2250	Environmental Impacts Assessment	2	2	0	0	4	3
ARC 2251	Renewable Energy Systems	2	2	0	0	4	3
ARC 2252	Advanced Finishing Materials	2	2	0	0	4	3
ARC 2253	Advanced Technical Installations	2	2	0	0	4	3
ARC 2254	Housing Policies	2	2	0	0	4	3
ARC 2255	Studies in Urban Landscape Architecture	2	2	0	0	4	3
ARC 2256	Cities Planning	2	2	0	0	4	3
ARC 2257	Urban Conservation & Rehabitation	2	2	0	0	4	3
ARC 2258	Sustainability in Architecture	2	2	0	0	4	3
ARC 2259	Thermal Environmental Systems	2	2	0	0	4	3
ARC 2260	Graduation Project	0	6	0	0	6	3
No. of Courses in the Department: 44	***Partial Sum:***	**65**	**128**	**0**	**6**	**199**	**132**

23 Department of Civil Engineering

This department scientifically supervises the following group of courses:

Course Code	Course Name	Lec.	Tut.	Lab.	WS	Sum	Credit Hours
CEN 2306	Engineering Geology	2	2	0	0	4	3
CEN 2307	Civil Engineering Drawing	1	4	0	0	5	3
CEN 2308	Properties and strength of materials	2	0	2	0	4	3
CEN 2310	Concrete technology	2	2	0	0	4	3
CEN 2311	Structural Analysis 1	2	2	0	0	4	3
CEN 2312	Structural Analysis 2	2	2	0	0	4	3
CEN 2313	Surveying Engineering	2	1	1	0	4	3
CEN 2316	Soil Mechanics	2	1	1	0	4	3
CEN 2318	Fluid Mechanics	2	1	1	0	4	3
CEN 2319	Hydraulics	2	1	1	0	4	3
CEN 2320	Structural Analysis 3	2	2	0	0	4	3
CEN 2322	Design of steel structures 1	2	2	0	0	4	3

CEN 2323	Design of Concrete Structures 1	2	2	0	0	4	3
CEN 2324	Irrigation and Drainage Networks	2	2	0	0	4	3
CEN 2325	Transportation and Traffic Engineering	2	2	0	0	4	3
CEN 2326	Foundation Engineering 1	2	2	0	0	4	3
CEN 2327	Foundation Engineering 2	2	2	0	0	4	3
CEN 2328	Design of Irrigation Structures	2	2	0	0	4	3
CEN 2330	Design of Concrete Structures 2	2	2	0	0	4	3
CEN 2332	Field Training	0	0	0	6	6	3
CEN 2333	Design of Concrete Structures 3	2	2	0	0	4	3
CEN 2334	Highway Engineering	2	2	0	0	4	3
CEN 2335	Problematic Soil	2	2	0	0	4	3
CEN 2336	Construction Management	2	2	0	0	4	3
CEN 2337	Dynamics of Structures	2	2	0	0	4	3
CEN 2338	Photogrammetric Surveying	2	2	0	0	4	3
CEN 2339	Environmental Engineering	2	2	0	0	4	3
CEN 2340	Water Resources Engineering	2	2	0	0	4	3
CEN 2341	Contracts, Quantities and Specifications	2	2	0	0	4	3
CEN 2342	Harbor Engineering and Offshore Structures	2	2	0	0	4	3
CEN 2344	Sanitary Engineering	2	2	0	0	4	3
CEN 2346	Geotechnical Engineering	2	2	0	0	4	3
CEN 2347	Dams and Reservoirs Engineering	2	2	0	0	4	3
CEN 2348	Water structures	2	2	0	0	4	3
CEN 2349	Advanced Strength of Materials	2	2	0	0	4	3
CEN 2351	Repair and strengthening of Concrete Structures	2	2	0	0	4	3
CEN 2353	Applications in Structural Engineering	2	2	0	0	4	3
CEN 2354	Advanced Structural Analysis	2	2	0	0	4	3
CEN 2355	Design of Steel Bridges	2	2	0	0	4	3
CEN 2356	Prestressed Concrete	2	2	0	0	4	3
CEN 2358	High Rise Buildings	2	2	0	0	4	3
CEN 2359	Geographic Information Systems	2	2	0	0	4	3
CEN 2360	Graduation Project	2	0	2	0	4	3
CEN 2361	Repair and Maintenance of Roadways	2	2	0	0	4	3
CEN 2363	Applications in Highways Engineering	2	2	0	0	4	3
CEN 2364	Applications in Sanitary Engineering	2	2	0	0	4	3
CEN 2366	Principles of Civil Engineering	2	2	0	0	4	3
ELP 2367	Principles of Electrical Engineering	2	2	0	0	4	3
No. of Courses in the Department: 48	***Partial Sum:***	**93**	**88**	**8**	**6**	**195**	**144**

24 Department of Electrical Power and Machines Engineering

This department scientifically supervises the following group of courses:

Course Code	Course Name	Lec.	Tut.	Lab.	WS	Sum	Credit Hours
CAI 2401	Automatic Control	2	1	2	0	5	3
ELP 2402	Digital Control Systems	2	1	2	0	5	3
ELP 2403	Electrical Circuits 1	2	1	2	0	5	3
ELP 2404	Electrical Measurements & Testing	2	1	2	0	5	3
ELP 2406	Electrical Circuits 2	2	1	2	0	5	3
ELP 2409	Electrical Materials	2	2	0	0	4	3

ELP 2410	Electrical Machines 1	2	1	2	0	5	3
ELP 2411	Electrical Machines 2	2	1	2	0	5	3
ELP 2412	Electrical Installation	2	2	0	0	5	3
ELP 2413	Electrical Power Systems	2	1	2	0	5	3
ELP 2414	Power System Analysis 1	2	1	2	0	5	3
ELP 2415	Microcontrollers & Applications	2	1	2	0	5	3
ELP 2418	Power Electronics	2	1	1	0	5	3
ELP 2419	High Voltage Engineering	2	1	2	0	5	3
ELP 2420	Programmable Logical Controllers	2	1	2	0	5	3
ELP 2421	Power Electronics Applications	2	1	2	0	5	3
ELP 2422	Special Electric Machine	2	1	2	0	5	3
ELP 2423	Computer Control in Electrical Power Systems	2	2	0	0	5	3
ELP 2424	Power System Analysis 2	2	1	2	0	5	3
ELP 2426	Electrical Protection systems	2	1	2	0	5	3
ELP 2429	Energy Utilization in Buildings and Industry	2	1	2	0	5	3
ELP 2430	Electrical Drive Systems	2	1	2	0	5	3
ELP 2432	Field Training	0	0	0	6	6	3
ELP 2433	Technology of RenewableEnergy	2	2	0	0	5	3
ELP 2444	Principles of Electrical Engineering	2	2	0	0	4	3
ELP 2460	Graduation Project	0	0	6	0	6	3
No. of Courses in the Department: 26	***Partial Sum:***	**46**	**9**	**43**	**6**	**104**	**75**

25 Department of Communication Engineering

This department scientifically supervises the following group of courses:

Course Code	Course Name	Lec.	Tut.	Lab.	WS	Sum	Credit Hours
ELE 2501	Information & Coding Theory	2	2	0	0	4	3
ELE 2502	Information Security	2	2	0	0	4	3
ELE 2503	Optical Communications	2	2	0	0	4	3
ELE 2504	Electromagnetic Fields	2	2	0	0	4	3
ELE 2505	Optoelectronics	2	0	2	0	4	3
ELE 2506	VLSI Technology	2	2	0	0	4	3
ELE 2507	Acoustics	2	2	0	0	4	3
CAI 2509	Computer Programming	1	2	2	0	5	3
ELE 2511	Logic Design 1	2	1	2	0	4	3
ELE 2512	Microprocessors & Applications	2	0	2	0	4	3
ELE 2514	Signal Analysis	2	0	2	0	4	3
ELE 2515	Communications 1	2	0	2	0	4	3
ELE 2519	Electronics	2	0	2	0	4	3
CAI 2520	Computer Organization & Architecture	2	2	0	0	4	3
ELE 2521	Antenna & Wave Propagation	2	0	2	0	4	3
ELE 2522	Communications 2	2	2	0	0	4	3
ELE 2523	Digital Signal Processing	2	0	2	0	4	3
ELE 2524	Satellite Communication	2	2	0	0	4	3
ELE 2526	Mobile Communications	2	2	0	0	4	3
ELE 2527	Integrated Circuits Design	2	2	0	0	4	3
ELE 2530	Electronic Circuits	2	2	0	0	4	3
ELE 2531	Principles of Mechatronics	2	2	0	0	4	3

ARC 2532	Principles of Architecture Engineering		2	2	0	0	4	3
ELE 2532	Field Training		0	0	0	6	6	3
ELE 2533	Principles of Electronic Engineering		2	2	0	0	4	3
ELE 2536	Microwave Engineering		2	2	0	0	4	3
ELE 2537	Logic Design 2	ELE 2511 Logic Design 1	2	0	2	0	4	3
ELE 2560	Graduation Project		0	0	6	0	6	3
No. of Courses in the Department:	**28**	***Partial Sum:***	**51**	**34**	**26**	**6**	**117**	**84**

26 Department of Computer Engineering and AI

This department scientifically supervises the following group of courses:

Course Code	Course Name	Lec.	Tut.	Lab.	WS	Sum	Credit Hours
CAI 2601	Principles of Computer Engineering	2	0	2	0	4	3
CAI 2602	Data Structures	2	2	0	0	4	3
CAI 2603	Artificial intelligence 1	2	1	1	0	4	3
CAI 2604	Design & Analysis of Algorithms	2	0	2	0	4	3
CAI 2605	Computer architecture & Organization	2	0	2	0	4	3
CAI 2606	Machine Learning	2	0	2	0	4	3
CAI 2607	Web Programming	2	0	2	0	4	3
CAI 2608	Operating Systems	2	0	2	0	4	3
CAI 2609	Computer Networks	2	0	2	0	4	3
CAI 2611	Object-Oriented Programming	1	2	2	0	5	3
CAI 2612	Data Structures	2	1	0			
CAI 2613	Cryptography	1	2	2	0	5	3
CAI 2614	Software Engineering	2	0	2	0	4	3
CAI 2615	Embedded systems	2	0	2	0	4	3
CAI 2618	Internet of things	2	0	2	0	4	3
CAI 2619	Networks security	2	0	2	0	4	3
ELC 2621	Parallel programming	2	0	2	0	4	3
ELC 2622	Computer Vision	2	0	2	0	4	3
ELC 2623	Image processing	2	0	2	0	4	3
ELC 2624	Robotics Design	0	0	6	0	6	3
ELC 2632	Field Training	0	0	6	0	6	3
ELC 2633	Parallel and distributed systems	2	0	2	0	4	3
ELC 2634	Cloud Computing	2	0	2	0	4	3
ELC 2637	Biometrics	1	2	2	0	5	3
ELC 2646	Computer Animation	1	2	2	0	5	3
AIE 2649	Neural Networks	2	0	2	0	4	3
AIE 2650	Artificial Intelligence 2	2	2	0	0	4	3
ELC 2660	Graduation Project	0	0	6	0	6	3
No. of Courses in the Department: **28**		***Partial Sum:***	**46**	**14**	**61**	**0**	**118**	**81**
No. of Courses in the Faculty: **187**		***Total:***	**325**	**295**	**146**	**24**	**787**	**555**

Suggested Study Plans For Academy and Media Engineering Major Requirements

مقترح بتوزيع الخطة الدراسية لمتطلبات الأكاديمية وشعبة هندسة الإعلام

Semester 1 الفصل الدراسي الأول

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
ENG 101	English Language			2	2	0	0	4	3
ARA 102	Arabic Language			3	0	0	0	3	3
HUR 110	Human Rights			3	0	0	0	3	3
CO 200	Computer Skills			2	0	2	0	4	3
EGY 300	Egyptology			3	0	0	0	3	3
			SubTotal:	13	2	2	0	17	15

Semester 2 الفصل الدراسي الثاني

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 1 (From Group 1)			3	0	0	0	3	3
0	Elective 2 (From Group 1)			3	0	0	0	3	3
BAS 2102	Mathematics 1			2	2	0	0	4	3
BAS 2103	Physics 1			2	1	2	0	5	3
BAS 2104	Mechanics			2	2	0	0	4	3
			SubTotal:	12	5	2	0	19	15

Elective Group 1 المجموعة الاختيارية الأولى

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
BUS 310	Business Administration Fundam			3	0	0	0	3	3
PSY 320	Thinking Philosophy			3	0	0	0	3	3
EGY 330	Egyptian History			3	0	0	0	3	3
MDA 400	Media Ethics			3	0	0	0	3	3
MDA 410	Media and Politics			3	0	0	0	3	3
MDA 420	Media and Society			3	0	0	0	3	3
RTV 430	International Media			3	0	0	0	3	3
ART 500	Basics of Arts			3	0	0	0	3	3
			SubTotal:	24	0	0	0	24	24

Semester 3 الفصل الدراسي الثالث

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 3 (From Group 2)			3	0	0	0	3	3
0	Elective 4 (From Group 2)			3	0	0	0	3	3
MED 2105	Engineering Drawing			1	4	0	0	5	3
MED 2106	History of Engineering & Technol			2	2	0	0	4	3
MED 2107	Technical Workshop			1	2	2	0	5	3
			SubTotal:	10	8	2	0	20	15

Semester 4

الفصل الدراسي الرابع

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 5 (From Group 2)			3	0	0	0	3	3
CO 210	Computer Applications			2	0	2	0	4	3
BAS 2110	Mathematics 2	BAS 2102	Mathematics 1	2	2	0	0	4	3
BAS 2111	Physics 2	BAS 2103	Physics 1	2	1	2	0	5	3
BAS 2112	Engineering Chemistry			2	1	2	0	5	3
BAS 2123	Statistics & Probability Theory			2	2	0	0	4	3
			SubTotal:	**13**	**6**	**6**	**0**	**25**	**18**

Elective Group 2

المجموعة الاختيارية الثانية

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
CEN 2366	Principles of Civil Engineering			2	2	0	0	4	3
ELP 2367	Principles of Electrical Engineerin			2	2	0	0	4	3
ELE 2531	Principles of Mechatronics			2	2	0	0	4	3
ARC 2532	Principles of Architecture Enginee			2	2	0	0	4	3
ELE 2533	Principles of Electronic Engineeri			2	2	0	0	4	3
CAI 2601	Principles of Computer Engineeri			2	0	2	0	4	3
			SubTotal:	**12**	**10**	**2**	**0**	**24**	**18**
			Total:	**84**	**28**	**14**	**0**	**126**	**105**

Suggested Study Plans For Architecture Engineering Requirements

مقترح بتوزيع الخطة الدراسية لمتطلبات تخصص الهندسة المعمارية

Semester 5 — الفصل الدراسي الخامس

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 6 (From Group 3)			3	0	0	0	3	3
ARC 2201	History and Theory of Planning			2	2	0	0	4	3
ARC 2202	Architectural Drawings 1			0	6	0	0	6	3
ARC 2203	Architectural Drawings 2			0	6	0	0	6	3
ARC 2205	History and Theory of Architecture			2	2	0	0	4	3
			SubTotal:	**7**	**16**	**0**	**0**	**23**	**15**

Semester 6 — الفصل الدراسي السادس

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 7 (From Group 3)			3	0	0	0	3	3
ARC 2207	Architectural Design Studio 1			0	6	0	0	6	3
ARC 2208	Architectural Design Studio 2	ARC 2207	Architectural Design St	0	6	0	0	6	3
ARC 2209	Building Construction 1			1	4	0	0	5	3
ARC 2210	Building Construction 2	ARC 2209	Building Construction 1	1	4	0	0	5	3
			SubTotal:	**5**	**20**	**0**	**0**	**25**	**15**

Semester 7 — الفصل الدراسي السابع

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 8 (From Group 3)			3	0	0	0	3	3
ARC 2215	Environmental Control			2	2	0	0	4	3
ARC 2218	History and Theory of Architecture			2	2	0	0	4	3
ARC 2220	Architectural Design Studio 3	ARC 2208	Architectural Design St	0	6	0	0	6	3
ARC 2221	Architectural Design Studio 4	ARC 2220	Architectural Design St	0	6	0	0	6	3
			SubTotal:	**7**	**16**	**0**	**0**	**23**	**15**

Semester 8 — الفصل الدراسي الثامن

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 9 (From Group 3)			3	0	0	0	3	3
ARC 2224	Working Drawings1	ARC 2210	Building Construction 2	1	4	0	0	5	3
ARC 2226	Housing			2	2	0	0	4	3
ARC 2228	Urban Design and Landscape			2	2	0	0	4	3
ARC 2240	History and thory of Architecture 3			2	2	0	0	4	3
CEN 2311	Structural Analysis 1			2	2	0	0	4	3
			SubTotal:	**12**	**12**	**0**	**0**	**24**	**18**

Semester 9

الفصل الدراسي التاسع

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 10 (From Group 3)			3	0	0	0	3	3
ARC 2232	Field Training			0	0	0	6	6	3
ARC 2242	Architectural Design Studio 5	ARC 2221	Architectural Design St	0	6	0	0	6	3
ARC 2260	Graduation Project			0	6	0	0	6	3
CEN 2312	Structural Analysis 2	CEN 2311	Structural Analysis 1	2	2	0	0	4	3
CEN 2322	Design of steel structures 1			2	2	0	0	4	3
			SubTotal:	**7**	**16**	**0**	**6**	**29**	**18**

Elective Group 3

المجموعة الاختيارية الثالثة

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
ARC 2213	Landscape and Site Planning			2	2	0	0	4	3
ARC 2223	Building Construction 3	ARC 2210	Building Construction 2	1	4	0	0	5	3
ARC 2225	Working Drawings2	ARC 2224	Working Drawings1	1	4	0	0	5	3
ARC 2231	Building & Urban Legislation			2	2	0	0	4	3
ARC 2234	Interior design			2	2	0	0	4	3
ARC 2235	Recent Building Technology			2	2	0	0	4	3
ARC 2236	Architecture, Culture and Heritag			2	2	0	0	4	3
ARC 2237	Architecture in Hot Arid Zone			2	2	0	0	4	3
ARC 2238	Architecture Criticism			2	2	0	0	4	3
ARC 2239	Green Architecture			2	2	0	0	4	3
ARC 2245	Architecture & Human Behavioral			2	2	0	0	4	3
ARC 2246	Maintenance & Preservation of B			2	2	0	0	4	3
ARC 2247	Advanced & Recent Theories of			2	2	0	0	4	3
ARC 2248	Environmental System: Site Plan			2	2	0	0	4	3
			SubTotal:	**26**	**32**	**0**	**0**	**58**	**42**
			Total:	**64**	**112**	**0**	**6**	**182**	**123**

Suggested Study Plans For Civil Engineering Requirements

مقترح بتوزيع الخطة الدراسية لمتطلبات تخصص الهندسة المدنية

Semester 5 الفصل الدراسي الخامس

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 6 (From Group 3)			3	0	0	0	3	3
CEN 2307	Civil Engineering Drawing			1	4	0	0	5	3
CEN 2308	Properties and strength of materi			2	0	2	0	4	3
CEN 2311	Structural Analysis 1			2	2	0	0	4	3
CEN 2312	Structural Analysis 2	CEN 2311	Structural Analysis 1	2	2	0	0	4	3
			SubTotal:	**10**	**8**	**2**	**0**	**20**	**15**

Semester 6 الفصل الدراسي السادس

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 7 (From Group 3)			3	0	0	0	3	3
CEN 2313	Surveying Engineering			2	1	1	0	4	3
CEN 2316	Soil Mechanics			2	1	1	0	4	3
CEN 2318	Fluid Mechanics			2	1	1	0	4	3
CEN 2319	Hydraulics			2	1	1	0	4	3
			SubTotal:	**11**	**4**	**4**	**0**	**19**	**15**

Semester 7 الفصل الدراسي السابع

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 8 (From Group 3)			3	0	0	0	3	3
CEN 2320	Structural Analysis 3	CEN 2312	Structural Analysis 2	2	2	0	0	4	3
CEN 2322	Design of steel structures 1			2	2	0	0	4	3
CEN 2323	Design of Concrete Structures 1			2	2	0	0	4	3
CEN 2324	Irrigation and Drainage Networks	CEN 2319	Hydraulics	2	2	0	0	4	3
			SubTotal:	**11**	**8**	**0**	**0**	**19**	**15**

Semester 8 الفصل الدراسي الثامن

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 9 (From Group 3)			3	0	0	0	3	3
CEN 2325	Transportation and Traffic Engine			2	2	0	0	4	3
CEN 2326	Foundation Engineering 1			2	2	0	0	4	3
CEN 2327	Foundation Engineering 2	CEN 2326	Foundation Engineerin	2	2	0	0	4	3
CEN 2328	Design of Irrigation Structures	CEN 2324	Irrigation and Drainag	2	2	0	0	4	3
CEN 2330	Design of Concrete Structures 2	CEN 2323	Design of Concrete Str	2	2	0	0	4	3
			SubTotal:	**13**	**10**	**0**	**0**	**23**	**18**

Semester 9

الفصل الدراسي التاسع

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 10 (From Group 3)			3	0	0	0	3	3
CEN 2332	Field Training			0	0	0	6	6	3
CEN 2334	Highway Engineering			2	2	0	0	4	3
CEN 2336	Construction Management			2	2	0	0	4	3
CEN 2344	Sanitary Engineering			2	2	0	0	4	3
CEN 2360	Graduation Project			2	0	2	0	4	3
			SubTotal:	**11**	**6**	**2**	**6**	**25**	**18**

Elective Group 3

المجموعة الاختيارية الثالثة

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
CEN 2306	Engineering Geology			2	2	0	0	4	3
CEN 2310	Concrete technology	CEN 2308	Properties and strengt	2	2	0	0	4	3
CEN 2333	Design of Concrete Structures 3	CEN 2330	Design of Concrete Stri	2	2	0	0	4	3
CEN 2335	Problematic Soil			2	2	0	0	4	3
CEN 2337	Dynamics of Structures			2	2	0	0	4	3
CEN 2338	Photogrammetric Surveying			2	2	0	0	4	3
CEN 2339	Environmental Engineering			2	2	0	0	4	3
CEN 2340	Water Resources Engineering			2	2	0	0	4	3
CEN 2341	Contracts, Quantities and Specifi			2	2	0	0	4	3
CEN 2342	Harbor Engineering and Offshore			2	2	0	0	4	3
CEN 2346	Geotechnical Engineering			2	2	0	0	4	3
CEN 2347	Dams and Reservoirs Engineerin			2	2	0	0	4	3
CEN 2348	Water structures			2	2	0	0	4	3
CEN 2349	Advanced Strength of Materials			2	2	0	0	4	3
CEN 2351	Repair and strengthening of Conc	CEN 2349	Advanced Strength of	2	2	0	0	4	3
CEN 2353	Applications in Structural Engine			2	2	0	0	4	3
CEN 2354	Advanced Structural Analysis			2	2	0	0	4	3
CEN 2355	Design of Steel Bridges			2	2	0	0	4	3
CEN 2356	Prestressed Concrete			2	2	0	0	4	3
CEN 2358	High Rise Buildings			2	2	0	0	4	3
CEN 2359	Geographic Information Systems			2	2	0	0	4	3
CEN 2361	Repair and Maintenance of Road	CEN 2334	Highway Engineering	2	2	0	0	4	3
CEN 2363	Applications in Highways Engine	CEN 2334	Highway Engineering	2	2	0	0	4	3
CEN 2364	Applications in Sanitary Engineer	CEN 2344	Sanitary Engineering	2	2	0	0	4	3
			SubTotal:	**48**	**48**	**0**	**0**	**96**	**72**
			Total:	**104**	**84**	**8**	**6**	**202**	**153**

Suggested Study Plans For Electrical Power and Machines Engineering Requirements

مقترح بتوزيع الخطة الدراسية لمتطلبات تخصص هندسة القوى الكهربية

Semester 5 الفصل الدراسي الخامس

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 6 (From Group 3)			3	0	0	0	3	3
CAI 2401	Automatic Control			2	1	2	0	5	3
ELP 2403	Electrical Circuits 1	BAS 2111	Physics 2	2	1	2	0	5	3
ELP 2404	Electrical Measurements & Testin			2	0	2	0	4	3
ELE 2504	Electromagnetic Fields			2	2	0	0	4	3
			SubTotal:	11	4	6	0	21	15

Semester 6 الفصل الدراسي السادس

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 7 (From Group 3)			3	0	0	0	3	3
ELP 2406	Electrical Circuits 2	ELP 2403	Electrical Circuits 1	2	1	2	0	5	3
ELP 2409	Electrical Materials			2	2	0	0	4	3
ELP 2410	Electrical Machines 1	ELP 2406	Electrical Circuits 2	2	1	2	0	5	3
ELE 2511	Logic Design 1			2	1	2	0	5	3
			SubTotal:	11	2	6	0	22	15

Semester 7 الفصل الدراسي السابع

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 8 (From Group 3)			3	0	0	0	3	3
ELP 2412	Electrical Installation			2	2	0	0	4	3
ELP 2413	Electrical Power Systems	ELP 2410	Electrical Machines 1	2	1	2	0	5	3
ELP 2414	Power System Analysis 1			2	1	2	0	5	3
ELE 2512	Microprocessors & Applications			2	1	2	0	5	3
			SubTotal:	11	2	6	0	22	15

Semester 8 الفصل الدراسي الثامن

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 9 (From Group 3)			3	0	0	0	3	3
BAS 2115	Mathematics 3	BAS 2110	Mathematics 2	2	2	0	0	4	3
ELP 2418	Power Electronics			2	1	1	0	5	3
ELP 2419	High Voltage Engineering			2	1	2	0	5	3
ELP 2420	Programmable Logical Controller			2	1	2	0	4	3
ELP 2432	Field Training			0	0	0	6	6	3
			SubTotal:	11	5	5	6	27	18

Semester 9

الفصل الدراسي التاسع

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 10 (From Group 3)			3	0	0	0	3	3
ELP 2423	Computer Control in Electrical P			2	2	0	0	4	3
ELP 2426	Electrical Protection systems			2	1	2	0	5	3
ELP 2430	Electrical Drive Systems			2	1	2	0	5	3
ELP 2460	Graduation Project			0	0	6	0	6	3
CAI 2509	Computer Programming			1	2	2	0	5	3
			SubTotal:	**10**	**4**	**12**	**0**	**28**	**18**

Elective Group 3

المجموعة الاختيارية الثالثة

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
ELP 2402	Digital Control Systems	CAI 2401	Automatic Control	2	1	2	0	5	3
ELP 2411	Electrical Machines 2	ELP 2410	Electrical Machines 1	2	1	2	0	5	3
ELP 2415	Microcontrollers & Applications			2	1	2	0	5	3
ELP 2422	Special Electric Machine			2	1	2	0	5	3
ELP 2424	Power System Analysis 2	ELP 2414	Power System Analysis 1	2	1	2	0	5	3
ELP 2429	Energy Utilization in Buildings an			2	1	2	0	5	3
ELP 2433	Technology of RenewableEnergy			2	2	0	0	4	3
ELE 2527	Integrated Circuits Design			2	2	0	0	43	
			SubTotal:	**16**	**10**	**12**	**0**	**38**	**24**
			Total:	**70**	**17**	**47**	**6**	**140**	**105**

Suggested Study Plans For Communication Engineering Requirements

مقترح بتوزيع الخطة الدراسية لمتطلبات تخصص هندسة الاتصالات

Semester 5 — الفصل الدراسي الخامس

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 6 (From Group 3)			3	0	0	0	3	3
BAS 2115	Mathematics 3	BAS 2110	Mathematics 2	2	2	0	0	4	3
ELP 2403	Electrical Circuits 1	BAS 2111	Physics 2	2	1	2	0	5	3
ELP 2404	Electrical Measurements & Testin			2	1	2	0	5	3
ELE 2504	Electromagnetic Fields			2	2	0	0	4	3
			SubTotal:	**11**	**6**	**4**	**0**	**21**	**15**

Semester 6 — الفصل الدراسي السادس

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 7 (From Group 3)			3	0	0	0	3	3
ELP 2406	Electrical Circuits 2	ELP 2403	Electrical Circuits 1	2	1	2	0	5	3
CAI 2509	Computer Programming			1	2	2	0	5	3
ELE 2511	Logic Design 1			2	1	2	0	5	3
ELE 2514	Signal Analysis			2	0	2	0	4	3
			SubTotal:	**10**	**4**	**8**	**0**	**22**	**15**

Semester 7 — الفصل الدراسي السابع

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 8 (From Group 3)			3	0	0	0	3	3
BAS 2118	Mathematics 4			2	2	0	0	4	3
ELE 2512	Microprocessors & Applications			2	0	2	0	4	3
ELE 2515	Communications 1	ELE 2514	Signal Analysis	2	0	2	0	4	3
ELE 2532	Field Training			0	0	0	6	6	3
			SubTotal:	**9**	**2**	**4**	**6**	**21**	**15**

Semester 8 — الفصل الدراسي الثامن

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 9 (From Group 3)			3	0	0	0	3	3
ELE 2507	Acoustics			2	2	0	0	4	3
ELE 2519	Electronics			2	0	2	0	4	3
ELE 2521	Antenna & Wave Propagation	ELE 2504	Electromagnetic Field	2	0	2	0	4	3
ELE 2522	Communications 2	ELE 2515	Communications 1	2	2	0	0	4	3
ELE 2523	Digital Signal Processing	ELE 2514	Signal Analysis	2	0	2	0	4	3
			SubTotal:	**13**	**4**	**6**	**0**	**23**	**18**

Semester 9

الفصل الدراسي التاسع

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 10 (From Group 3)			3	0	0	0	3	3
ELE 2526	Mobile Communications	ELE 2522	Communications 2	2	2	0	0	4	3
ELE 2527	Integrated Circuits Design			2	2	0	0	4	3
ELE 2530	Electronic Circuits	ELE 2519	Electronics	2	2	0	0	4	3
ELE 2560	Graduation Project			0	0	6	0	6	3
			SubTotal:	**9**	**6**	**6**	**0**	**21**	**15**

Elective Group 3

المجموعة الاختيارية الثالثة

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
ELP 2409	Electrical Materials			2	2	0	0	4	3
ELE 2501	Information & Coding Theory			2	2	0	0	4	3
ELE 2502	Information Security			2	2	0	0	4	3
ELE 2503	Optical Communications			2	2	0	0	4	3
ELE 2505	Optoelectronics			2	0	2	0	4	3
ELE 2506	VLSI Technology			2	2	0	0	4	3
CAI 2520	Computer Organization & Archite			2	2	0	0	4	3
ELE 2524	Satellite Communication	ELE 2515	Communications 1	2	2	0	0	4	3
ELE 2537	Logic Design 2	ELE 2511	Logic Design 1	2	0	2	0	4	3
CAI 2609	Computer Networks			2	0	2	0	4	3
			SubTotal:	**20**	**14**	**6**	**0**	**40**	**30**
			Total:	**72**	**32**	**34**	**6**	**144**	**108**

Suggested Study Plan For Computer Engineering and AI Requirements

مقترح بتوزيع الخطة الدراسية لمتطلبات تخصص هندسة الحاسبات والذكاء الاصطناعي

Semester 5 — الفصل الدراسي الخامس

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 6 (From Group 3)			3	0	0	0	3	3
BAS 2114	Discrete Mathematics			2	2	0	0	4	3
ELE 2511	Logic Design 1			2	0	2	0	4	3
ELE 2512	Microprocessors & Applications			2	0	2	0	4	3
CAI 2602	Data Structures			2	2	0	0	4	3
			SubTotal:	**11**	**4**	**4**	**0**	**19**	**15**

Semester 6 — الفصل الدراسي السادس

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 7 (From Group 3)			3	0	0	0	3	3
ELE 2537	Logic Design 2	ELE 2511	Logic Design 1	2	0	2	0	4	3
CAI 2603	Artificial intelligence 1			2	1	1	0	4	3
CAI 2604	Design & Analysis of Algorithms			2	0	2	0	4	3
CAI 2605	Computer architecture & Organiz			2	0	2	0	4	3
			SubTotal:	**11**	**1**	**7**	**0**	**19**	**15**

Semester 7 — الفصل الدراسي السابع

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 8 (From Group 3)			3	0	0	0	3	3
CAI 2606	Machine Learning			2	0	2	0	4	3
CAI 2608	Operating Systems			2	0	2	0	4	3
CAI 2609	Computer Networks			2	0	2	0	4	3
CAI 2611	Object-Oriented Programming			1	2	2	0	5	3
			SubTotal:	**10**	**2**	**8**	**0**	**20**	**15**

Semester 8 — الفصل الدراسي الثامن

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 9 (From Group 3)			3	0	0	0	3	3
CAI 2613	Cryptography			1	2	2	0	5	3
CAI 2614	Software Engineering			2	0	2	0	4	3
CAI 2615	Embedded systems			2	0	2	0	4	3
CAI 2619	Networks security			2	0	2	0	4	3
ELC 2632	Field Training			0	0	6	0	6	3
			SubTotal:	**10**	**2**	**14**	**0**	**26**	**18**

Semester 9

الفصل الدراسي التاسع

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
0	Elective 10 (From Group 3)			3	0	0	0	3	3
ELC 2621	Parallel programming			2	0	2	0	4	3
ELC 2622	Computer Vision			2	0	2	0	4	3
ELC 2624	Robotics Design			0	0	6	0	6	3
ELC 2646	Computer Animation			1	2	2	0	5	3
ELC 2660	Graduation Project			0	0	6	0	6	3
			SubTotal:	8	2	18	0	28	18

Elective Group 3

المجموعة الاختيارية الثالثة

Course Code	Course Name	Pre. Code	Prerequisite	Lec	Tut	Lab	WS	Sum	Credit Hrs
ELE 2523	Digital Signal Processing	ELE 2514	Signal Analysis	2	0	2	0	4	3
CAI 2607	Web Programming			2	0	2	0	4	3
CAI 2618	Internet of things			2	0	2	0	4	3
ELC 2623	Image processing			2	0	2	0	4	3
ELC 2633	Parallel and distributed systems			2	0	2	0	4	3
ELC 2634	Cloud Computing			2	0	2	0	4	3
ELC 2637	Biometrics			1	2	2	0	5	3
AIE 2649	Neural Networks			2	0	2	0	4	3
AIE 2650	Artificial Intelligence 2	CAI 2603	Artificial intelligence 1	2	2	0	0	4	3
			SubTotal:	17	4	16	0	37	27
			Total:	67	15	67	0	149	108

Chapter 6

Summary of Course Contents For the

Academy Requirements

ENG 0101 English Language لغة انجليزية

This course prepares students for advanced English reading and writing skills. Students read a wide variety of academic texts of easy to medium reading difficulty. Students practice reading skills such as pre-reading/surveying texts, adjusting their speed and reading style to different skimming and scanning requirements. They practice a variety of vocabulary skills such as using roots and affixes to understand the meaning of a word, using context clues to understand the approximate meaning of the word, and knowing when it is or is not necessary to look up a new word in the dictionary. Students learn how to write simple, compound and complex sentences and incorporate them into short paragraphs to form short essays.

ARA 0102 Arabic Language لغة عربية

This course is a survey of Arabic literature history with a focus on continuity and change, influence, and major trends, themes, and genres. It provides students with a foundational knowledge of literature in the Arabic language. Students will be introduced to short stories, novels, essays, poetry, and plays. The focus will be on literature that is classical and modern, urban and rural, as well as religious and secular. This course explores social, religious, and historical aspects of modern Arab culture through an exciting collection of videos, lectures, reading and discussion. Contact between the Arab world and the west in the modern era will be seen in relation to changes in Arabic culture. Particular attention will be given to the works of Naguib Mahfouz, the Egyptian Winner of the Nobel Prize for Literature as well as to the works of Gibran Khalil Gibran, Lebanese-American philosophical essayist, novelist, mystical poet, and artist.

HUR 0110 Human Rights حقوق الإنسان

This course examines the historical, conceptual and legal development of human rights from the 13th century to the present, focusing on the shift from natural law to natural rights and finally human rights. In addition, the course seeks to address and discuss the major philosophical debates in the area of human rights in modern times. It explores some human rights problems and controversies such as economic and social rights, group rights, and cultural relativism. The course further surveys international human rights treaties, courts, and institutions. It discusses interactions between state sovereignty and issues of justice and pays considerable attention to questions of universal human rights and their (non-selective) enforcement.

COM 0200 Computer Skills مهارات الحاسبات

This course allows students to learn modern computer skills. Students learn first the different production computer programs; this may include word, power point, excel and access. The application of these programs in the scientific fields of the academy should also be studied. The course also includes the principle of programming, using one of the modern programming languages.

EGY 0300 Egyptology علم المصريات

The objective of this course is to help students acquire the necessary knowledge and understanding of ancient Egyptian culture/civilization in the ancient world. Topics in Egyptology shall introduce students to the following areas of study: History and archaeology of ancient Egypt, Middle Egyptian language and Hieroglyphic script, Egyptian art, Museum Studies, Egyptian epigraphy, Culture, Religion and beliefs, Egyptian foreign relations, Egyptian languages, Middle Kingdom literature, Ancient Languages, Egyptian art, Architecture, and Egyptian Town and Country

BUS 0310 Business Administration Fundamentals مبادئ إدارة الأعمال

This course aims to introduce the student to the conceptual framework of business administration and the nature and content of administrative activity and intellectual methods in the study of management and how and practice of the administrative process to meet the challenges in an era of continuous change, through the study of the following topics: Organization functions - Administrative Decision Making and Quantitative Methods in Decision Making - Planning Function - Administrative Leadership - Motivations and Incentives - Organizational Structure and Relationships of Authority and Responsibility - Organizational Development - Finally the Concept and Dimensions Control tools and control methods. In addition to learning about the concepts of e-business management and its applications in organizations.

PSY 0320 Thinking Philosophy فلسفة التفكير

Introduction to the topic–What's thinking, definition and strategies – Intelligence and thinking– Multiple thinking–Emotional intelligence– Thinking and learning strategies– Scientific thinking– Creative thinking – Critical thinking – Problem solving techniques.

EGY 0330 Egyptian History التاريخ المصري

The course offers an overview on the national and international history with emphasis on the recent Egyptian history, role of ancient Egyptian civilization on the world civilization, the main characters of Christian era and the Islamic period, the role of Islamic institutions e.g. Azhar and Coptic Church on the national and international civilization, the stages of building democracy in Egypt, the role of Egyptian Leaders for dependence.

MDA 0400 Media Ethics أخلاقيات الإعلام

Introduction to the topic – Historical framework – Press freedom in developed and developing societies – Censorship and seditious libel – Social responsibility and self-regulation – The relationship between media and the government – The origins of journalist privilege – The right to know and the free of information – Yellow journalism and the right of privacy – The right of fair trial – The copyright law – Suppress obscenity – Code of ethics – Case studies.

MDA 0410 Media and Politics الإعلام والسياسة

Introduction to the topic – Concept of political system – Classification of political systems – Concept of the state political power – The genre (style) of power balance – The world relationship and its effect on the foreign politics – Concept of media systems in different political schools – Using depending theory in the relationship between media and politics – Political media : concept and debating cases – The effect of political system in the political communication industry – Media and internal politics: comparative models – Media and foreign politics : comparative models.

MDA 0420 Media and Society الإعلام والمجتمع

Introduction to the topic – Social change campaigns – Social change campaigns – Social change campaign applications – Effects operation and stages of persuasion – Effects and persuasion applications – Innovation idea – Local media and society problems – Relation between media and the modernization of society – Media and society terminology.

RTV 0430 International Media الاعلام الدولي

Introduction to the topic – Int'l communication concepts and thearies – globalization – Int'l communication propaganda, foreign policy – unbalanced flow of information – Biased models in Int'l communication – Communication , technology, satellites & Int'l communication – Radio as Int'l media (BBC, V.O. America, Sawa, etc) - T.V. as Int'l media (CNN, Euro news, BBC, AlJazeera… etc.). Int'l communication issues – Internet media-Clash or dialogue of civilizations - Stereotyping of Arab & Muslims in western media – strategies to correct the biased bad image of Arab & Muslims .

ART 0500 Basics of Arts مبادئ الفنون

Introduction - Definition of Art - Art Categories - Principles of Art - Effect of Art - Importance of Art - Plastic Arts - Expressive Arts
Applied Arts - Invisible Arts.

Total Number of Courses: 13

Chapter 7

Summary of Course Specs For the

Engineering Major

BAS 2102 Mathematics 1 رياضيات ١

Calculus :function – classification of function -compost function – inverse function – trigonometric function and its inverse – logarithm function – exponential function –hyperbolic function -limits- continuity –derivative for functions –high order derivative – Libeinze theorem – application on derivative Taylor expansion –McLaren expansion –sketch the function -L`Hopital theorem for limits .Algebra: Binomial theorem and approximation –remain theorem –matrices – solution of algebraic system of equation –theory of equation –vectors.

BAS 2103 Physics 1 فيزياء ١

Properties of matter:Units and dimensions, elasticity, oscillation, gravity, hydrostatics and surface tension, hydrodynamics, viscosity, malleability waves in elastic media, sound waves, ultrasound and applications. Heat and thermodynamics:Temperature, temperature scales, thermometers, heat expansion, heat transfer, zeroth law of thermodynamics, first law of thermodynamics, kinetic theory of gases, second law of thermodynamics, entropy, reversible and irreversible processes, Carnot cycle, heat engines and refrigerators.

BAS 2104 Mechanics ميكانيكا

Statics : Vectors –vectors in two dimension- vectors in three dimension – cross product –scalar product – addition of vectors –application on vectors - resultant of some forces – finding resultant of summation moments –couple moment –equivalent system - moment of wrench – equilibrium in space –trusses – method of joints to solve trusses problems-method of intersection to solve trusses problems.Dynamics: motions in one dimension – (position- velocity-acceleration)- representative of motion in two dimension-projectiles –Newton low of motion –work and energy-elastic collision-inelastic collision Center of mass (length-area-volume)-Moment of inertia-theorem of parallel axis – Product moment of inertia -Principal axis – Mohr circle.

MED 2105 Engineering Drawing الرسم الهندسي

Techniques and skills of engineering drawing, normal and auxiliary projections.Solid geometry.Intersections between planes and solids.Development.Sectioning. Drawing and joining steel frames. Assembly drawing of some mechanical parts, Reading drawings.

MED 2106 History of Engineering & Technology تاريخ الهندسة والتكنولوجيا

History of Civilization and Technology Development, Humanities and social sciences, Engineering Education and its Disciplines, Scientific thinking and analysis, Technology and Training, Different work methodologies and ethics, Application examples, Course Project.

MED 2107 Technical Workshop ورش فنية

Engineering Materials, Manufacturing Processes: Casting and molding processes, metal forming, forming of plastics, powder metallurgy; Material Joining processes: welding, soldering, brazing, riveting, joining by mechanical elements; Material removal processes, metal cutting and finishing processes; Practical training

BAS 2110 Mathematics 2 رياضيات ٢

Integration: indefinite integral – remain integral – method of integration (substitution – integration by parts –integration by using partial fraction)-reduction method –definite integral -Area – volume . Geometry: second degree equation in two variable –circle – tangent and normal – conic section(parabola- hyperbola- ellipse)-polar coordinates –sphere – straight line in space

BAS 2111 Physics 2 فيزياء ٢

Electricity Electric charge, electric field, Gauss law, electric potential, capacitors and insulators, current, resistance and electromotive force, kirchoff 's laws.Magnetism Magnetic field, Amper's law, Byte and Safart law, Faraday's law, law of magnetic induction, magnetic characteristics of materials, Maxwell's equations (integrated form)

BAS 2112 Engineering Chemistry كيمياء هندسية

Equations of State - Introduction to Chemical Thermodynamics - Material & Energy Balance in Fuel Combustion and Chemical Processes - General Properties of Solutions - Dynamic Equilibrium in Physical and Chemical Processes - Basic Principles in Electrochemistry - Introduction to Corrosion Engineering - Selected topics in process Chemical Industries (Industry & Chemistry of Cement - Chemical Fertilizer Industries - Sugar Industry - Dyes & Dyeing Industry - Petrochemical Industries - Sulfuric acid Industry

BAS 2114 Discrete Mathematics الرياضيات المتقطعة

Logic: Sentential and predicate languages, truth tables, quantifiers, Methods of mathematic al proof and disproof, Set theory, Number theory Algorithms, Relations and functions, Algebraic structures, Graph theory Trees, Application of discrete mathematics.

BAS 2115 Mathematics 3 رياضيات ٣

function in more than one variable –partial derivative –Taylor expansion in two variable –stationary point –double integration - triple integration –line and surface integration- infinite series –convergent -divergent – first order ordinary differential equation –method of solution for first order ordinary differential equation- second order ordinary differential equation—reduction method .

BAS 2118 Mathematics 4 رياضيات ٤

Fourier series – even function – odd function – Laplace transformation –inverse Laplace –inverse Laplace using political function – numerical integration – numerical solution for ordinary differential equation- interpolation – solution for system of linear equation- d`alempert method –wave equation –heat equation method of separation of variable –Laplace equation

BAS 2123 Statistics & Probability Theory إحصاء ونظرية احتمالات

Introduction: The birth of statistics, definition of statistics, functions of statistics, collection and organization of statistical data, presentation Of statistical data. Sets and Probabilities: random experiments, sample spaces, sets operations, counting data, probability, conditional probabilities, Bayes' theorem. Tendency and Dispersion Measures: Introduction, different types of data, tendency measures, variability measures, frequency distributions. Random Variables: Discrete random variables, the Hyper - geometric distribution, Binomial distribution, the Poisson distribution, Poisson approximation Of binomial probabilities, continuous random variables. Moments: central moments, Skew ness measures, kurtosis measures, moment generating function. Sampling Theory and Inferences: the concept Of a sampling distribution, sampling distribution of the mean, central limit theorem, tests of hypothesis and Confidence intervals for the mean, tests of hypothesis and confidence intervals for the difference between two means, tests of hypothesis and confidence intervals for the population proportion, tests of hypothesis and confidence intervals for the difference between two proportions, tests of hypothesis and confidence intervals of sample variance, tests of hypothesis and confidence interval for ratio of sample variances. Simple regression and correlation: Simple linear regression by least square method, validation the model, correlation coefficient.

ARC 2201 History and Theory of Planning تاريخ ونظريات التخطيط

The course aims to study history of cities in Pre-historic times, the city in Ancient Egyptian era, the city in the civilization of Mesopotamia, the city in Ancient Greek and the city in Ancient Roman era, the Middle Ages, and the Islamic cities, the Renaissance cities. Then the course introduce the modern theories of planning in established cities starting from the Industrial Revolution- identifying comprehensive planning studies and conduct a field study of the urban residential site or small towns. The course develops the student's skills in understanding the historical background and basic theories information of planning science through the identification of city planning in different eras.

ARC 2202 Architectural Drawings 1 رسم معماري ١

This is basic foundation course in the fundamentals of form and graphic design. It includes the theory and practice of two-dimensional design, Incorporating concepts and terminology such as: point-line- shape- value- texture and space). In this course the students will explore the basic art principles, elements, and concepts emphasizing spatial organization of the two-dimensional plane. Also employs basic media, techniques, and tools emphasizing craftsmanship as well as composition and problem solving techniques. Freehand Drawing course also focus on the drawing from observation of buildings and architectural space, and is intended for students at all levels to develop and refine skills and techniques for seeing and recording the built environment. Emphasis will be placed on drawing composition, proportion, perspective and exploring ways to discover natural light and color in buildings and landscapes. Drawing media will emphasize graphite, and ink, with the addition of colored pencil and watercolor.

ARC 2203 Architectural Drawings 2 رسم معماري ٢

This course is intended to teach the principles of architectural representation and develop the student's perceptive skills. Student should acquire an ability to communicate simple forms graphically by transforming visual information into a two-dimensional image with shade and shadow. The course examines the language of architectural form and deals with the techniques of analyzing and representing it by different means of rendering. Topics include Shade and Shadow of buildings and Perspective drawings.

ARC 2205 History and Theory of Architecture1 تاريخ ونظريات العمارة ١

The course is an introduction to the development of architecture through ages, highlighting the factors that contribute to the development of the unique of various cultures, social- political-technological, military and environmental and the development of structural systems, materials, construction and other building types. The courses cover Ancient Egyptian Architecture, Mesopotamia era (Babylon, Assyria and Persia), Greek architecture, Roman architecture, Early Christian and Byzantine architecture.

ARC 2207 Architectural Design Studio 1 تصميم معماري ١

The course is an Introduction to the processes of design through studio projects to apply the fundamentals of architectural design, definition, analysis, concepts, development and presentation. Building form in relation to program human activity, scale and furniture as means of creating space. Space analysis. Training includes simple projects focusing on the functional relations and the use of space. Studio problems in architectural design at an elementary level of a small residential or a single use building and a primary educational building. Elementary projects are carried out which explore spatial thinking in basic structural forms and shapes. Projects are mainly small scale residential and public buildings. Final presentation is manually in order to train student's skills of manual presentation, hand drawings, scale, and manual rendering.

ARC 2208 Architectural Design Studio 2 تصميم معماري ٢

The studio aims to introduce the students to the Local and traditional architecture as well as increasing their awareness of the essences and details of such discipline. The course concentrates on analyzing the existing features of the traditional architecture and interacting with it on site. The course focuses on medium scale public building projects with its functional relations with the use of space. Elementary projects are carried out which explore spatial thinking in basic structural forms and shapes. Projects are mainly a medium scale of public buildings. Final presentation is manually in order to train student's skills of manual presentation, hand drawings, scale, and manual rendering.

ARC 2209 Building Construction 1 إنشاء معماري ١

The course introduces student to the principles and fundamentals of building construction; skeleton, bearing wall structural system; building with brick and building with stone, types of bonds of bricks and their types; building Details and water resistance and design of stairs- Studying how to implement the various stages of construction theoretically and practically in site.

ARC 2210 Building Construction 2 إنشاء معماري ٢

The course deals with study the processes elements of buildings construction: Studding types of various foundations and types of various structural roofing systems. Expansion and settlement joints, building works using prefabricated systems.

ARC 2213 Landscape and Site Planning تنسيق وتخطيط المواقع

The course studies the fundamentals of landscape architecture and the relation between landscape and architectural design. Students are introduced to the study of exterior spaces as they relate to and complement building designs. Typical projects are included in the courses as tutorial exercises (gardens, plaza, Playground, memorials and other small open spaces).

ARC 2215 Environmental Control التحكم البيئي

The course studies the interaction between buildings and climate and emphasis on theories of environmental design- Development of various methods, tools, and techniques available for environmental designs. The course focuses on the Introduction and definition of terms used in the field of environment, Environments and its effect on man, Relation between architecture and climate, Physiological comfort, Climate comfort, Climatic regions, Elements of climate (sun, air and water), Introduction to the climate of Egypt , Sun rotation and Calculation of sun angles, Designing sun-breakers, Wind characteristics, (pressure, temp. rains, moisture), Introduction to the utilization of solar energy, Lighting comfort, Acoustical comfort.

ARC 2218 History and Theory of Architecture 2 تاريخ ونظريات العمارة ٢

The course is an introduction to the development of architecture through ages, highlighting the factors that contribute to the development of the unique of various cultures, social- political-technological, military and environmental and the development of structural systems, materials, construction and other building types. The courses cover different era from the architecture of Romanesque, Gothic and Renaissance, Rococo, to illustrate the architectural expression in each period with its culture and

ARC 2220 Architectural Design Studio 3 تصميم معماري ٣

The architectural design studio III program addresses concepts, processes and skills pertaining to context, structure and climate as determinants that shape the built environment and support the communication of intended concepts and meanings. The course orient the student and upgrade his capabilities to deal with the architectural design as a creative process for resolving spatial issues on different design levels, covering the scope from different circumstances, sites, to masses and spaces. This course offers a comprehensive exploration of computer-aided software. This course qualifies the student to the ideas and skills needed to use the system of computer-aided architectural design. As the students has learned 2D, 3D system. In this course the student will apply the first applications using the computer in producing architectural drawings and elevations ranging from simple interfaces to complex 3D models. Students will gain a solid understanding of the rapidly developing world of CAD/CAM and 3D max techniques.

ARC 2221 Architectural Design Studio 4 تصميم معماري ٤

The architectural design studio IV program focuses on the ways in which the nature of structural systems methods of construction and building materials affect and inform architectural design. Students must be able to select building materials with knowledge of their characteristics and performance to satisfy the requirements of building programs as an integral part of the design.

ARC 2223 Building Construction 3 إنشاء معماري ٣

The course deals with the internal space, The main elements of finishing materials of the external walls; internal walls and partition; floors (wood, marble, carpet, and cement); suspended ceiling (tiles, gypsum board); light partitions (wood, glass, metal, gypsum board); openings (doors and windows).

ARC 2224 Working Drawings1 الرسومات التنفيذية١

The course introduces the student unto the fundamentals of working drawings used in the building construction and building industry. The course focuses on preparing and presenting working drawing project and architectural details. Drawings are presented in the form of floor plans and elevations, site, foundation, framing and roof plans and details, wall and roof sections and details, interior finish elevations and details, and door and window schedules and details. Drawing skills are developed; office management issues are discussed. This experience is applied on a simple given project.

ARC 2225 Working Drawings2 الرسومات التنفيذية٢

The course deals with execution documents for complicated projects including specific functional elements. Working drawings in this level includes all documents of the project (plans, elevations, sections, architectural details, in addition to technical systems such as sanitation and electrical documents). The complete technical documentations include a complete file for quantities and specifications of all constructional elements.

ARC 2226 Housing الإسكان

This course provides an introduction to housing and residential development; housing processes and development; targets and phases and outputs; analysis and planning of residential areas -analysis, evaluation and design of Housing prototype; The concept of completed and developed development process. The course focuses on Introduction of housing problem in developing, Informal housing, Types of housing, units and buildings, Housing Densities design, Neighborhood design process, Streets and pedestrian ways.

ARC 2228 Urban Design and Landscape تصميم عمراني وتنسيق مواقع

This course provides an introduction to urban design terms and deals with physical and non-physical aspects in urban design and its levels as well as the urban image of city components. The course also introduces principles of urban land-use; types and dimensions of spaces, elements of urban environment. Regulations of urban design, the values of old cities and its urban spaces are also included in term of conservation of historical zones.

ARC 2231 Building & Urban Legislation تشريعات البناء والعمران

The course aims to define the role of the architect, owner and the contractor during the construction process. The course includes the following topics. Definition of concepts and terminologies used during design, construction and implementation processes and extraction permits and licenses- Urban planning law - Authorities of the Supreme Council for Planning and Urban Development - Strategic plan of city or village – requirements of existing zones - Different types of Detailed plans: Design of urban Residential areas, commercial, public and recreational services and zones for industrial, craft and the Infrastructure) - Re-planning of unplanned areas – Structural requirements and its related topics - Cultural coordination - Organization of construction work (requirements for public construction, documents and procedures for issuance of the license, inspection and control measures and actions, the validity of the building occupancy). The course also deals with the scheduled study of professional practices and legislation in terms of rights, obligations and ethics.

ARC 2232 Field Training تدريب ميدانى

The student will have a training program in the field according to his specialization

ARC 2234 Interior design تصميم داخلى

The course aims to improve the formulation of skills and the formation in interior spaces in public and private buildings, details studies on the architectural spaces components, factors affecting its composition, improving potentialities/ possibilities of architectural presentation and expressing details and concepts of architectural spaces, history of interior design, visual perception of spaces, lighting components, acoustics, textures, forms, standards and norms used in interior design, industrial design of furniture, finishing materials and tools, studies of color theories and its psychosocial effects, aesthetic of interior spaces, new trends in designing internal spaces, design of private spaces, design of public spaces, Environmental control design and its integrated requirements with the architectural context, methods of presentation and expression skills. Studies on a Case study and applied researches are basic requirement in the course

ARC 2235 Recent Building Technology تكنولوجيا البناء الحديثة

The course deals with the principles of adaptation and localization of building technology. The course focuses on the new direction of advanced building technology; Mobile home, capsule units, mega-structure spatial city and the sky-city. The course covers the following topics: Methods of production (open and closed methods) Vs)flexibility of design and Flexibility of production(- Classification of prefabricated buildings: Columns and beams - Panel and slab - Box units- The economic return of prefabricated application (time – cost – quality)- New directions of advanced buildings (Metabolism- Archigram- Mega structure- Capsule units) new trends of prefab dealing with (Addition-, subtraction - Substitution)- Students will study Case studies for the advanced technology directions.

ARC 2236 Architecture, Culture and Heritage العمارة والحضارة والتراث

The course aims to support and expand the background knowledge of the students on the subject of social and humanities Studies and emphasis on cultural background, urban architectural heritage, local architecture either Arab or regional. The course includes the following topics: Identify domain cultural environment – Features and characters- Methods and foundations to identify the features- Descriptive, functional and structural methodologies social interaction and the Built Environment – Perception, image of the environment and behavioral patterns – Architecture and built Environment architecture as an expression of culture (models and analytical studies) – Concept of humanity, humanity and the design processes (privacy, identity, personalization) – Cultural expression of behavioral and social patterns – Factors and constraints of regional architectural expression- Regional Architecture at both local and national level- Classification of the regions and expressions- Architectural heritage in various Egyptian environments – Analysis and vocabulary and alternatives to deal with heritages- Studies for applied models.

ARC 2237 Architecture in Hot Arid Zone عمارة المناطق الحارة الجافة

The course aims to acquire the student with the essential knowledge to understand the types of desert regions- Hot dry and humid climate, Environmental control in desert regions- How to develop and treat buildings in different regions and how to use techniques of the environmental control through the natural potentialities of the climate design which can be used to treatment the buildings in hot climate regions on purpose of achieving full thermal comfort for the building's occupants- different topics are studied: climate conditions, sun orientation, shading, wind orientation and ventilation, day and night temperature, transition of heat, landscaping. Hazards are studied also such as floods, landsides, earthquakes, sand and dust storms. Urban forms for hot arid zone are included in site planning.

ARC 2238 Architecture Criticism النقد المعماري

This course focuses on the types and methods of architectural criticism. It includes studying the techniques of critical expression, evaluation of architectural projects. The students are required to practicing the architectural criticism in term of local and international case studies. The course focuses on the development of architectural thought in the second half of the 20th century and beyond and its effects on local architecture. It introduces theories and criticism in architecture and their use in the building process. The course emphasizes the variety of architectural thinking.

ARC 2239 Green Architecture العمارة الخضراء

The course aims to acquire students with the essential knowledge to understand main principles and systems in green architecture, climate and regional consideration, renewable resources and sustainable development and ecologically- sensitive architecture- Teaching students how to select the suitable construction materials and mechanical systems in green buildings, re-using and recycling of construction materials components. Examples of local and international Green Buildings are studied and analyzed.

ARC 2240 History and thory of Architecture 3 تاريخ ونظريات العمارة ٣

The course examines the formation and development of architectural, artistic, and urban traditions of the Islamic World. The study includes the ideas and cultures that shaped the architectural character. Emphasis is placed upon the study of Islamic Architecture in the Arab region, Persia, Indian and Far East of Asia, Cairo, Damascus, and Istanbul. The study emphasis selected examples of religious, civic and residential Islamic Architecture in chronological order

ARC 2242 Architectural Design Studio 5 تصميم معماري ٥

Design studio V is oriented to cope with different specifications in the program (architecture, Building science and environmental Design). Selecting the projects to be developed in the studio will reflect the specific emphasis of each spec. In general this studio is continuation of design with more complex projects, considering form, proportions within the meaning that architectural design is a creative operation to solve functional problems of buildings or complex of buildings. Problem analysis, goals, results, evaluation of propositions.

ARC 2245 Architecture & Human Behavioral Studies دراسات العمارة والسلوك الإنساني

In the course students will learn relation between architecture, space and behavior within a cultural context, the theoretical foundations and concepts from the environment and human behavior as applied to design and design process, Maslow' Human Needs, comfort space bubble (personal, intimate and social space), Proxemics zones and social design, and ergonomics as well as safety issues. The course covers the following topics: Proxemics as a system of Communication- Physical space, Crowding and territorial Behavior- Language, culture and Thought- Cultural Aspects of user requirements in Design- Ergonomics- Built Environmental Issues-Principles of Behavioral design- Concept of residential environments: (homogeneous Vs differentiated- Communal Vs non-communal- Identity Vs commonality- Openness Vs closeness)- Functionality, Different building types will be examined as case studies (residential- schools, hospitality and public administration buildings).

ARC 2246 Maintenance & Preservation of Buildings تأهيل وصيانة المباني

The course introduce for the concern of preserving and maintenance of buildings. Durability of buildings: Life expectancy of different types of buildings, effect of environmental elements such as heat, dampness and precipitation on buildings, effect of chemical agents on building materials , effect of pollution on buildings , effect of fire on buildings, damage by biological agents like algae, fungus, moss, insects. Maintenance of buildings: Reliability principles and its applications in selection of systems for routine maintenance of buildings, maintenance of cost, specification for maintenance works. Conservation and recycling: performance of construction materials and components, rehabilitation of constructed facilities, materials and methods for conservation work, recycling of old buildings and its advantages

ARC 2247 Advanced & Recent Theories of Architect ure نظريات العمارة الحديثة والمعاصرة

The course is an advanced study in recent theories of architecture during the latest 20th century and the 21th century in the Western Architecture and Far East New Architecture. The course focuses on Modern movement; international style; mechanical analogy , deconstruction systems in architecture arriving to the modern trend in technology, New structural forms, Mega structure, Tube architecture, functional expression, High technology, symbolism, environmentalist, clustering, Post-modern architecture, Neo-modern architecture- Vernacular architecture and its historical forms, Future expectation through scientific and cultural transmission

ARC 2248 Environmental System: Site Planning — النظام البيئي : تخطيط المواقع

The course focuses upon the basic principles involved in design in the outdoor environment- Brief historical perspective- Development of site, building layout forms and landscaping. The course includes Introduction to site analysis (physical and natural environment)- Basic principle involved in Design outdoor environment- Environmental principles (sun-light, solar energy, wind, ventilation, passive cooling, air pollution, vegetation)- Site location principles (public open spaces, road layout and orientation, sequences of spaces)- Building layout and its relation with day light, solar access and shading, wind ventilation and passive cooling- Building forms (shape, orientation, density, ventilation and cooling, location of passive cooling systems)- Landscaping - Infrastructure principles. This course focuses on different methods of environmental calculations

ARC 2249 Project Evaluation & Analysis — تحليل وتقييم المشاريع

The course introduces an overview on project analysis and appraisal criteria, in design stage and after execution stage taking into consideration the architectural and structural principles, evolution investment in term of their economic cost and time. The course is also includes the theoretical researches and field studies on one particular project to practicing the output of the course, financial and economic issues relating to resources allocation for projects. The course covers the following topics: Overview on project analysis and appraisal criteria- Evaluating investment related to the architectural structural principles of projects- Types of appraisal and cost benefit analysis- Economic appraisal (cost effectives and scoring weighting- Financial and economic issues relating to reassure allocation for project- Studies on a Case study is a basic requirement in the course.

ARC 2250 Environmental Impacts Assessment — تقييم التأثير البيئي

The course is concerned with studying the Environmental Impact Assessment as a methodology for determining and evaluating the potential effects of proposed projects and programs. It deals with the process of assessing and evaluating the environmental impacts of proposed projects, taking into account the cultural, economic and social development and their effects on human health, whether beneficial or harmful. The course also covers the interpretation and application of international, national, provincial environmental law. The course focuses on the role of architecture in the issues of pollution control (soil, air, and water), preservation of natural recourses, sustainability. The course also introduces to the green architecture, intelligent building and The LEED as a sustainability evaluation methodology. This course introduces Environmental Law of Egypt and the different items to achieve development without compromising the environment.

ARC 2251 Renewable Energy Systems نظم الطاقة المتجددة

The course aims to acquire the student with the essential knowledge to understand the renewable energy. This course is an introduction to the technology of renewable energy systems in buildings as an essential means to achieve the principles of sustainability. The course covers energy conversion, utilization and storage for renewable technologies) wind, solar, biomass, fuel cells and hybrid systems (- Thermodynamics concepts (including the first and second law) will form the basis for modeling the renewable energy systems. The course also touches upon the environmental consequences of energy conversion and how renewable energy can reduce air pollution and global climate change on earth.

ARC 2252 Advanced Finishing Materials مواد التشطيبات الحديثة

The course is concerned with studying the modern finishing materials that are usually used for interior and exterior finishing. It deals with the special group of materials used for covering surfaces which must meet number of specific requirements. This course is involved with the criteria adopted to select finishing building materials in the indoor spaces (walls, floor and ceiling) and in the outdoor spaces (walls and floors). The course is concerned with studying the physical characteristics of materials. Finishing materials also include acoustic materials, which are used simultaneously as sound-absorbing coatings and as decorative finish materials.

ARC 2253 Advanced Technical Installations تركيبات فنية حديثة

This course is an advanced application for the methods of designing integrated environmental systems. The course focuses upon the environmental application of new technological installations of acoustics and illuminations in the built environment through the basic principles and application of environmental systems.

ARC 2254 Housing Policies سياسات الإسكان

The course aims to introduce housing problems and problems of residential areas in developing countries, and to provide different approaches to deal with this problem with a focus on the complex nature of development efforts- the importance of awareness of the cultural and economic aspects and the role of the participants to insure success of the housing process. The course covers the following topics: Definition of developing countries - Development processes and features - Physical aspects -Housing problem in developing countries - Housing problem in Egypt. The field of housing: Urban, social and cultural aspects - economic aspects and constraints - Administrative and organizational aspects - Analysis of housing problems from both aspects quantity and quality- Informal housing (problem and advantages). Display and evaluate different approaches to solve the housing problem. Development of Residential areas: political, administrative and organizational aspects- Economics issues of residential areas development- Site planning for residential areas- Pattern of design (traditional and developed patterns)- Methods of housing planning (Land division and free planning)- Types of suitable housing- Urban open spaces- Different levels of external spaces- the interdependence and integration of internal and external spaces - Models, applications and research studies.

ARC 2255 Studies in Urban Landscape Architecture دراسات في تنسيق الموقع الحضرية

The course deals with the study of 20th century landscape design with an emphasis on modernity, bio-design, and contemporary trends in landscape design. The course includes the following topics: A survey of historic landscape preservation theories, method and practice and their relationship to environmental and cultural considerations - Integration of large-scale site, programming, planting design, ecology of site, design of water element, and the design of the plant component, the preparation of ecological studies of the site and other design elements to form a suitable design solutions to achieve functional programs and maintaining environment-

Students will go through practical applications of landscape projects to maximize the relationship between the site analysis and execution drawings of landscape projects

ARC 2256 Cities Planning تخطيط مدن

Course deals with the approaches and different studies of city planning, and focuses on the planning process methodology and methods of analysis and the development of the capacities of the student in urban planning scope from the theoretical and practical aspects. The course includes the following topics: Conceptual: the elements of the sequence of preparation of the Master Plan process - Regional framework – Natural, economic, demographic and social studies- legislative framework - The current conditions – Urban framework - Land uses - Determinants Problems and Potentialities - Goals and objectives- Alternatives of Planning plans- Evaluation and selection of optimum alternative- Methods of monitoring and follow-up the implementation - Studies of human settlement in urban communities - Studies of the various specialized areas in the city- Studies and Concepts of improving, upgrading and renovation of urban areas both theoretically and practically- Models, analysis and planning of parts of the cities list.

ARC 2257 Urban Conservation & Rehabitation الحفاظ العمراني وإعادة التأهيل

The course discusses the reasons of the deterioration of the urban environment in the developing countries focusing on informal housing , slums and squatters in Cairo- Understanding the historical context for urban deterioration- The social implications- identifying the urban upgrading and development policies- The government efforts in slum areas- Reviewing case studies on comparative basis for local and international examples. The course is a survey of the relationship between new design and the preservation of historic buildings, buildings with special values, structures and landscape, from antiquity to the present. The course discusses the theories and practices associated with the historic preservation movement, the impact that historical values, aesthetics, culture, politics, and economic factors have in the preservation process

ARC 2258 Sustainability in Architecture العمارة المستدامة

This course examines the environmental impact of building design and construction. The concept of sustainable architecture is discusses as means of reducing this impact- Understanding the principles of sustainable architecture that seeks to minimize the negative environmental impact of buildings by enhancing efficiency and moderation in the use of materials and energy. The student should do applied research in the field of the applications of the techniques of ecologically approach in the field of architecture.

ARC 2259 Thermal Environmental Systems النظم الحرارية البيئية

The course aims to acquire students with essential knowledge of the design and analysis of the building envelope, with a focus on the materials and the relation between architecture and environment. Topics include: comfort, building thermodynamics, envelope assemblies, thermal modeling, active and passive control systems, day-lighting and architectural acoustics. The course focuses on heating, ventilation, and air conditioning (HVAC) Central heating & cooling systems, Heating & Cooling load calculations, Water supply & draining systems, fixtures, Private sewerage systems, Electric systems, illuminations, lighting, Fire protection systems, Vertical & Horizontal circulation.

ARC 2260 Graduation Project مشروع التخرج

This comprehensive architectural project is the culmination of the student's architectural education. The student must presents new concepts and imaginative solutions based on real problems taking into consideration the environmental, social, cultural and structural systems. The project is presented in a series of drawings, perspectives and models, it is also proposed to present 3D Max animation of the project. The course contains: A collective research study to know previous experiments- Design determinants formulation, Analysis and critiques of public buildings, comprehensive programming and comparative analysis of design alternatives and selection of the most appropriate design of architectural and urban spaces to fulfill design, functional, environmental, structural, human and cultural determinants- An integrated design project to combine the collective outputs of the previous architectural and urban studies during the program.

CEN 2306 Engineering Geology الجيولوجيا الهندسيه

Rock forming minerals- rock types and soil types-soil and rock properties – geological structure analysis - plate tectonics - geological time (relative and absolute geological age) – geological maps and sections – discontinuities analysis (hemispherical projection) – weathering and soil – surface processes (floodplains and alluvium – glacial deposits – climatic variants) – coastal processes – groundwater flow – geological and geophysical site investigation – engineering geophysics – assessment of difficult grounds – rock excavation – rock as construction materials.

CEN 2307 Civil Engineering Drawing رسم مدنى

Irrigation structures: Earth works, retaining walls, Bridges, Culverts, Siphons, Regulators, Weirs, Symmetrical and unsymmetrical Locks. Metallic sheds: Column Base, Riveted Joints, and Connections between girders and beams, Columns and beams. Steel Bridges: Truss connections, Main girders (upper and lower chords, verticals and diagonals), Cross girders and stringers. Reinforced concrete structures: Footings, Column, Slabs and beams.

CEN 2308 Properties and strength of materials خواص ومقاومة المواد

Specifications and standard specifications of engineering materials and products. Testing machines and its calibration, strain gages. Main properties of engineering materials (physical , chemical, mechanical,…etc). Non – metallic building materials and units types. Properties and testing of building stones, lime, Gypsum, Timber, Bricks, Tiles. Isolation materials for moisture, Heat and sound. Advanced composite materials, Glass, Plastics. Metallic building materials and units: Structural and reinforcing steel, Welding and welded splice, Aluminum, Behavior of metals under static loads: Tension, compression, Flexure, Shear, Surface hardness of metals. Behavior of metals under dynamic loads (impact) and repeated loads (fatigue), Creep.

CEN 2310 Concrete technology تكنولوجيا الخرسانة

Concrete materials: Cement, Aggregate, Mixing Water, Admixtures. Concrete manufacturing: Storage, Mixing, Transportation, Pouring, Compacting, Curing, Construction joints, shrinkage and movement joints, Formwork, Ready mixed concrete. Properties of fresh concrete: Consistency, Workability, Cohesion, Segregation, Bleeding. Properties of hardened concrete: Strength, Volumetric changes, Elasticity and creep, Durability of concrete. Mix design: Engineered methods, Empirical methods. Non-destructive testing: Rebound hammer, Ultrasonic, Pulse velocity, Core, Steel detection, radiation. Statistical analysis: To judge the concrete quality. Special concrete: polymer, Fibber and lightweight concretes. Hot weather concreting: definition, Problems, Precautions. Repair and strengthening of R.C. structures: Assessment methods, Repair materials, overview for different techniques. Concrete floorings: Floor types, Materials properties, joints construction, Surface finish and preparation

CEN 2311 Structural Analysis 1 تحليل إنشائي ١

Types of loads, Types of supports, Reactions of statically determinate beams, frames, and arches, Stability of structures, Internal force diagrams (Normal, Shear &bending moment) in beams, frames, and arches. Two dimensional analysis of statically determinate trusses. Influence lines for statically determinate beams, frames, arches, and trusses.

CEN 2312 Structural Analysis 2 تحليل إنشائي ٢

Properties of plane areas, Straining actions, Concept of stresses, Concept of strains, Stress-strain relationship, Hooke's law, Normal stresses and strains, shear stresses and strains due to shear force, Concept of shear flow, Torsion of circular shafts, Combined stresses, Mohr's circle, buckling of compressive members

CEN 2313 Surveying Engineering مساحة هندسية

Definition and basic principles – Distance measurements by tape and EDM, corrections –Leveling: principles, rise and fall method, height of instrument method – Invert staff leveling –Adjustment of level lines – Longitudinal and cross-section – Contours

CEN 2316 Soil Mechanics ميكانيكا التربه

Rock forming minerals- rock types and soil types-soil and rock properties – geological structure analysis - plate tectonics - geological time (relative and absolute geological age) – geological maps and sections – discontinuities analysis (hemispherical projection) – weathering and soil – surface processes (floodplains and alluvium – glacial deposits – climatic variants) – coastal processes – groundwater flow – geological and geophysical site investigation – engineering geophysics – assessment of difficult grounds – rock excavation – rock as construction materials.

CEN 2318 Fluid Mechanics ميكانيكا الموائع

Introduction, Engineering system, Properties of fluid, Fluid Statics, Fundamentals of fluid flow, Momentum and forces in fluid flow, Principals laws and equations of hydrodynamic, Similitude and dimensional analysis, Steady incompressible flow in pressure conduit, Forces in immerged bodies, Flow in closed conduit and pipe system.

CEN 2319 Hydraulics هيدروليكا

Flow in open channel, Energy and momentum principles, Uniform flow, Critical Flow and transitional problems, Gradually varied Flow, Rapidly varied flow, Flow measurements, Introduction, Introduction to pumps and turbines, Steady and unsteady flow in open channel.

CEN 2320 Structural Analysis 3 تحليل إنشائي ٣

Deformations of elastic bodies, Double integration method, Conjugate beam method, Virtual work method for beams, frames, and trusses, three moment equation method.

CEN 2322 Design of steel structures 1 تصميم المنشآت المعدنية ١

Structural steel technology, steel grades, steel structural systems, Codes and specifications, lateral resistance and bracing systems, calculation of loads on steel structures, design of tension members, design of compression members, design of axially loaded columns, design of beams subjected to pure bending, design of beam-column and frames structures

CEN 2323 Design of Concrete Structures 1 تصميم المنشأت الخرسانية ١

Material properties; Methods of design; Structural systems and load distribution; limit states design method; Sections subjected to bending moments; design of reinforced concrete beams under bending moments and shearing forces; bond strength and development length of reinforcement; reinforcement details for beams, Design of short columns subjected to axial load

CEN 2324 Irrigation and Drainage Networks هندسة شبكات الرى والصرف

Introduction for the water cycle and water resources and use in different sectors. Element of the hydrologic cycle. Soil –Plant-Water relationships. Irrigation water requirements, Irrigation efficiency and calculating periods between irrigation, low rates and irrigation time. Planning and design of Irrigation projects: Alignment of canals and drains, Synoptic diagrams for canals and drains, Design of cross sections for earth channels. Different type of field water application: Surface irrigation method, Sprinkler and drip irrigation, subsurface irrigation. System of irrigation in Egypt. Planning, Design, Management, Operation and Maintenance for different methods.

CEN 2325 Transportation and Traffic Engineering هندسة النقل والمرور

Urban planes – objectives and goals and transportation planning stages – Traffic studies (volume, speed, density, and travel time delay) – Traffic flume characteristics – interception control. Definition of management and traffic operation – traffic planning – traffic operating signals – light signals – parking control – traffic tidal effect – improvement of cargo transportation.

CEN 2326 Foundation Engineering 1 هندسه الأساسات ١

Foundation types – selection of foundation – allowable movements – soil mechanics review – soil description – classification – effective stress – in situ tests – shear strength – shallow foundations – bearing capacity – evaluation of settlements – isolated foundation – combined foundations – mat foundations

CEN 2327 Foundation Engineering 2 هندسه الأساسات ٢

deep foundations – pile foundations – drilled shaft foundation – load transfer mechanisms – axial load capacity of deep foundations – static capacity analysis for piles – static capacity analysis for drilled shafts – field load tests – group effects – settlement – construction of deep foundation – pile driving – pile driving formula – wave equation analysis – drilled shaft construction – foundations on expansive soils .

CEN 2328 Design of Irrigation Structures تصميم منشات الرى

Irrigation structures: Classification of irrigation structures – Retaining walls: Types, Cases of loading, Hydraulic and structural design – Crossing structures: Hydraulic design, Calculation of loads for different cases of loading and structural design for the following crossing structures: Small R.C. bridges, Culverts, Syphons, and Aqueducts – Escapes: Types, Functions, Design – Introduction to heading up works and navigation works.

CEN 2330 Design of Concrete Structures 2 تصميم المنشأت الخرسانية ٢

Design and reinforcement details of: solid slabs, Hollow block slabs, and paneled beams. Design of eccentric sections, Design of long columns, Design of beams under torsional and shear stresses, Design of stairs.

CEN 2332 Field Training تدريب ميدانى

The student will have a training program in the field according to his specialization

CEN 2333 Design of Concrete Structures 3 تصميم المنشآت الخرسانية ٣

Design of Flat slab: Code limitations, Structural analysis, punching, columns, openings in slabs, & Reinforcement details. Structural system for long-span halls, Design of frames, Design of saw tooth frames and trusses, Vierendeel girders, Arch slabs, Arch girders

CEN 2334 Highway Engineering هندسة الطرق

Classification of roads – Planning and route selection – Geometric design criteria – Planning and design of intersection – Design and characteristics of asphalt mixes – Design of pavement and concrete roads – Surface drainage of roads.

CEN 2335 Problematic Soil التربة ذات المشاكل

Problematic soil: expansive (swelling) soil, collapsible soil, very soft clay. Distribution of problematic soil in Egypt. The different characteristics of problematic soil. Related problems of problematic soil on the foundations and structures. Method of foundation on problematic soil.

CEN 2336 Construction Management إدارة مشروعات التشييد

Quantities, Cost estimation, Cost monitoring, Cost control, Construction contracts, Safety.

CEN 2337 Dynamics of Structures ديناميكا المنشأت

Introduction to Earthquake Engineering: Earthquakes, causes of earthquakes and their characteristics. Plate tectonics theory. Past earthquake: Egypt and World. Intensity and magnitude: Scales – Richter and Modified Mercali. The relationship between the static and dynamic analysis – Dynamic degrees of freedom – Structural system with single degree of freedom – Converting of the different structures to the single degree of freedom system – Forming the general equation of motion and its solution in the different cases – Source of vibration, types of vibration, degree of freedom, spring action and damping: viscous and coulomb's damping. Single Degree of freedom system : undamped and damped and free and forced vibration (harmonic): Response to unit impulse and arbitrary loading by Duhamel's integral for SDOF system (Ramp and Pulse loading).

CEN 2338 Photogrammetric Surveying المساحة التصويرية

Aerial photogrammetry – Aerial cameras – Flight planning - Vertical photographs – 3D vision

CEN 2339 Environmental Engineering هندسه البيئه

Introduction mass and energy fundamentals – physical chemistry and principles – organic chemistry – microbiology & microbial growth – erosion control and storm water management – water quality – water treatment – wastewater treatment – solid waste – hazardous waste – air pollution – global events

CEN 2340 Water Resources Engineering هندسة الموارد المائية

Introduction to water balance and hydrologic cycles, Computational methods and statistics, Surface hydrology: Precipitation, meteorology, Evaporation, transpiration and their methods of estimation and measurements, Surface water flow and surface water measurements. Groundwater hydrology, Groundwater measurements

CEN 2341 Contracts, Quantities and Specifications العقود والكميات والمواصفات

Contracts definitions – Formatting and types – Components of contracts (Main points) – Tendering procedures – Relationship between concerned people in construction projects – stages project preparation – Tender Documents – Calculations of quantities: Excavation and filling quantities – Calculation of plain and reinforced concrete and steel reinforcement quantities – Calculation of Brick Walls quantities – Calculation of isolation quantities – Cost estimate – Final invoice – Specifications: Types of specifications – Specification items and their users – Methods of formatting the specifications for different works (Brickwork, Concrete, Isolation, Insulation) – Types of contracts and judgment.

CEN 2342 Harbor Engineering and Offshore Structur هندسة الموانى والمنشآت البحرية

Introduction, Tide, wind, currents and wave definition and analysis. Wave motion and transformation. Harbor planning. Break water type and design. Berthing facilities. Natural changes of shore. Environmental impacts assessment.

CEN 2344 Sanitary Engineering الهندسه الصحيه

Introduction to water supply works – sources of water – rain water – ground water – surface water – impurities – water quality of each source – drinking water standards – rate of water consumption – required studies to estimate water demands for different water uses – collection works – types of intake structures – surface water intakes – criteria for intake location – design of intake conduit and low lift pumps – water purification works – flash mixing – coagulation – sedimentation – slow and rapid filtration – chlorine disinfection – storage works – elevated and ground storage – water distribution works – high lift pumps –design of distribution networks using method of sections – introduction to wastewater system – surface and ground water pollution due to the absence of wastewater systems – historical development of wastewater system – characteristics and sources of wastewater – pollutants – domestic flow – industrial flow – storm water flow – infiltration flow – collection works – design of gravity networks – wastewater pump station – force mains – treatment works – design of primary treatment units – design of biological treatment system using trickling filter.

CEN 2346 Geotechnical Engineering الهندسة الجيوتقنية

Introduction to the finite element method as a tool of solving partial differential equations. Introduction to analysis and design programs in geotechnical engineering field such as plaxis and geostudio.

CEN 2347 Dams and Reservoirs Engineering هندسة السدود والخزانات

Types of dams, Dams stability, gravitational, arch and aggregate Dams Required studies for dam construction: hydrological, ecological, geotechnical and geophysics, cost and benefit studies and dam project funds. Design consideration from geological and topography and available point of view. Hydraulic design and structural design for gravity dams, rock fill dams and earth dam. Method of protection of dam against seepage either underneath the dam or through dam. Computer applications on dams. Introduction to dam failure and risk assessment due to dam failure.

CEN 2348 Water structures المنشآت المائية

Introduction to the finite element method as a tool of solving partial differential equations. Using of different available Software in the field of irrigation structures design in addition to studies related to the flow and pollution movement for surface water and groundwater such as: (GEOSTUDIO) , (PLAXIS 3D) , (V-MODFLOW) , (GMS) , (SMS).

CEN 2349 Advanced Strength of Materials خواص ومقاومة مواد متقدمة

General state of stress and strain – Absorbed energy – General hook low – Theories of failure and its applications – Thick and thin cylinders – Equilibrium and stability of slender columns – Strain gauges.

CEN 2351 Repair and strengthening of Concrete Str uctures ترميم وتدعيم المنشآت الخرسانية

Cracking of buildings – Probable defects during executing operations and failure of different structures – Examples for some of existing failed structures – Inspections of defects of concrete structures – Repair and strengthening of concrete structures – Maintenance and protection of concrete structures – Repair and retrofitting of underground and water structures – Repair of concrete floors – Materials of repair and protection and its uses – modern technology of repair of concrete structures. Subject to fire and its design methods.

CEN 2353 Applications in Structural Engineering تطبيقات في الهندسة الانشائية

Introduction about the structural engineering programs, Drawing using AutoCAD program, Structural analysis of 2D beams, frames and trusses using SAP2000 program, Structural analysis of 2D floors using SAP2000, Exporting Dxf files from AutoCAD program to SAP2000 program, Structural analysis of shallow foundations using SAP2000 program, Using Excel spread sheets to design different structural elements. Analysis by using advanced structure software such as (Etabs, Safe, and Revit). Analysis of 3-D structures.

CEN 2354 Advanced Structural Analysis تحليل إنشائي متقدم

Structure idealization and degrees of freedom; Coordinate systems; Equilibrium, compatibility and constitutive relations; Force-displacement relations for bars and beams; Stiffness versus flexibility; Stiffness matrix of bar, beam, and frame members; Global stiffness equations; Inclined members and special topics; Matrix analysis of trusses, beams, frames and grids; Self-strained problems; Approximate analysis of structures; Computer applications.

CEN 2355 Design of Steel Bridges تصميم الكباري المعدنية

Structural system of bridges, types of bridges : structural system in longitudinal and transverse directions – material of construction – design philosophy – design loads – road way loading – railway loading – other loads on bridges– design of steel floor beams systems : stringer, cross girders, floor connections – design details: bracings – bearings – topics relevant to bridge design :beam girds, curved and skew bridges, composite bridges, deflection and camber, temperature effect in bridges, erection of bridges

CEN 2356 Prestressed Concrete خرسانة سابقة الإجهاد

Pre-stressed concrete: introduction, types of pre-stressing steel, material properties, analysis of statically determinate pre-stressed beams, Design of pre-stressed beams and draw cable profile. Calculation of pre-stressing forces, eccentricity of cables, and calculation of losses. Design of end block. Analysis and design of continuous pre-stressed beams

CEN 2358 High Rise Buildings المبانى العالية

Examine structural aspects of high rise buildings, particularly fundamental approaches to the analysis of the behavior different forms of building structures including frame, shear wall, tubular, core and outrigger-braced system. Introducing the forces to which the structure is subjected, design criteria which are of the greatest relevance to tall buildings, and various structural forms which have developed over the years since the first skyscrapers were built at the turn of the century. Modeling of real structures for both preliminary and final analysis. Assessment of the stability of the structure, and the significant of creep and shrinkage. Dynamic response of structures subjected to wind and earthquake forces. Includes both accurate computer – based approximate method of analysis

CEN 2359 Geographic Information Systems نظم المعلومات الجغرافية

Principles of GIS: Maps, scale, GIS origins, the development of GIS, map decomposition, map algebra, current GIS market estimates, future market projections and trends; GIS Data: Point, line, and polygon data. Raster, vector and voxel data; Database structures: Data types: continuous, ordinal and discrete data. Integrating different data structures and data types; General Overview of GIS Capabilities and Functions. Data collection, management, manipulation, analysis, display and visualization; Components of GIS Systems: Software, operating systems, hardware, peripherals, data, people, management, infrastructure; Data Types and Data Sources: Raster, vector, point data sources. Government sources (USGS, etc.) Commercial sources, Sources of international data, remote sensing data sources; GIS Data: GIS digitizing. Digitizing paper map data. Incorporating existing database information, Incorporating GPS data; GIS Resources; Remote Sensing and GIS: Incorporation of remote sensing data into GIS, Remote sensing data types and sources, issues of incorporating and processing raster remote sensing data with vector GIS; GPS and GIS: Incorporation of GPS and other telemetry data into GIS. GPS, Gloanas, Argos, and other data types and sources, issues of incorporating and processing point and time data within the GIS environment; Visualization and Simulation: The role of visualization and simulation technologies in GIS Practical Issues in successfully and productively using these technologies.

CEN 2360 Graduation Project مشروع التخرج

The student shall choose elective courses according to the desired graduation project. In case of increasing the number of students in a certain project, the students will be sorted by their GBA and the courses related to the desired project. The graduation projects are: Structural Engineering (Design of reinforced concrete structures – Steel structures – Structural Analysis Geotechnical Engineering - Hydraulics and Irrigation Engineering (Water Structures – Pumb stations – Irrigation – Hydraulics) - Highways and Airports Engineering - Sanitary Engineering - Harbor Engineering and offshore structures - Project Management - Surveying Engineering and GIS - Properties and Strength of Materials (Properties of Materials – Repair and Strengthening of Concrete Structures)

CEN 2361 Repair and Maintenance of Roadways إصلاح وصيانة الطرق

Introduction and expressions – Type of maintenance – Information system for roadways – Management of maintenance operations – Methods of roadways – Evaluation and evaluation maintenance requirements concerning disturbing and un disturbing testing – Faults and common problems and methods of repair – Structural design of paving layer above old layers – Repair with reused pavement materials.

CEN 2363 Applications in Highways Engineering تطبيقات في هندسة الطرق

Introduction about the Highways engineering and Traffic and Transportation Engineering programs, Application of using such Programs

CEN 2364 Applications in Sanitary Engineering تطبيقات في الهندسة الصحية

Introduction about the Sanitary Engineering programs such as (SewerCad), (StormCad), and (WaterCad). Application of using such Programs

CEN 2366 Principles of Civil Engineering مبادئ الهندسة المدنية

"Principles of Applied Civil Engineering Design, details the guidelines, principles, and philosophy needed to produce design documents for heavy civil engineering projects. The interrelationships among contract documents, site characterization, construction documents, and construction cost estimates numerous examples and illustrations on drawing preparation, specification writing, and estimating construction costs. In addition to introducing conventional and standard practice and basic principles to prepare quality documents,

ELP 2367 Principles of Electrical Engineering مبادئ الهندسة الكهربية

Electrical circuit variables and elements, Simple resistive circuits, Analysis of electrical circuits, Source transformation, Network theorems, Star-delta transformation, Sinusoidal steady state analysis, Magnetically coupled circuits, Mutual inductance, Resonance in electrical circuits, Electric filters, Analysis of electrical circuits with non-sinusoidal alternating currents.

CAI 2401 Automatic Control التحكم الآلي

Transient and steady state response analysis of continuous time feedback control systems; Routh's stability criterion; Error analysis of stable control systems; Effects of integral and derivative control actions; Control systems analysis and design by root locus method; PID controllers; Control systems analysis and design by frequency response method; Bode Diagrams; Relative stability analysis; Lead, Lag, Lag - Lead compensation.Laboratory:
01 Introduction to Matlab.
02 Plotting response curves using Matlab.
03 Transformation of mathematical models of dynamic systems using Matlab.
04 Matlab representation of systems in block diagram form.
05 Impulse response analysis of dynamic systems using Matlab.
06 Transient response analysis using Matlab.
07 Root locus analysis and design using Matlab.
08 Frequency response analysis and design using Matlab.
09 Position control system.
10 Thermal control system.
11 Level control system.
Textbook:
• K. Ogata, Modern Control Engineering, Pearson, 5th.Ed., 2009.

ELP 2402 Digital Control Systems أنظمة التحكم الرقمي

Digital control system components - techniques of digital control algorithm ,time domain control techniques .SCADA systems, MMI (Man Machine Interface) ,Microcontrollers , PLC Applications.Textbook:
• Design of Modern Control Systems.By David John Bell
• Modern Control System Theory and Design.By Stanley M. Shinners
• K. Ogata, Modern Control Engineering, Pearson, 5th.Ed., 2009.

ELP 2403 Electrical Circuits 1 دوائر كهربية ١

Definition of: Current, Voltage, Power, Energy – Ohm's Law – Nodes, Branches, Loops – Kirchhoff's Laws – Star Delta Transformations – Nodal and Mesh Analysis – Linearity – Superposition – Source Transformation – Thevenin's and Norton Theorems – Max. Power Transfer – Operational Amplifier – Inverting and non Inverting OPAM – Summing, Difference and Cascaded OPAM – Capacitors and Inductors – F
Definition of: Charge, Current, Voltage, Power, Energy – Ohm's Law – Nodes, Branches, Loops – Kirchhoff's Laws – Star Delta Transformations – Nodal and Mesh Analysis – Linearity – Superposition – Source Transformation – Thevenin's and Norton Theorems – Max. Power Transfer –Transient in DC Circuits.
Irst Order Circuits – Second Order Circuits.Laboratory:
01 Loop analysis.
02 Nodal analysis.
03 AC resonance circuits.
04 Voltage , current and power of DC circuits.
05 Voltage , current and power of AC circuits.
Textbook:
• J. W. Nilsson and S. A. Riedel, Electric Circuits, Prentice - Hall, 8th.Ed., 2008.
References:
• F. P. Yatsko and D. M. Hata, Circuits: Principles, Harcourt Brace College Publishers, 1992.

ELP 2404 Electrical Measurements & Testing قياسات واختبارات كهربية

Introduction about measurements - Errors in measurements - Statistical analysis of errors in measurements - Measurements of all electrical quantities (current, voltage, energy and power) for DC and AC current - Measurement of resistance, inductance and capacitance - the multi meter - The oscilloscope - Signal generators - Measurements of time period and frequency - Spectrum analyzers - Logic Analyzers - Logic probe - Energy transducers (pressure, force, displacement, level, light, temperature, speed) - A/D and D/A and applications - Data acquisition cards.Laboratory:
01 Errors in experimental data.
02 Basic statistical sampling.
03 Voltmeter calibration using the potentiometer.
04 Oscilloscope operation.
05 Basic oscilloscope measurements.
06 Measuring frequency and phase shift with the oscilloscope.
07 Basic function generator.
08 The thermocouple.
09 Photoelectric transducers.
10 Signal conditioning for data acquisition.
References:
• Larry D. Jones and A. Foster Chin, Electronic Instruments and Measurements, Prentice - Hall International, 2nd.Ed., 1991.
• A. V. Baksh, U. A. Baksh, Electronic Instrumentation, Technical Publications, 2009.
• Klaas B. Klaassen, Electronic Measurement and Instrumentation, Cambridge Univ. Press, 1999.
• M. M. S. Anand, Electronic Instruments and Instrumentation technology, PHI Learning Pvt. Ltd, 2004.

ELP 2406 Electrical Circuits 2 دوائر كهربية ٢

Sinusoids – Phasors – Impedance and Admittance – Kirchhoff's laws in The Frequency Domain - Nodal and Mesh Analysis – Linearity – Superposition – Source Transformation – Thevenin's and Norton Theorems – Max. Power Transfer – OPAM AC Circuits – Instantaneous and Average Power – Effective and RMS Value – Apparent Power and Power Factor – Power Factor Correction -Complex Power – Three Phase Circuits – Balanced Star and Delta Connections – Power In Balanced Systems – Magnetically Coupled Circuits - Mutual Inductance – Energy in a Coupled Circuit.Laboratory:
01 Transient analysis in DC circuits.
02 3 Phase circuits
03 Using PSPICE SW: Transient analysis of AC circuits.
04 Using PSPICE SW: Transfer function.
05 Using PSPICE SW: Frequency response.
Textbook:
• J. W. Nilsson and S. A. Riedel, Electric Circuits, Prentice - Hall, 8th.Ed., 2008.
References:
• F. P. Yatsko and D. M. Hata, Circuits: Principles, Harcourt Brace College Publishers, 1992.

ELP 2409 Electrical Materials مواد كهربية

Atoms And Atomic Structure – Materials Classification – Conductors – High/Low Resistive - Materials – Semiconductors – Insulators – Magnetic Materials – Study And Measurement Of Electrical Materials – Magnetic And Optical Properties Of Materials – Materials For Electronic Components.Textbook:
• A. J. Dekker, Electrical Engineering Materials, Prentice Hall, 1970.
References:
• S. O. Kasap, Principles of Electrical Engineering Materials, McGraw - Hill, 2000.

ELP 2410 Electrical Machines 1 آلات كهربية ١

Direct Current Machines – Armature Winding – Armature Reaction And Commutation – Methods Of Excitation – Characteristics Of DC Generators – Load Characteristics Of DC Motors – Speed Control Of DC Motors – Construction Of Single Phase Transformers – Equivalent Circuits – Determination Of Transformer Parameters – Voltage Regulation – Efficiency – Autotransformers – Poly Phase Transformers And Their Connections.Laboratory:
01 Study of Excitation Phenomena in Single - Phase Transformers.
02 Open Circuit and Short Circuit Tests of Single - Phase Transformers.
03 Load Test and Parallel Operation of Single - Phase Transformers.
04 Back - to - Back Testing of Single Phase Transformers.
05 Three - Phase and Multi - Winding Transformer Connections for Three - Phase Circuits.
06 Three - Phase to Two - Phase Transformation and Open Delta Connection.
07 Characteristics of Separately - excited, Shunt and Compound DC Generators and Motors.
08 Separation of Iron, Friction Losses and Estimation of Parameters of DC Machines.
09 Speed Control of DC Motors.
Textbook:
• E. Fitzgerald, C. Kingsley and S. Umans, Electric Machinery, McGraw - Hill, 6th.Ed., 2003.
References:
• G. R. Slemon and A. Straughen, Electric Machines, Addison Wesley Publishing Company, 1980.
• J. Rosenblatt and M. H. Friedman, Direct and Alternating Current Machinery, Charles E. Merrill Publishing Company, A Bell& Howell Company, 2nd. Ed., 1984.

ELP 2411 Electrical Machines 2 آلات كهربية ٢

Three Phase Synchronous Machines (Construction And Principle Of Operation – Armature Winding And Space Harmonics – Armature Reaction And Equivalent Circuit – Voltage Regulation – Circle Diagram – Parallel Operation – Synchronous Motors – Three Phase Induction Machines (Construction Of Three Phase Induction Motors) – Equivalent Circuit – Performance Circle Diagram – Starting – Torque – Speed Curves – Speed Control And Testing – High Starting Torque Cage Motors – Braking – Induction Generator – Unbalanced Operation And Effect Of Space Harmonics – Single Phase Induction Motors (Construction – Windings – Theory Of Operation – Vibration – Types – Performance)Laboratory:
01 Open circuit, Short Circuit and zero Power factor characteristics of synchronous machine
02 Determination of direct and quadrature axis reactance of synchronous machine
03 Synchronization and parallel operation
04 determination of V-curves of synchronous machine
05 Determination of parameters and performance characteristics of three phase induction machine
06 Determination of torque – speed characteristics of three phase induction machine in braking, motoring, and generation.
07 Speed control of three phase slip ring induction motor by rotor impedance control
08 Speed control of three phase slip ring induction motor by varying supply voltage
09 Speed control of three phase slip ring induction motor by injected EMF control

Textbook:
Hindmarsh, John. Electrical Machines & Their Applications.Elsevier, 2014.
References:
1-Laramore, Robert D. An introduction to electrical machines and transformers. Wiley, 1990.
2-Hamdi, Essam S. Design of small electrical machines. John Wiley & Sons, Inc., 1994

ELP 2412 Electrical Installation التركيبات الكهربية

Installation: Regulation and Responsibilities – Codes of Practice – On Site Communications – Electricity Supply Systems – TN – S Systems – TN – C – S Systems – IT Systems – Wiring and Lighting Circuits – Socket Outlet Circuits – Cables and Enclosures – Wiring Colors – Wiring Systems and Enclosures – Conduit Installations – Cable Tray Installations – Bathroom Installations – Agricultural and Horticultural Installations – Flammable and Explosive Installations – Support and Fixed Methods for Electrical Equipment – Electrical Installation Inspection and Testing – Safe Working Environment – Safety Signs – Accident and Emergency Procedures – Electric Shock Protection – Correct Disposal of Waste Materials.Textbook:
Seip, Günter G. Electrical installations handbook.Wiley-VCH, 2000.
References:
Ådnanes, Alf Kåre. Maritime electrical installations and diesel electric propulsion.ABB, 2003.

ELP 2413 Electrical Power Systems أنظمة القوى الكهربية

Introduction of Power Transformer, Electrical Design of Overhead Lines: Constants of a Transmission Line, Resistance of a Transmission Line, Skin Effect, Flux Linkages, Inductance of a Single Phase Two-Wire Line, Inductance of a 3-Phase Overhead Line, Concept of Self-GMD and Mutual-GMD, Inductance Formulas in Terms of GMD. Performance of Transmission Lines: Classification of Overhead Transmission lines, Important Terms, Performance of Single Phase Short Transmission Lines, Three-Phase Short Transmission Lines, Effect of Load p.f. on Regulation and Efficiency, Medium Transmission Lines, End Condenser Method, Nominal T Method, Nominal π Method. Underground Cables: Construction of Cables, Insulating Materials for Cables, Classification of Cables, Cables for 3-Phase Service, Laying of Underground Cables. Steam and Nuclear Power Stations: Schematic Arrangements, Selection of Site, Comparison Between Them.Laboratory:
01 Overhead AC transmission Line Performance Characteristics.
02 Electrolytic Tank Model for Assessment of Underground Cable Electric Fields.
03 Balancing of Unbalanced Three - Phase Loads.
04 Measurement of Earth Resistance.
05 Mono-polar and Bipolar DC Transmission Systems.
Textbook:
• H. Cotton and H. Barber, The Transmission and Distribution of Electrical Energy, Hodder and Stoughton, UK, 1976.
• J. R. Eaton, Electric Power Transmission Systems, Prentice Hall, Inc, 1980.
• J. Grainger and W. D. Stevenson, Power System Analysis, McGraw - Hill, 1994.
References:
•V.K. Mehta, Rohit Mehta, Principles of Power System, S Chand & Co. Ltd., 2005.
•J. Duncan Glover, Mulukutla S. Sarma, Thomas J. Overbye, Power System: Analysis and Design, 4th Ed., Thomson Corporayion, USA, 2008.
•J. D. Glover, M. S. Sarma and T.J. Overbye, Power System Analysis, CENGAGE Learning, UK, 4th. Ed., 2008.
•J. D. Glover and M. Sarma, Power System Analysis and Design, PWS - KENT Publishing Company, Boston, USA, 1987.
•C. D. Gross, Power System Analysis, J. Wiley @ Sons, 2nd. Ed., 1986.

ELP 2414 Power System Analysis 1 تحليل نظم القوى الكهربائية ١

Introduction to the Power Flow Problem, Analysis of Power Systems Under Fault Conditions: Type of Faults, Series Faults, Shunt Faults, Method of Analysis, Symmetrical Faults on Three-Phase System: Limitation of Fault Current, Percentage Reactance, Percentage Reactance and Base kVA, Short-Circuit kVA, Reactor Control of Short-Circuit Currents, Location of Reactors, Steps for Symmetrical Fault Calculations, Unsymmetrical Faults on Three-Phase System: Symmetrical Components Method, Symmetrical Components in Terms of Phase Currents, Sequence Impedances, Sequence Impedances of Power System Elements, Analysis of Unsymmetrical Faults, Single Line-to-Ground Fault, Line-to-Line Fault, Double Line-to-Ground Fault.Textbook:
1-Balu, N.J. and Lauby, M.G. eds., 1994. Power system stability and control (Vol. 7). New York: McGraw-hill.
References:
•Electrical Power Systems by D.Das
•Electrical Power Systems Technology
Author: Dale R. Patrick
•V.K. Mehta, Rohit Mehta, Principles of Power System, S Chand & Co. Ltd., 2005.
•J. Duncan Glover, Mulukutla S. Sarma, Thomas J. Overbye, Power System: Analysis and Design, 4th Ed., Thomson Corporayion, USA, 2008.

ELP 2415 Microcontrollers & Applications المتحكمات الدقيقة وتطبيقاتها

Difference between microprocessors and microcontrollers, General architecture of microcontrollers, Architecture of one of the available microcontrollers that will be used in this course, its assembly, Programming with either C or Basic, Input and output of data in this microcontroller, Timers, Counters, and Interrupts, Software and hardware applications will be assumed in each part. Dealing with A/D and D/A either internal or external, The student should build a complete project to control a simple process like controlling temperature and displaying it, or controlling the speed of a motor and displaying it also.athematical modeling of linear dynamic systems; transfer function and impulse response function; Modeling of mechanical, electrical, fluid and thermal systems; Modeling in state space; State - space representation of scalar differential equation systems; State - space representation of transfer function systems.Laboratory:
01-04 Exp. # 1 - 4: Experiments on programming the 8 bits microprocessor used in this course either on a simulator or a kit. These programs must be gradually increased in difficulty from handling data between the microprocessor registers, and transferring data to and from memory using different addressing modes, and transferring data to and from input and output ports.
05 Monitoring the signal on all the microprocessor control lines while executing a very short closed loop program.
06 Building a microcomputer card consisting of the microprocessor, flash memory contain the program, a ram chip to store some data, at least one input and one output port.
07-09 Exp. # 7 - 9: Programming the 16 bit microprocessor with its assembly language. These programs should deal with memory with different addressing modes, Input and output programs, and dealing with subroutines.
Textbook:
• Renu Singh, B. P. Singh, Microprocessors Interfacing and Application, New Age International Publishers, 2002.

ELP 2418 Power Electronics إلكترونيات القدرة

POWER SEMICONDUCTOR DEVICES: Principle of operation - Characteristics and modeling of power diodes, SCR, power BJT, and power MOSFET. PHASE CONTROLLED CONVERTERS: Uncontrolled, semi-controlled, and fully-controlled rectifiers - Converters design and control - Inverter operation - Input power factor - Effect of source inductance - Firing circuits. DC TO DC CHOPPERS: Buck, Boost, and Cuk Converter circuit Analysis, energy Analysis, circuit simulation, continuous and discontinuous modes of operation. Laboratory experiments on the course topics.Laboratory:
01 Characteristics of Thyristors and Triacs.
02 Experimentation on Single - Phase Semiconverters and Full Converters Feeding Resistive Loads.
03 Experimentation on Three - Phase Semiconverters and Full Converters Feeding Resistive Loads.
04 Power Factor Improvement Using Extinction Angle, Symmetrical Angle and Pulse - Width - Modulation Control.
05 Experimentation on Single - Phase and Three - Phase AC Switches.
06 Phase and Integral - Cycle Control of Single Phase Resistive Loads.
07 Single Phase Controllers with Resistive and Inductive Loads.
08 Three - Phase Half - Wave and Full - Wave Controllers with Resistive Loads.
09 Experimentation on Step - Down and Step - Up Choppers with RL Loads.
10 Experimentation on Single - Phase and Three - Phase Inverters.
11 Characteristics of a DC Motor Fed by Phase - Controlled Rectifier Using SCR's.
12 Characteristics and Speed Control of a DC Motor Fed by Bridge Rectifier.
Textbook:
• M. M. Rashid, Power Electronics, Circuits, Devices and Applications, Prentice - Hall, 2nd.Ed., 1993.
References:
• S. B. Dewan and A. Straughen, Power Semiconductor Circuits, J. Wiley & Sons, 1975.

ELP 2419 High Voltage Engineering هندسة الضغط العالي

Fields: Field Concepts, Electrostatic Fields, Magnetic Fields, Electrical Conduction Fields, Thermal Fields, Field Analysis Methods. High-Voltage Generation: Generation of High Alternating Voltages, Generation of High DC Voltages, Generation of Impulse Voltages, Generation of Switching Impulses, Generation of Impulse Currents. High Voltage Gases Insulating Materials: Ionization, Electronegative Gases, Attachment and De-ionization, Self-Sustained Gas Discharges (Townsend Discharges), Self-Sustained Gas Discharged (Streamer Discharges), Flashover of Uniform Gaps (The Effect of Pressure And Gap Length - Paschen's Law), Flashover of Non-Uniform Gaps (The Polarity Effect), Flashover Mechanism of Long Gaps (Leader Mechanism), Flashover, Sparks And Arcs, Corona Discharges, earthing basics, rods resistance, equipment grounding, system gronding and surges groundingLaboratory:
01Stress Mapping around High Voltage electrode using electrolytic tank
02Testing of transformer oil
03Electrical corona on point and wires electrodes
04Electrical corona on monopolar and bipolar DC lines
05High Voltage measurements
06High voltage distribution along stressed string of suspension insulator.
07Electrical corona power loss in AC transmission lines
08Measurement of earth resistance for different grounding electrodes.

Textbook:
Naidu, Motukuru S., and V. Kamaraju.High voltage engineering.Tata McGraw-Hill Education, 2013.
References:
- M. Abdel – Salam, H. Anis, A. El-Morshedy and R. Radwan, High-Voltage Engineering: Theory and Practice, Marcel Dekker, I NC. 2nd Ed., 2000.
- J. Holtzhausen, W. Vosloo. High Voltage Engineering Practice and Theory. ISBN: 978 - 0 - 620 - 3767 – 7

ELP 2420 Programmable Logical Controllers الحاكمات المنطقية المبرمجة

Introduction to Programmable Logic Controllers – Hardware Components of PLCs – Input/output Devices – PLC Communications – Input/output Processing – PLC operation – PLC programming – PLC Programming Instructions – Internal Relays – Timers and Counters Programming – Shift Registers – Data Handling – Designing Programs – Testing and Debugging – Practical Applications.Laboratory:
01 PLC programming 1
02 PLC programming 2
03 PLC programming 3
04 PLC control of belt conveyor
05 PLC control of production line
Textbook:
Bolton, William. Programmable logic controllers.Newnes, 2015.
References:
Morriss, S. Brian. Programmable logic controllers.Prentice Hall PTR, 1999.

ELP 2421 Power Electronics Applications إلكترونيات القدرة وتطبيقاتها

Control and Estimation of Induction Motor Drive (Scalar Control – Vector Control – Sensor less vector Control – Direct Torque & Flux Control – Adaptive control) – Control and Estimation of Synchronous Motor Drive (Flux control – Adaptive Control – Synchronous PM Machine Drives – Synchronous Reluctance Machine Drives – Sensor less –Control) – Expert System Applications in Motor Drives – Fuzzy Logic Applications in Motor Drives – Neutral Network Applications in Motor Drives.Textbook:
Erickson, Robert W., and Dragan Maksimovic.Fundamentals of power electronics.Springer Science & Business Media, 2007.
References:
1-Irwin, J. D. Control in power electronics: selected problems. Eds. Marian P. Kazmierkowski, Ramu Krishnan, and Frede Blaabjerg. Academic press, 2002.
2-Rashid, Muhammad H. Power electronics handbook: devices, circuits and applications. Academic press, 2010.

ELP 2422 Special Electric Machine الآلات الكهربية الخاصة

A.C commutators machines – two – phase servo motors – linerar machines – repulsion motor(starting conditions, phasor diagram, analytical relations, circle diagram and performance characteristics, commutation, compensated repulsion motors, A.C series motor (single – phase motors, phasor diagram, commutation , operating chaacteristics, polyphase motors)- universal motor – scharage motor (Kramer- Scherbins cascades – schemes)Laboratory:
01 determination of parameters and performance of single phase induction machine.
02 Experimental analysis of servomotor.
03 Experimental analysis of reluctance motor
04 Experimental analysis of universal motor
05 Experimental analysis of stepper motor
Reference
Jim Cathey, Jimmie J. Cathey, Electric Machines: Analysis and Design Applying MATLAB

ELP 2423 Computer Control in Electrical Power Systems التحكم بالحاسبات في نظم القوى الكهربية

Computer control System structure – Distributed control system DCS: Functions – Field Units – Local Control units – Control Data Communication – Operator interference and engineering units – Application in power Plants and industry – SCADA systems – Functions – Measuring units and IED – RTU – Data Communication systems – Control centers – Applications in power networks and distribution systems – BMS: Functions – Intelligent sensors – Data Networks – Control and monitoring units.Laboratory:
01 function block element (main element, simple feedback loop, feedback and feedforward, cascade control)
02 SCADA SW (Main elements, database, graphical display design, interface with loop controller)
Textbook:
Abur, Ali, and Antonio Gomez Exposito. Power system state estimation: theory and implementation. CRC Press, 2004.
References:
•Computer methods in power system analysis.GW Stagg amp aH El Abiad
•Levine, William S., ed. The control handbook. CRC press, 1996.
•Grainger, John J., and William D. Stevenson.Power system analysis.Vol. 31. New York: McGraw-Hill, 1994.

ELP 2424 Power System Analysis 2 تحليل نظم القوى ٢

Representation of power systems, Admittance matrix formulation, power flow solutions, DC load flow- impedance matrix formulation, symmetrical faults, Symmetrical components and sequence networks, unsymmetrical faults , power system synchronous stability of machine- infinite bus system, means of synchronous stability improvement, multi-machine systems, computer applications.Reference
J. Duncan Glover, Thomas J. Overbye, Mulukutla S. Sarma, Power System Analysis and Design

ELP 2426 Electrical Protection systems نظم الحماية الكهربية

Attributes of protection systems – Zones of protection – Transducers – Logical design of relays – Primary and backup protection – line protection – Protection of power transformers – Relay hardware – Digital protection systemsLaboratory:
01 Characteristics of fuses
02 Characteristics of switches
03 Characteristics of MCB
04 performance of vacuum, oil and sf6 circuit breaker
05 induction and synchronous motor protection
06 protection of radial feeder and protection coordination
Textbook:
-Garcia, Mary Lynn. Design and evaluation of physical protection systems. Butterworth-Heinemann, 2007.
References:
-Protection Techniques in Electrical Energy Systems
CRC Press, Aug 3, 1995.
-Power System Protection: Systems and Method. Electricity Training Association, Institution of Electrical Engineers
IET, 1995

ELP 2429 Energy Utilization in Buildings and Industr استخدامات الطاقة في المباني والصناعة
y

Solar Energy Utilization (Energy Conservation in Residential Buildings – Solar Energy Active and Passive Collectors – Photovoltaic – Solar Energy Storage) – Heating (Electric Heating – Resistance Ovens – Induction Heating – Dielectric heating – Arc Furnaces) – Welding (Resistance Welding – Arc Welding – Atomic Hydrogen Welding) – Electrolytic Processes (Extraction and refining of Metals – Electro Deposition) – Electric Traction (Traction Motors – Locomotives – Tramways – Trolleybuses – Trains) – Electric Elevators (Types of Machines – Methods of Roping – Over speed Governors and Car and Counterweight Safeties – Brakes – Two Speed Controllers – Variable Voltage Variable Frequency Controllers – Signal Systems – Electro Hydraulic Elevators).Textbook:
Rashid, Muhammad H. Power electronics handbook: devices, circuits and applications. Academic press, 2010.
References:
1-Pimentel, David. Handbook of energy utilization in agriculture. CRC Press, Inc., 1980.

ELP 2430 Electrical Drive Systems نظم الجر الكهربي

Variable Speed Drive Systems – Separately Excited DC Motor Drives - Single phase Rectifiers with Motor load – Three phase rectifiers with motor load – Chopper Drives – Three phase Induction Motor Drives – Speed Control by AC power Controllers – Speed Control by Slip Energy Recovery – Induction Motors with Voltage Source Inverters – Induction Motors with Current Source inverters – Synchronous Motor Drives.Laboratory
01 DC motor Speed Control
02 DC motor Speed and current control
03 induction motor speed control
05 permanent magnet synchronous motor spedd control
Textbook:
Krause, Paul C., et al. Analysis of electric machinery and drive systems. Vol. 75.John Wiley & Sons, 2013.
References:
Vas, Peter. Sensorless vector and direct torque control. Oxford Univ. Press, 1998.

ELP 2432 Field Training تدريب ميدانى

The student will have a training program in the field according to his specialization

ELP 2433 Technology of RenewableEnergy تكنولوجيا الطاقة المتجددة

Introduction: fundamental concepts of energy conversion and perspectives on energy supply and demand, Wind power: primary mechanical design and system aspects, Biomass: resources and thermochemical convers, Solar: photovoltaics and solar thermal including concentrating solar power, Hydropower: key components along with large-scale and small-scale systems, Other technologies: energy storage, fuel cells, hydrogen, wave and tidal power, geothermal energyReference
M A Laughton, Watt Committee on Energy. Working Group on Renewable Energy Sources., NetLibrary, Inc., Renewable energy sources

ELP 2444 Principles of Electrical Engineering مبادئ الهندسة الكهربية

Electric Circuit Analysis: DC circuits, AC circuits, Circuits under transient conditions. Electric Power and Machines: power systems, Transformers, Synchronous and induction generators, Three - phase and single - phase motors, speed control of motors, cables, transmission lines, switching circuits, electrical installations. Measurement and Protection: Protection circuits and devices, relays and timers, measuring devices and recorders.Reference
V. K. Mehta, Rohit Mehta, Basic Electrical Engineering

ELP 2460 Graduation Project مشروع التخرج

The aim of Project 2 is to conduct detailed design and verification based on the preliminary system design specifications reached in Project 1. Once the design and verification is complete, this should be followed by prototype implementation and testing. The outcome of Project 2 is a complete design, fully verified using standard verification tools and presented in the form of professional design documents and design drawings accompanied with bill of materials. At the end of Project 2, students are asked to submit a dissertation or project report and go through an oral examination after delivering a presentation of their work.

ELE 2501 Information & Coding Theory نظرية المعلومات والترميز

Mathematical model for information: entropy and mutual information. Source coding: optimum source coding, Huffman codes. Analog source coding and distortion rate function. Information channel modeling: model of binary symmetric channel. Shannon theorem for channel capacity. Error detection: parity check and cyclic redundancy check codes. Error detection and correction using automatic repeat request. Forward error correction codes: linear block codes and BCH codes. Convolutional codes and Viterbi decoding algorithm.Siman hykin, communication systems, sohnwilly and sons, 2001

ELE 2502 Information Security أمان المعلومات

Principles of data security – hardware and software security techniques – software protection – computer viruses – worms – Trojans – Spy wares – networks security and firewalls - database administration security – Access control: Authentication, pass word, biometrics , authorization, multi levels – Protocols : simple authentication protocols – real world security protocolsMark stamp, information security: principle and practice, wiely, USA, 2011

ELE 2503 Optical Communications الاتصالات الضوئية

Components of optical fiber communication systems and its features. Optical fiber cables: types of cables and transmission characteristics. Signal attenuation and link budget calculations. Dispersion over optical fiber cables and limitations of transmission rates. Optical sources: light emitting diodes and laser diodes. Optical signal detectors. Receiver analysis, noise and limitations. Optical fiber communicationGerd keiser, optical fibber communications, mc graw hill, 2000

ELE 2504 Electromagnetic Fields مجالات كهرومغناطيسية

Vector Analysis, Coordinate Systems and Transformation, Coulomb's Law, Electric Field Intensity due to line charge and sheet of charge, Streamlines and Sketches of Fields, Electric flux density, Gauss Law and Applications, Maxwell's First Equation, Divergence Operator, Energy and Potential, Line Integration, Potential Gradient, Electric Dipole, Energy density in Electrostatic Fields, Applications of Electrostatics,Conductors, Dielectrics and Semiconductors Properties, Current density and Continuity of current, Boundary conditions, Method of Images, Capacitance, Capacitance of Two - Wire Line, Experimental Mapping, Poisson's and Laplace's Equations, Example of the solution of Poisson's equation, Steady magnetic field; Biot Savart and Ampere circuital laws, Magnetic Forces, Torque, Magnetic Materials, Calculation of Self and Mutual InductanceTextbook:

• W. Hayt and J. Buck, Engineering Electromagnetics, McGraw - Hill, 7th.Ed., 2006.

References:

• M. N. O. Sadiku, Elements of Electromagnetics, Saunders College Publishing, Harcourt Brace College Publishers, 1989.

ELE 2505 Optoelectronics إلكترونيات ضوئية

Wave propagation in dielectric materials. Compound Semiconductors, direct and indirect band - gap semiconductors, light absorption and emission. Light detection, photovoltaic cells, photodiodes and phototransistors. Light emitting diodes and semiconductor laser diodes. Optical fibers. Opto - isolators and optical switches. Liquid crystal displays. Integrated optoelectronics and optoelectronic circuits.-H. zimmermann, silicon optoelectronic integrated circuits, springer, 2010

-P. bhattacharya, semiconductor, optoelectronic devices, prentice hall, 1996

ELE 2506 VLSI Technology الدوائر المتكاملة عالية الكثافة

Introduction to VLSI technology, future trends in VLSI technology, technology limitations. Basic technology modules include: crystal growth and wafer preparation; mask generation techniques; lithography; diffusion process; ion implantation; oxidation; etching techniques - wet etching and plasma etching; thin film deposition - epitaxial growth, chemical vapor deposition techniques, metallization; clean room technology; Advanced process integration for CMOS, BiCMOS and Bipolar fabrication; Failure analysis techniques. Advanced packaging techniques.D. widemann, h.mader, h. friedrich, technology of integrated circuits , springer, 2010

ELE 2507 Acoustics صوتيات

Introduction and fundamental of acoustics- one dimensional plane , spherical and cylindrical sound wave- Transmission, reflection and absorption - Feature of speech- Speech analysis-(LPC- Cepstrum- Zero crossing – wavelet coefficients)- Room acoustics- FIters – Microphones- LoudspeakersMichael moser, engineering acoustics, springer, 2004

CAI 2509 Computer Programming برمجة الحاسب

Introduction to software design- Objective orient language- Graphic user interface – Data types- Basic operations- Control structure-Operators-Branch statements- pointers and arrays- Constructors- Destructors- C++ Applications.D.M. Copper, C++ for scientists, engineers and mathematicians, springer verleg, 1994

ELE 2511 Logic Design 1 تصميم منطقي ١

Number systems and digital waveforms - Basic gates and logic functions with a discussion of the available ICs that represent these gates - Boolean algebra, Boolean expressions and truth tables - Sum of products and product of sum forms. Simplifying expressions - K - maps up to fourth degree - Combinational logic, decoders, encoders, multiplexers, demultiplexers, magnitude logic comparators -Digital arithmetic, adders, subtractions, Simple arithmetic and logic unit - Basics of sequential circuits - Basic latches and flip - flops. Timing parameters, Finite state machine (FSM), Counters - Shift registers, Basic PLD architectures - Discussion of the available Ics for each systemBrin holdsworth, clive woods, digital logic design, britich library cataloguing 2002

ELE 2512 Microprocessors & Applications المعالجات الدقيقة وتطبيقاتها

Introduction and historical review about microprocessors, Computer architecture, Difference between microprocessor and microcontroller, Definition of a CPU The 8 bits CPU, Assembly language for the used processor, Different busses of the microprocessor and the function and properties of each, Addressing modes, Interfacing with memory, Interfacing with inputand output ports, Developing a simple microcomputer using an 8 bit CPU the 16 bit CPU Interfacing with memory and input and output ports, Assembly language of the 8086 CPU Architecture of the 80186, 80286, 80386, 80486, an d Pentium microprocessors, Interrupts, Direct Memory Access, Cache memory, Register file.Tokheim, microprocessor fundamentals, Schum's series, m.graw hill,1986
Barry brey, the intel microprocessors 2000

ELE 2514 Signal Analysis تحليل إشارات

Signals and systems: continuous - time and discrete - time, elementary signals, basic system properties. Linear Time Invariant Systems: continuous - time and discrete - time convolution, system properties. Fourier series representation ofperiodic signals: continuous - time and discrete -odd and even signals – Energy and power of signals- time. Continuous - time and discrete - time Fourier transforms and their properties. Frequency response of LTI systems. Sampling of continuous - time signals.Oppenteim, A. vi and will sky, signal and systems, prentice hall,1997

ELE 2515 Communications 1 اتصالات ١

Communication system elements, Overview of current communication systems. Communication channels properties. Basics of analog communication: amplitude (DSB-SSB), angle, frequency and analog pulse modulation; frequency division multiplexing. Demodulation of AM, FM ,and PM- Basics of digital communication: sampling, quantization, pulse code modulation, Delta Modulation, Differential PCM, time division multiplexing, binary signal formats. Digital carrier modulation: ASK, PSK, FSK and QAM. Multiple - access techniques.

Laboratory:

01 Communication channels.
02 Amplitude modulation.
03 Frequency and phase modulation.
04 Phase locked loop.
05 Sampling and TDM.
06 Digital carrier modulation Grey millercommunication nelectronics. Mc Graw, 1999

ELE 2519 Electronics إلكترونيات

Bipolar junction transistors(BJT), modes of operation , Biasing, Small signal ac models, characteristic of different configurations- Junction field effect transistors(JFETs). Metal oxide semiconductor field effect transistors (MOSFET) , dc models, modes of operation, biaing, small Signal ac models – Amplifier configuration,Multistage amplifiers, compound circuits- Oprational Amplifiers, OP-Amp. Amplications.

•□A. Sedra, K. Smith, Microelectronic Circuits, Oxford Press, 5th. Ed., 2004.

References:

•□D.A. Neaman, Semiconductor Physics and Devices, McGraw Hill, 4th. Ed., 2011.
•□B. Streetmann & S. Banerjee, Solid State Electronic Devices, Prentice Hall, 6th. Ed., 2005.

CAI 2520 Computer Organization & Architecture تنظيم وبنية الحاسب

Von Newman and Harvard architectures, Computer arithmetic, Design of ALU and pipelined processor, Control unit, Instruction repertoires (RISC, CISC), RAM access, Interrupt circuits, Bus synchronization, I/O devices, Channels, Memory architectures, Connection of computer peripherals, Large computer systems (parallel processing, array processors, interconnect networks, multi-processors).Rajarman and T. Radhakrishnan, computer organization and architecture, PHI learning private limited, new delhi, 2007

ELE 2521 Antenna & Wave Propagation هوائيات وانتشار موجات

Properties of electromagnetic waves: Maxwell’s equations, Plane waves, Polarization. Propagation mechanisms: reflection, transmission and refraction, scattering, diffraction. Antenna fundamentals: antenna parameters, dipoles, arrays, loop antennas, helical antennas, patch antennas. Propagation models: path loss, free space loss, plane earth loss, link budget. Fading and shadowingBalanis, c.a, Antenna theory and analysis, willy, New York 1997

ELE 2522 Communications 2 اتصالات ٢

Random processes: Gaussian process, narrow - band noise. Digital Comminication (Channel – Source encoding(A/D and D/A converts- Quantizer)– Channel encoding(Introduction to Entropy and coding)–Digital transmission and reception (Timing-Baseband systems- pulse transmission - matched filter, Modulators and Demodulators (ASK- FSK- PSK.) correlation receiver, probability of error. Performance of digital carrier modulation schemes. Laboratory:
01 Random processes.
02 Baseband pulse transmission.
03 Matched filter and correlation receiver.
04 Phase and timing recovery.
05 OFDM.
06 Error correction coding. Grey miller, communication nelectronics. Mc Graw, 1999

ELE 2523 Digital Signal Processing معالجة الإشارات الرقمية

Z - transform: ROC and properties. Transform analysis of LTI systems: system function and frequency response, linear - phase, minimum - phase and all - pass systems. Structures for discrete - time systems: basic IIR and FIR structures. Filter design techniques: filter specifications, IIR design, FIR design. Discrete Fourier Transform: sampling of the Fourier transform, properties of the DFT, circular convolution, linear convolution using DFT, FFT. Spectral analysis using DFT.Mitra, sanjit, digital signal processing, mc graw hill, 1999

ELE 2524 Satellite Communication الاتصالات بالاقمار الصناعية

An overview of satellite communication systems. Orbital concepts: Orbital parameters, geostationary orbits, low earth and medium earth orbits. System components: The space Link, space and earth segments. Earth stations technology. Space link (uplink and downlink) analysis. Frequency division multiple - access, time division multiple - access, and code division multiple - access. Packet switching in satellite systems. Examples of satellite communication systems.Roddy, satellite communications, Mc graw hill 2001

ELE 2526 Mobile Communications الاتصالات المتحركة

Basic concepts of mobile communications, Cell site planning, Traffic engineering, RF propagation characteristics, Fading and Path loss phenomena, Frequency planning, RF propagation characteristics , RF Propagation in highways and city streets, Frequency reuse, Noise in cellular systems ,Types of interference, Cell sectorization, GSM system, Multiple access techniques, CDMA spread spectrum systems, Frequency hopping, Power control, Third Genera/on (3G), fourth Genera/ons (4G), architecture, frame structure, logical channels and physical channels, interleaving, Modulation, Carrier and burst synchronization

ELE 2527 Integrated Circuits Design — تصميم الدوائر الإلكترونية المتكاملة

Integrated circuits trends and digital integrated circuits implementation methodologies- MOS inverters, inverters switching characteristics, MOS logic gates circuits, clocking and timing, interconnects issues, power dissipation in digital circuits, combination MOS logic circuits and sequential MOS logic circuits fabrication metholdology, Packaging, power and I/O issues, Testing and design layout for testabbility methodology and tools.J. M. Rabaey, A. chandrakason, B.Nikolic, digital integrated circuits, prentice hill, 2003

ELE 2530 Electronic Circuits — دوائر إلكترونيه

Analysis of Power amplifiers –Analysis of small signal amplifiers-Cascaded amplifiers-BJT and JFET Frequency response- Feedback and Oscillators- Active filters- digital electronics
01 Op Amp characterization.
02 Op Amp Applications.
03 Design and characterization of active filters.
04 Design and characterization of single stage BJT amplifiers.
05 Design and characterization of current sources and differential amplifiers.
06 Design and characterization of power amplifiers.Jacob Millman and Arvin Grabel, Microelectronics, Mc Graw Hill, 1987

ELE 2531 Principles of Mechatronics — مبادئ الميكاترونيات

This course will introduce you to Mechatronics as a multidisciplinary engineering discipline that includes electronics, electrical, mechanical, computer systems engineering, together with information technology. Theory lectures will introduce the core components of mechatronic systems: electrical and electronic components and circuits, sensors and actuators.Ai Sheng, mechatronics EWng. And Electrical Eng., 2015.

ELE 2532 Field Training — تدريب ميدانى

The student will have a training program in the field according to his specialization

ARC 2532 Principles of Architecture Engineering — مبادئ الهندسة المعمارية

History Of Arts – Fine Arts (Painting, Sculpture, Ornaments … Etc.), Artistic Movements In The Twentieth Century: Cubism, Expressionism, Futurism And Surrealism. Artist Groups Like De SM And Bauhaus And Their New Ideas About The Interrelation Of The Arts – Architecture Design And Art Education. Trends Of Art Through Historical Eras And Parallel Trends Of Architecture – Contemporary Trends Of Art And Its Influence On Architecture. Values In Art Works (Contrast, Balance, Proportion, Color, Rhythm, Movement …), Artistic Values And Design Principles In Architecture.

ELE 2533 Principles of Electronic Engineering مبادئ الهندسة الإلكترونية

PN junction diodes, special diodes, diode circuit applications, rectifiers – properties and types of Bipolar junction transistors (BJT), Properties and types of JFET, dc modes of operation, bias and stabilization, DC analysis graphical analysis, small signal ac model-Transistor Amplifiers.Yang, E.S., Microelectronic devices, MH,1988

Laboratory :
1-I-V characteristic of PN junction
2-Have and full wave circuits
3-Transistor biasing
4-Ziener diode
Textbook: ELECTRONIC Circuits and DEVICES

ELE 2536 Microwave Engineering هندسة الموجات الدقيقة

Introduction to guided - wave structures. TEM waves in parallel plate transmission lines. Phase velocity, group velocity and dispersion. General transmission line equations: transmission line parameters, terminated transmission lines and standing - wave ratio. The Smith chart. Transmission line matching networks. Waveguides. Micro-strip lines. Microwave network analysis: impedance and admittance matrices, scattering matrix. Microwave passive components.Liao, Microwave devices and circuits, prentice hall,1990

ELE 2537 Logic Design 2 تصميم منطقي ٢

This course covers the second part of the logic design techniques. This part involves the design and simulation of sequential logic circuits, Flip flops, Counters, Registers and memory.Chen, logic design, CRC press,2003

ELE 2560 Graduation Project مشروع التخرج

The aim of Project 2 is to conduct detailed design and verification based on the preliminary system design specifications reached in Project 1. Once the design and verification is complete, this should be followed by prototype implementation and testing. The outcome of Project 2 is a complete design, fully verified using standard verification tools and presented in the form of professional design documents and design drawings accompanied with bill of materials. At the end of Project 2, students are asked to submit a dissertation or project report and go through an oral examination after delivering a presentation of their work.

CAI 2601 Principles of Computer Engineering مبادئ هندسة الحاسبات

Introduction to the following topics: Computer Engineering and Science, data and information, algorithms, computer architecture, software engineering, computer programming, and AI.Law, computer information systems, 2002

CAI 2602 Data Structures هياكل البيانات

Secondary storage devices stacks, sequences, Trees, priority queues, dictionaries, sets, sorting, graphs, strings, record storage and file organizations, hashing and extendible, index structuresMark, data structure and algorithm analysis in C++, 2006

CAI 2603 Artificial intelligence 1 الذكاء الاصطناعي ١

Overview: foundations, scope, problems, and approaches of AI, Intelligent agents, Artificial Intelligence programming techniques, Problem-solving through Search, Knowledge Representation and Reasoning, Planning: planning as search, partial order planning, construction and use of planning graphs, Representing and Reasoning with Uncertain Knowledge, Decision-Making, Machine Learning and Knowledge Acquisition.Winston, Artificial intelligence, Addison wesely publishing company,1992

CAI 2604 Design & Analysis of Algorithms تصميم وتحليل الخوارزميات

nalysis of algorithms, correctness of algorithms, asymptotic notation, divide and conquer, recurrences, quick sort, median, order statistics, hashing, binary search trees, balanced search trees, competitive analysis, dynamic programing, greedy algorithms, depth first search.Deyterc, the design and analysis of algorithms, springer, 1992

CAI 2605 Computer architecture & Organization تصميم وبنية الحاسب

Identify various components of computer and their interconnection, identify basic components and design of the CPU: the ALU and control unit, Compare and select various Memory devices as per requirement, Compare various types of IO mapping techniques, memory systems, Assembly level.V. Rajarman and T.R, computer organization and architecture, PHI learning, new delhi 2007

CAI 2606 Machine Learning تعليم الآلة

Supervised learning (generative/discriminative learning, parametric/nonparametric learning, neural networks, and support vector machines); unsupervised learning (clustering, dimensionality reduction, kernel methods); learning theory (bias/variance tradeoffs; VC theory; large margins); reinforcement learning and adaptive control.M.Z. Mohamed, machine learning: algorithms and applications,2006

CAI 2607 Web Programming برمجة الويب

Internet Fundamentals, internet programming, HTML Basics, Styles of scripting programming, JAVA basics, XML and DOM, ADO.net and DB Processing Beck. Systems software Addison Wesley, 1997

CAI 2608 Operating Systems أنظمة التشغيل

Role and purpose of operating systems, functionality of typical operating system, Structuring methods, abstractions, processes and resources, application programming interfaces, device organization, interrupts, user/system state transition, concurrent execution, states and state diagram, implementation of structures, mutual exclusion, scheduling, memory management, device management, file systems, security.Tanenbaum, modern operating system, 2001

CAI 2609 Computer Networks شبكات الحاسبات

This course reflects the latest essential networking technologies with emphasis on wireless
networking, including 802.11, 802.16, Bluetooth, and 3G/4G cellular, paired with fixed-network
coverage of ADSL, Internet over cable, gigabit Ethernet, MLPS, and peer-to-peer networks, Fiber
to the Home, RIFD, delay-tolerant networks, in addition to Internet routing, multicasting, congestion control, quality of service, real-time transport, and content distribution.

CAI 2611 Object-Oriented Programming البرمجة الشيئية

Review on programming fundamentals, classes and objects, overloading unary operators, data conversion, inheritance, templates and exceptions, object-oriented design, fundamental of event driven programming, software development and evolution.Wang, C++ with object-oriented programming, 1994

CAI 2613 Cryptography التشفير

Basic cryptographic concepts and methods, Classical cryptosystems, Block ciphers, Public-Key Cryptography, Stream ciphers, Cryptographic Protocols

CAI 2614 Software Engineering هندسة البرمجيات

This course introduces the design and analysis of computational systems that interact with physical processes. Applications of such systems include medical devices and systems, consumer electronics, toys and games, assisted living, traffic control and safety, automotive systems, process control, energy management and conservation, environmental control, aircraft control systems, communications systems, instrumentation, critical infrastructure control (electric power, water resources, and communications systems for example), robotics and distributed robotics (telepresence, telemedicine), defense systems, manufacturing, and smart structuresBeck, system software, Addison Wesley, 1997

CAI 2615 Embedded systems الأنظمة المدمجة

This course introduces the design and analysis of computational systems that interact with physical processes. Applications of such systems include medical devices and systems, consumer electronics, toys and games, assisted living, traffic control and safety, automotive systems, process control, energy management and conservation, environmental control, aircraft control systems, communications systems, instrumentation, critical infrastructure control (electric power, water resources, and communications systems for example), robotics and distributed robotics (telepresence, telemedicine), defense systems, manufacturing, and smart structures.Bhasker, VHDL, person education ,1999

CAI 2618 Internet of things إنترنت الأشياء

Describe what IoT is and how it works today, Recognise the factors that contributed to the emergence of IoT. Design and program IoT devices, Use real IoT protocols for communication. Secure the elements of an IoT device, Design an IoT device to work with a Cloud Computing infrastructure. Transfer IoT data to the cloud and in between cloud providers, Define the infrastructure for supporting IoT deployments.Paul, architecture for the internet of things, 2015

CAI 2619 Networks security أمن الشبكات

Cover basic security topics, including symmetric and public key cryptography, digital signatures, hash functions, and network security protocols. Understand basic security terms such as plaintext, cipher-text, encryption/decryption, and authentication. Explain the basic number theory required for cryptographic applications, and manually encrypt/decrypt and sign/verify signatures using cryptographic approaches. Identify typical security pitfalls in authentication protocols, and outline the protocols, i.e., AH and ESP protocols, for IP Security.White, computer system and network security, 1995

ELC 2621 Parallel programming البرمجة الموازية

Introduction to parallel computing − Models of parallel computers − Data and task parallelism − Shared and Distributed memory parallel machine architecture concepts − Interconnection networks − Basics of threaded parallel computation− Parallel algorithmic design − Languages and libraries for threaded parallel programming − Languages and libraries for distributed memory parallel programming − Co-processor techniques including GPU and FPGA − Experimental techniques − Measuring performance and computing speed-up.Coulouris, distributed systems: concepts and design ,2000

ELC 2622 Computer Vision رؤية الكمبيوتر

Introduction and matlab/Simulink review, radiometry, sources, shadows and shading, color, cameras. Linear filters and edge detection, texture, digital libraries. The geometry of multiple views, stereopsis, segmentation and fitting- tracking using linear dynamic models. Correspondence and pose- template matching, recognition by relations between templates, toward category level recognition.Rashid, computer vision: algorithms and applications, 2010

ELC 2623 Image processing معالجة الصور

Introduction to image processing, image analysis, human visual system, image enhancement, discrete transform, filtering, wavelet transform, pseudo color, image restoration, image compression.
Introduction to image processing, image analysis, human visual system, image enhancement, discrete transform, filtering, wavelet transform, pseudo color, image restoration, image compression.Gonzolez, digital image processing, 2002

ELC 2624 Robotics Design تصميم الروبوتات

Introduction (what is robotics? robotics and AI, embedded systems, agent- task environment model, embodied systems, synthetic approaches to science). Sensors and signal processing (common sensors and their properties, 1D signal processing, animate vision). Planning approaches to robot control& robot kinematics and dynamics, control theory (linear control problems, modelling robot processes using control theory, limitations of control theory). probability based approaches (markov decision processes(MDPs), analysis of robotA.T. Ala, basics of robotics, 2011

ELC 2632 Field Training تدريب ميداني

The student will have a training program in the field according to his specialization

ELC 2633 Parallel and distributed systems الأنظمة المتوازية والموزعة

The course contains the following topics: Parallel computing, parallel processor architecture or multiprocessing architecture, Multiprocessing, Distributed System, Distributed Operating System, increasing throughput and resource efficiency, Communication, Fault tolerance.Coulouris, distributed systems: concepts and design , 2000

ELC 2634 Cloud Computing الحوسبة السحابية

Cloud Computing definition and characteristics, Cloud Computing and SOA, Enterprise Cloud drivers and adoption trends. Typical Cloud Enterprise workloads, Cloud service models/types, Cloud deployment models, Cloud ROI models. Cloud reference architectures, Cloud standards. Planning Cloud transformations.Srinivas, cloud computing basics, 2013

ELC 2637 Biometrics القياسات الحيوية

Biometrics in forensics, Design of a biometric system, Feature extraction and matching for (Fingerprint, Hand Geometry, Palmprint, Face (2D and 30), Voice, Signature), Evaluation of System Performance, Image/signal quality measures, Multi-modal Biometrics, Template Protection and update, Privacy IssuesNorthrop, signal and systems analysis in biomedical engineering, 2003

ELC 2646 Computer Animation — الرسوم المتحركة باستخدام الحاسب

Introduction to Computer Graphics (Modelling, Rendering, Animation), Shape Models, Operations and Transformations, Camera Motion, Traditional Animation, 3.D Rigid Animation, Articulated Bodies, Free Form Animation, Specialized Behaviors, Recording and Other Media

AIE 2649 Neural Networks — الشبكات العصبية

Basic neuron model, basic neural network models, basic learning algorithms, applications.Fausett, Laurenev, Fundamentals of neural networks, prentice hall, 1994

AIE 2650 Artificial Intelligence 2 — ذكاء اصطناعي ٢

Introduction to Soft Computing (Contrast expert systems, fuzzy systems, neural Networks, expert systems, and genetic algorithms), Introduction to Expert Systems (Define expert systems, knowledge representation, Inference in Expert Systems (using rules and decision trees, Knowledge Acquisition; Processing uncertainty preliminary comparison with fuzzy systems), Implementation of Fuzzy Systems, Introduction to Neural Nets (basic architectures), Backpropagation, Genetic algorithms and Evolutionary Computing, Introduction to machine learning Winston, Artificial intelligence, Addison Wesley, 1992

ELC 2660 Graduation Project — مشروع التخرج

The graduation project is a practical project work that the student can build using his knowledge during his study.

Total Number of Courses: 186