



**University of Basra**  
**College of Engineering**



# **Self-Assessment Report**

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***College of Engineering,  
University of Basra,  
Basra, Iraq***

***Dr. Hassanein Ibraheem Khalaf***  
***Director of Quality Assurance***

***Prof. Dr. Rabee' Hashim Thejel***  
***The Dean***

**2016-2017**



## Self-Assessment

Assessment is a systematic process of gathering, reviewing and using important qualitative and quantitative data and information about a program from multiple sources, for the purpose of:

- Evaluating whether academic and learning standards are being met, and
- Improving students learning.

## Self-Assessment Report

Self-Assessment Report makes the basis of all future reviews/ audits / accreditation of the college programs.

## Self-Assessment of College Program

Self-assessment is an exercise conducted by the college/ department itself to assess whether its programs meet their educational objectives and outcomes with the purpose to improve quality of programs and enhance students' learning

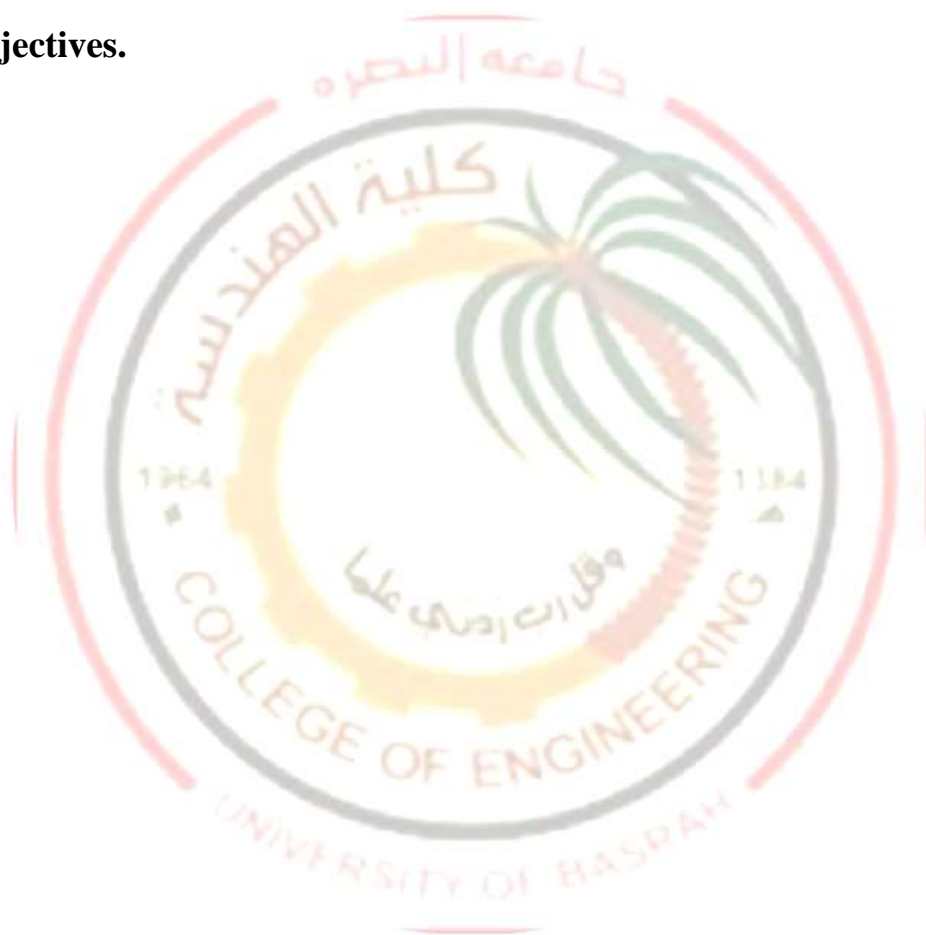
## Program Team

1. Dr. Rabee' Hashim Thejel / Dean
2. Dr. Hassanein Ibraheem Khalaf / Director of Quality Assurance
3. MSc. Mohamed Farhan Ajami/ Dept. of Civil Engineering
4. Dr. Mofeed Turkey Rashid / Dept. of Electrical Engineering
5. Dr. Abd albaser shari bahedh / Dept. of Mechanical Engineering
6. Dr. Anwar Abdelhassan Aboud / Dept. of Chemical Engineering
7. MSc. Khaled Ali Abbas / Dept. of Computer Engineering
8. Dr. Emad Obaid Bajee / Dept. of Materials Engineering
9. Dr. Saddam Khalaf faleh / Dept. of Architectural Engineering
10. Dr. Khawala Naeem Hamoud / Dept. of Petroleum Engineering



## Objectives of Self-Assessment Report

1. **Learning Objective:** Statement about what students are expected to learn or to be able to do as a result of studying a college program.
2. **Implementation Objective:** A measurable operationalization of a policy, strategy or mission
3. A **strategic plan** must be in place to achieve the college program objectives.



## College History



**University of Basra**  
**College of Engineering**



The Engineering College at University of Basra was established at the beginning of the academic year 1964-1965 and aims to secure, in general, the country's need of engineers and the southern region in particular. In the first academic year the college accept 135 students, while the number of students admitted for the academic year 2016-2017 was 593 students. Period of study in the various Departments is four years (except the Department of Architecture, five years). The graduate gets a degree in Civil, electrical, mechanical, chemical, computer materials, architectural and petroleum engineering.

The graduate studies began at the college at the academic year 1976-1977 for the granting of a Higher Diploma and Master of Science. The number of students at the start of graduate studies was 10 students while the number of students now was 155. Studies of doctorate started from the academic year 1992-1993 in the departments of civil, electrical and mechanical engineering.

The college have a library contains many up to date books and specialized journals in science and engineering , also the college have the computer and Internet center, computer lab for preliminary studies. Finally the college is providing engineering consultancy for a large number of government industrial institutions and companies through the Engineering Consultancy Bureau, which was founded in 1981 in order to develop engineering eXpertise in the university community service and contribute to raising the level of practice of the profession of engineering.

The engineering college constitutes:



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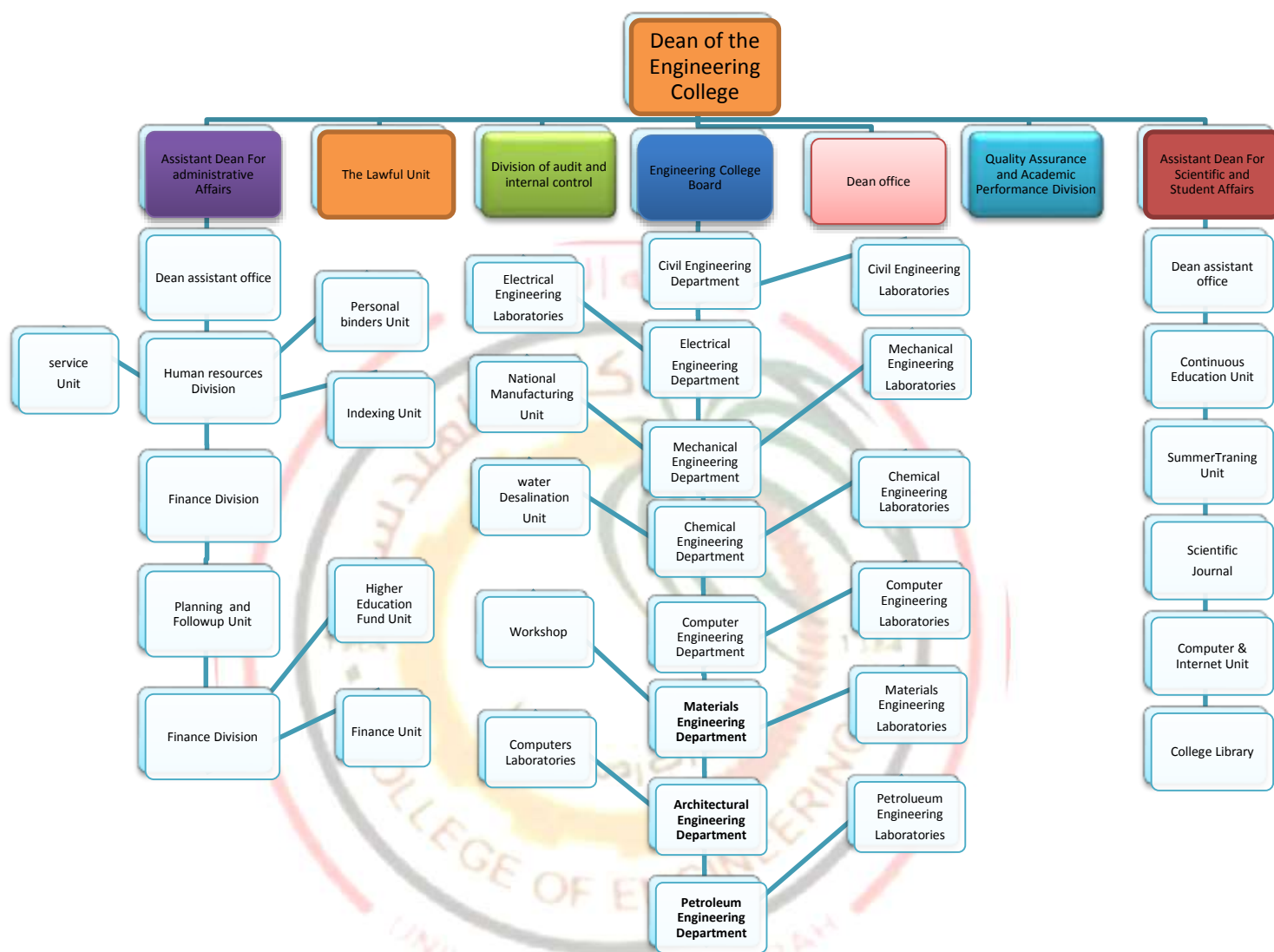
1. The Dean of the College who manages the college's academic and administrative affairs.
2. Two Dean Assistant one for Scientific & Student's Affairs and the other for Administrator's Affairs, support staff (Dean Office and secretary).
3. Engineering College board which is headed by the dean of the college and consists of the Dean's assistant and all of the heads of departments. Figure 0.1 shows the administrators structure of the college while Table 0.1 summarizes the engineering College Board members.
4. The eight Engineering departments see Table 0.2







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**Figure 0.1: Administrative structure of the college of Engineering - University of Basrah**



**University of Basra**  
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**Table 0.1: Basrah Engineering College Board**

No.	Academic Title	Name	Job Description
1	Prof.	Dr. Rabee' Hashim Thejel	Dean
2	Assist. Prof.	Dr. Salman Hashim Hammadi	Assistant Dean for Scientific & Student's Affairs
3	Lecturer	Dr. Basim Talib Kadhim	Assistant Dean for Administrator's Affairs
4	Assist. Prof.	Dr. Wissam Sabeeh Neama	Head, Dept. of Civil Engineering
5	Assist. Prof.	Dr. Ramzi Salim Ali	Head, Dept. of Electrical Engineering
6	Assist. Prof.	Dr. Rafil Mahmood Laftah	Head, Dept. of Mechanical Engineering
7	Assist. Prof.	Dr. Ameen Ahmed Nassar	Head, Dept. of Chemical Engineering
8	Assist. Prof.	Dr. Abbas Abdulameer Jassim	Head, Dept. of Computer Engineering
9	Lecturer	Dr. Tahseen Ali Majed	Head, Dept. of Architectural Engineering
10	Assist. Prof.	Dr. Haider Maath Mohammad	Head, Dept. of Materials Engineering
11	Lecturer	Dr. Sajid Hussain Ali	Head, Dept. of Petroleum Engineering
12	Lecturer	Dr. Hassanein Ibraheem Khalaf	Director of Quality Assurance

**Table 0.2: Departments of Basrah Engineering College**

No.	Department	Year of Established
1	Civil Engineering	1964/1965
2	Electrical Engineering	1964/1965
3	Mechanical Engineering	1964/1965
4	Chemical Engineering	1981/1982
5	Computer Engineering	1997/1998
6	Materials Engineering	1999/2000
7	Architecture Engineering	2002/2003
8	Petroleum Engineering	2008/2009



## **CRITERION ONE: VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES**

### **1.1 Mission of the College**

The vision of the College of Engineering, Basrah University aims to attain excellence in engineering education, scientific research and community service through an integrated system for total quality management linking all the college departments and cooperation with different national and international engineering institutions to assure sustainable development.

### **1.2 Vision of the College**

The mission of the College of Engineering, Basrah University is to produce comprehensively prepared and innovative graduates being able to interact with the challenges created by global economy in different engineering disciplines. These disciplines are established to cover the requirements of the society in governmental authorities and public and private sectors.

The college of engineering considers it essential to create an intellectual atmosphere of work and study for both students and staff in order to foster their appreciation of their own culture and heritage and of their responsibilities to the society. The faculty offers programs at the undergraduate, graduate as well as continuing education programs that help participants to acquire updated knowledge thus contributing to our community development. It also provides research and consultancy in different engineering fields to serve the requirements of all society sectors.





### **1.3 Program Educational Objectives**

1. Graduate engineers specialized in engineering and science applications.
2. Granting degrees in different disciplines of the college.
3. Publication of scientific and applied research in the different areas of the College disciplines for the purpose of solving industrial and service society problems.
4. Active participation in the revival and progress of society through seminars, conferences and continues education.
5. Adopt the continuous improvement for all events and activities of the departments to ensure that the mission and objectives for the College and the University were achieved.

### **1.4 College of Engineering Programs Constituencies**

The vision, mission and objectives of the Engineering college at university of Basrah and its eight department are designed to be flexible enough to cope with the rapidly changing in engineering world. These objectives are defined, implemented and frequently reviewed through the college and departments and finally approved by the programs constituencies. The following are the major College of Engineering programs constituencies;

- a. Faculty Members
- b. Employers of Engineering related businesses.
- c. Students
- d. The Employers.
- e. The Alumni.



### **1.5 Points of Strength**

1. The vision, mission and program educational objectives are well detailed and annually updated.
2. The vision, mission and program educational objectives of the departments are well compatible to the vision, mission, and objective of the college.
3. They are included in the college website and college prospectus.

### **1.5 Points of Weakness**

1. Some of the staff are not interested to participate in the formulation of the college vision, mission and objectives.
2. The opinion of the students and alumni are still ineffective as required.
3. Some of the Employers of engineering related business are participate in the formulation of the college vision, mission and objectives.

### **1.6 Corrective Actions**

1. Urged all employees of the college to participate in the formulation of the college vision, mission and objectives.
2. Creation of Program Industrial Advisory Committee (PIAC). PIAC members represent employers of engineering related businesses.
3. Creation of Program Students Advisory Council (PSAC). This is an eight members, all students council. The PSAC consists of eight students from the third and fourth academic year levels. The students are recommended by the chief advisor in the department and College of Student Society.

## **CRITERION TWO: FINANCIAL SUPPORT**



## **2.1 College Budget Process**

The Iraqi Ministry of Finance allocates the annual budget of all Iraqi ministries including the Ministry of higher Education and Scientific Research. The Ministry of Finance exerts all efforts possible in framing and application of the righteous financial policies to improve and develop the available resources for all ministries.

The Ministry of Higher Education and Scientific Research, in turn, allocates the planned annual budget to the University of Basrah which gives the college of engineering its share of the budget. Then, each department gets its own financial part from the college and uses it in fulfilling:

1. Employees' expenditures: employees' salaries, lectures wages, retired faculty salaries, specific expenses, university expenses, risk expenses, affiliation rewards, and other expenses.
2. Services requirements: depositions, ceremonial activities, students' expenses, researches reinforcement, building cleaning expenses, athletic activities, conferences, and banking services.
3. Commodities requirements: all equipment's (laboratorial, medical, schooling, agricultural, publications, books, fuels, and others).
4. Equipment maintenance: all maintenances (watery, electrical, buildings, furniture, books, gardens, records, work, and appliances).
5. Funding costs: furniture (wood and metallic), appliances, personal computers, telephones, copiers, printers, books and magazines, calculators, and machines.
6. Other expenses: students and unofficially employed staff.



## **2.2 Source of Financial Support**

The college of engineering is a governmental institution that funds its activities from:

1. General governmental funds which represents the greatest portion of the budget.
2. Higher education fund which includes:
  - a. Laboratorial tests: 65% of funds for test team, 15% for university, 16% for bonuses, and 4% for maintenance.
  - b. Shops rent: 15% for university, 68% for bonuses, and 17% for maintenance.
  - c. Continuous learning courses: 65% for course trainers, 15% for university, 16% for bonuses, and 4% for maintenance.
  - d. Special courses: 65% for course trainers, 15% for university, 16% for bonuses, and 4% for maintenance.
  - e. Industry cooperation: 80% for work team, 10% for university, 8% for bonuses, and 2% for maintenance.
  - f. Internet Center: 15% for university, 68% for bonuses, and 17% for maintenance.
  - g. Student registration fees: 80% for bonuses and 20% for maintenance.
  - h. EXams results objections fees: 80% for bonuses and 20% for maintenance.
  - i. Self-funding study master and doctorate fees: 50% for students, 25% for lectures, and 25% for other stuff.





- j. Water desalination plant: 15% for university, 68% for bonuses, and 17% for maintenance.

## 2.3 Community Service

- The Engineering college participates through the engineering consultation office in the college in giving consultation services in all fields for governmental and private sector agencies inside and outside Basrah.
- The Engineering college provides the private and governmental companies with different services of various tests of engineering materials.
- Also, it participates through the continuous learning unit in the college in giving several developing courses for the governmental sector employees

## 2.4 SWOT Analysis

Table (2.1) shows the SWOT analysis for this article.

STRENGTHS (INTERNAL)	WEAKNESSES (INTERNAL)
<ol style="list-style-type: none"><li>1. Good salaries for the staff</li><li>2. Good wages from<ul style="list-style-type: none"><li>- Additional lectures</li><li>- Continuous learning</li><li>- Consultations</li><li>- Material tests</li></ul></li></ol>	<ol style="list-style-type: none"><li>1. In sufficient funding for research, teaching improvements, hiring adequate human resources, and maintain and upgrading facilities.</li><li>2. Complicated and restrictive purchasing and restrictive hiring procedures</li></ol>
OPPORTINITIES (EXTERNAL)	THREATS (EXTERNAL)
<ol style="list-style-type: none"><li>1. Due to the process of assigning budgets to universities and colleges, our college receives a guaranteed annual budget.</li></ol>	<ol style="list-style-type: none"><li>1. Lack of financial powers granted to university presidents, deans, and heads of departments.</li></ol>

## CRITERION THREE: EDUCATIONAL OUTCOME

### 3.1 Process for Establishing and Revising Program Outcomes

The main objective of the program outcomes, POs, and program Educational Objectives, PEOs, is to measure the level of achievement of the curricular





requirement of the departments in preparing the graduates to meet the challenges presented to them by the fascinating real problems. In other words, Engineering Programs outcomes, POs, and Program Educational Objectives, PEOs, are two different, but interrelated mechanisms that were developed in order to measure the level of achievement and success of the program. The Engineering College, has decided to adopt a uniform metric goal of 3.50 (70%), in a scale of (1-5) to be used, to measure the level of success in achieving any of the program outcomes, in all the program assessment tools, to be discussed later. The Engineering Programs will be a success, if a program outcome meets the above criteria in five assessment tools out of six assessment tools, and no correcting measure will be taken. Corrective measures will be taken if any of the outcomes failed to meet its metric goal in two or more assessment tools.

### **3.2. Program Outcomes**

Program outcomes are defined by ABET as “narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.” Current ABET Engineering Criteria requires that:

- a. Assessment under this criterion is one or more processes that identify, collect, and prepare data to evaluate the achievement of program outcomes.
- b. Published program outcomes that are consistent with the evaluation under this criterion are one or more processes for interpreting the data and evidence accumulated through assessment practices. This evaluation determines the extent to which program outcomes are being achieved, and results in



decisions and actions to improve the program. Table 3.1 shows the program outcomes for the departments in college of Engineering at university of Basrah.

**Table 3.1: Programs Outcomes**

Code	Program Outcomes
A	<b>PO1:</b> an ability to apply knowledge of mathematics, science, and engineering fundamentals.
B	<b>PO2:</b> an ability to outline and conduct experiments as well as analyze and interpret data.
C	<b>PO3:</b> an ability to design an integrated system and its various components and processes, within realistic economic, environment, social, political, ethical, health and safety, manufacturability, and sustainability constraints.
D	<b>PO4:</b> an ability to function on multi-disciplinary teams to analyze and solve problems.
E	<b>PO5:</b> an ability to identify, evaluate and solve engineering problems.
F	<b>PO6:</b> an understanding of the responsibility of engineers to practice in a professional and ethical manner at all times.
G	<b>PO7:</b> an ability to communicate effectively using oral, written, and graphic forms.
H	<b>PO8:</b> the broad education necessary to understand the potential impact of engineering solutions on society and the environment.
I	<b>PO9:</b> an understanding of the need for up-to-date engineering tools and other knowledge acquired through life-long learning.
J	<b>PO10:</b> knowledge of contemporary issues related to engineering.
K	<b>PO11:</b> an ability to use modern engineering tools, skills and design techniques necessary for the practice of engineering.

### 3.3 SWOT Analysis

Table (3.2) shows the SWOT analysis for this article.

STRENGTHS (INTERNAL)	WEAKNESSES (INTERNAL)
<ol style="list-style-type: none"> <li>Many aspects are used in evaluating students (exams, reports, quizzes, and final year project).</li> <li>The college vision, mission, and</li> </ol>	<ol style="list-style-type: none"> <li>Student to faculty ratio is higher than the optimum value (15 : 1).</li> <li>There are only two elective courses, which are in fact not elective since the</li> </ol>



- objectives focus on the graduates and the overall knowledge they get to apply in their future work.
3. The total credit hours are equal to the number of credit hours at other Engineering colleges in Iraq and worldwide.
  4. The used textbooks are updated by the faculty member her/himself using the internet. Thus, no outdated scientific materials are used.
  5. Accepted equipped laboratory, library and IT facilities.
- students have no choice in studying them.
3. The senior year project is of a worth of only 1.31% of the total credit hours.(eXcept Architectural department)
  4. According to the style of curriculum, the departments are more tilted towards teaching rather than learning, research, and other scholarly activities.

#### OPPORTINITIES (EXTERNAL)

1. Emerging technologies
  - a. Technologies that does not require eXtensive industrial infrastructure.
  - b. Information based technologies
2. Trends in multi-disciplinary professional new education teaching methods:
  - a. Possibility of re-designing curriculum to allow multi-disciplinary teaching and learning.
  - b. Possibility of utilizing e-learning and distance education.

#### THREATS (EXTERNAL)

- Quality of incoming students (language, analytical thinking, motivation)
- Large number of incoming students.

### CRITERION Four: Curriculum

#### 4.1 Preface

The College of Engineering represented by the lecturing staff aims to be the typical college by its student's abilities and the lecturing staff efficiency on both the local and regional levels. The capacity of the college has increased due to the



increase in both the lecturing staff number and the accepted students according to the local and regional requirements.

The lecturing staff in the college is qualified and well prepared. They have experimental and academic experiences in all engineering fields including civil, electrical, mechanical, chemical, computer, materials, architectural, and petroleum.

College of Engineering provides its students with all facilities and laboratories which are supplied with instruments and tools used to rise up the student abilities.

## **4.2 Curricular/Course Description**

### **4.2.1 Civil Engineering Department**

#### **4.2.1.1 Course Description**

The units are calculated such as, the theoretical hours (1 hour per week = 1 unit), practical hours (2-3 hours per week = 1 unit), and the tutorial hours (units = 0). Prerequisites, if any, are indicated at the course description. These have been established to assure an adequate and uniform background for students in advanced classes.

Course code is presented according to three requirements:

- 1- University requirement started by the letter **U**
- 2- Engineering College requirement is started by the letter **E**
- 3- Department requirement (Civil Engineering) is started by the letters **CE**

Course code starts with capital letter followed by number of 3-digit as following:



1<sup>st</sup> digit represents the class number

2<sup>nd</sup> digit represents the semester number

3<sup>rd</sup> digit represents the subject number

For examples:

Example: U113 represents University requirements, first year, first semester, and third subject.

Example: CE212 represents Department requirements, second year, first semester, and second subject.

#### 4.2.1.2 Graduation Requirements

Requirements	Units	Total hours/Year
University Requirements	6	90
College Requirements	38	870
Department Requirements	112	2610
Total	156	3570

#### 4.2.1.3 University Requirements: 6 Units

Subject Code	Subject	Units	Weekly hours		
			Th.	Prac.	Tut.
U111	English Language	4	4	-	-
U211	Human Rights and Democracy	2	2	-	-
Total		6	6		

#### 4.2.1.4 College Requirements: 38 Units





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No.	Subject Code	Subject	Units	Weekly hours		
				Th.	Prac.	Tut.
1	E112	Mathematics I	3	3	-	1
2	E122	Mathematics II	3	3	-	1
3	E113	Statics	3	3	-	2
4	E123	Dynamics	3	3	-	1
5	E125	Computer Science	4	2	3	-
6	E116	Physics	2	1	2	-
7	E126	Chemistry	2	1	2	-
8	E118	Engineering Drawing I	3	-	6	-
9	E128	Engineering Drawing II	3	-	6	-
Total for 1st Year			26	16	19	5
10	E212	Applied Mathematics I	3	3	-	1
11	E222	Applied Mathematics II	3	3	-	1
Total for 2nd Year			6	6	0	2
Total for 3rd Year			0	0	0	0
12	E411	Engineering Project I	2	-	4	-
13	E421	Engineering Project II	2	-	4	-
14	E428	Engineering Ethics	2	2	-	-
Total for 4th Year			6	2	8	0
Total			38	24	27	7
				58		

#### 4.2.1.5 Department Requirements: 112 Units

No.	Subject Code	Subject	Units	Weekly hours		
				Th.	Prac.	Tut.
1	CE114	Engineering Geology	3	2	2	-
2	CE124	Construction Materials	5	4	2	-
3	CE115	Engineering Workshops	2	-	4	-
Total for 1st Year			10	6	8	-
4	CE213	Mechanics of Materials I	3	3	-	1
5	CE223	Mechanics of Materials II	3	3	-	1
6	CE214	Fluid Mechanics I	3	2	2	1
7	CE224	Fluid Mechanics II	3	2	2	1
8	CE215	Engineering Surveying I	3	2	2	1
9	CE225	Engineering Surveying II	3	2	2	1
10	CE216	Concrete Technology I	3	2	2	-
11	CE226	Concrete Technology II	3	2	2	-



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No.	Subject Code	Subject	Units	Weekly hours		
				Th.	Prac.	Tut.
12	CE217	Computer Programming	3	2	2	-
13	CE227	Engineering Statistics	2	2	-	2
14	CE228	Building Construction	2	2	-	2
Total for 2nd Year			31	24	14	10
15	CE311	Engineering Analysis	2	2	-	2
16	CE321	Numerical Analysis	3	2	2	2
17	CE312	Theory of Structures I	3	3	-	1
18	CE322	Theory of Structures II	3	3	-	1
19	CE313	Soil Mechanics I	3	2	2	1
20	CE323	Soil Mechanics II	3	2	2	1
21	CE314	Reinforced Concrete Design I	3	3	-	2
22	CE324	Reinforced Concrete Design II	3	3	-	2
23	CE315	Irrigation	2	2	-	1
24	CE325	Drainage	2	2	-	1
25	CE316	Engineering Management	2	2	-	-
26	CE326	Engineering Economy	2	2	-	-
27	CE317	Traffic Engineering	3	2	1	1
28	CE327	Transportation Engineering	2	2	-	1
29	CE318	Computer Applications I	1	-	2	-
30	CE328	Computer Applications II	1	-	2	-
Total for 3rd Year			38	32	11	16
31	CE412	Foundation Engineering I	3	3	-	1
32	CE422	Foundation Engineering II	3	3	-	1
33	CE413	Steel Structures Design I	2	2	-	2
34	CE423	Steel Structures Design II	2	2	-	2
35	CE414	Hydraulic Structures	3	3	-	1
36	CE424	Engineering Hydrology	2	2	-	2
37	CE415	Highway Engineering	3	2	1	2
38	CE425	Highway Pavement Analysis & Design	3	2	2	1
39	CE416	Water Supply Engineering	3	2	1	1
40	CE426	Sanitary Sewage Engineering	3	2	2	1
41	CE417	Construction Methods	2	2	-	1
42	CE427	Estimation and Specifications	2	2	-	1
43	CE418	Prestressed Concrete	2	2	-	2
Total for 4th Year			33	29	6	18
Total			112	91	39	44
				174		

#### 4.2.1.6 CE Program: Curriculum



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Typical degree program is shown in the following Tables for Civil Engineering, where recommended CE course plan by semester is presented

**First Year**

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Mathematics I	3	3	-	1	Mathematics II	3	3	-	1
Statics	3	3	-	2	Dynamics	3	3	-	1
Engineering Drawing I	3	-	6	-	Chemistry	2	1	2	-
Physics	2	1	2	-	Engineering Drawing II	3	-	6	-
Engineering Geology	3	2	2	-	Construction Materials	5	4	2	-
English Language	2	2	-	-	Computer Science	4	2	3	-
Engineering Workshops	2	-	4	-	English Language	2	2	-	-
Total	18	11	14	3		22	15	13	2
		28					30		

**Second Year**

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Applied Mathematics I	3	3	-	1	Applied Mathematics II	3	3	-	1
Mechanics of Materials I	3	3	-	1	Mechanics of Materials II	3	3	-	1
Fluid Mechanics I	3	2	2	1	Fluid Mechanics II	3	2	2	1
Engineering Surveying I	3	2	2	1	Engineering Surveying II	3	2	2	1
Concrete Technology I	3	2	2	-	Concrete Technology II	3	2	2	-
Computer Programming	3	2	2	-	Engineering Statistics	2	2	-	2
Human Rights and Democracy	2	2	-	-	Building Construction	2	2	-	2
Total	20	16	8	4	Total	19	16	6	8
		28					30		

**Third Year**



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First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Engineering Analysis	2	2	-	2	Numerical Analysis	3	2	2	2
Theory of Structures I	3	3	-	1	Theory of Structures II	3	3	-	1
Soil Mechanics I	3	2	2	1	Soil Mechanics II	3	2	2	1
Reinforced Concrete Design I	3	3	-	2	Reinforced Concrete Design II	3	3	-	2
Irrigation	2	2	-	1	Drainage	2	2	-	1
Engineering Management	2	2	-	-	Engineering Economy	2	2	-	-
Traffic Engineering	3	2	1	1	Transportation Engineering	2	2	-	1
Computer Applications I	1	-	2	-	Computer Applications II	1	-	2	-
Total	19	16	5	8	Total	19	16	6	8
		29					30		

**Forth Year**

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Prestressed Concrete	2	2	-	2	Foundation Engineering II	3	3	-	1
Foundation Engineering I	3	3	-	1	Steel Structures Design II	2	2	-	2
Steel Structures Design I	2	2	-	2	Engineering Hydrology	2	2	-	2
Hydraulic Structures	3	3	-	1	Highway Pavement Analysis & Design	3	2	2	1
Highway Engineering	3	2	1	2	Sanitary Sewage Engineering	3	2	2	1
Water Supply Engineering	3	2	1	1	Estimation and Specifications	2	2	-	1
Construction Methods	2	2	-	1	Engineering Ethics	2	2	-	-
Engineering Project I	2	-	4	-	Engineering project II	2	-	4	-
Total	20	16	6	10	Total	19	15	8	8
		32					31		



## 4.2.2 Electrical Engineering Department

### 4.2.2.1 Course Description

The units are calculated such as, the theoretical hours (1 hour per week = 1 unit), practical hours (2-3 hours per week = 1 unit), and the tutorial hours (units = 0). Prerequisites, if any, are indicated at the course description. These have been established to assure an adequate and uniform background for students in advanced classes.

Course code is presented according to three requirements:

- 1- University requirement started by the letter **U**
- 2- Engineering College requirement is started by the letter **E**
- 3- Department requirement (Electrical Engineering) is started by the letters **EE**: This is divided into three specializations for the last two years (3<sup>rd</sup> and 4<sup>th</sup> years):
  - a. Control & Systems is started by the **CS**
  - b. Communication & Electronics is started by the **CE**
  - c. Power & Machines is started by the **PM**

Subject code started by capital letters followed by number of 3-digits as following:

1st digit refers to:

- 1- First year
- 2- Second year
- 3- Third year
- 4- Fourth year





2nd and 3rd digits represents the serial number of the subject in the assigned stage, 01 to 99.

Example: U101 represents University requirements, first year and first subject.

Example: E205 represents College requirements, second year and fifth subject.

Example: CS304 represents Department requirements, third year and forth subject.

#### 4.2.2.2 Graduation Requirements

Requirements	Units	Total hours/Year
University Requirements	9	135
College Requirements	20	480
Department Requirements	111	2610
Department Elective	12	270
Total	156	3495

#### 4.2.2.3 University Requirements: 9 Units

Subject Code	Subject	Units	Weekly hours		
			Th.	Prac.	Tut.
U101	Basic Physics	3	3	-	-
U102	English Language	2	2	-	-
U103	Technical Writing	2	2	-	-
U201	Human Rights and Democracy	2	2	-	-
Total		9	9		



#### 4.2.2.4 College Requirements: 20 Units

No.	Subject Code	Subject	Units	Weekly hours		
				Th.	Prac.	Tut.
1	E101	Mathematics I	3	3	-	1
2	E102	Mathematics II	3	3	-	1
3	E103	Engineering Drawing I	1	-	3	-
4	E104	Engineering Drawing II	1	-	3	-
Total for 1st Year			8	6	6	2
5	E201	Engineering Mathematics I	2	2	-	1
6	E202	Engineering Mathematics II	2	2	-	1
Total for 2nd Year			4	4	0	2
Total for 3rd Year			0	0	0	0
7	E401	Engineering Project* I	2	1	3	-
8	E402	Engineering Project*II	2	1	3	-
9	E403	Engineering Economics	2	2	-	-
10	E404	Project Management	2	2	-	-
Total for 4th Year			8	6	6	0
Total			20	16	12	4
				32		

#### 4.2.2.5 Department Requirements: 112 Units

No.	Subject Code	Subject	Units	Weekly hours		
				Th.	Prac.	Tut.
1	EE101	Basic of Electrical Engineering I	3	3	-	1
2	EE102	Basic of Electrical Engineering II	3	3	-	1
3	EE103	Mechanical Engineering (Statics & Dynamics)	3	2	2	1
4	EE104	Digital Logic-I	3	3	-	-
5	EE105	Basic Electronics	3	3	-	1
6	EE106	Computer Programming I	2	2	-	-
7	EE107	Computer Programming II	2	2	-	1
8	EE108	Laboratories 1	2	-	6	-
9	EE109	Laboratories 2	2	-	6	-
Total for 1st Year			23	18	14	5
10	EE201	Measurements & Instrumentation	3	3	-	-
11	EE202	Electrical Circuits Analysis	3	3	-	1



No.	Subject Code	Subject	Units	Weekly hours		
				Th.	Prac.	Tut.
12	EE203	Introduction to Electrical Networks	3	3	-	1
13	EE204	Electronic Circuits I	2	2	-	1
14	EE205	Electronic Circuits II	3	3	-	-
15	EE206	Advanced Programming-I	2	2	-	-
16	EE207	Digital Logic II	2	2	-	-
17	EE208	DC Machines	2	2	-	1
18	EE209	Electrical Transformers	2	2	-	1
19	EE210	Advanced Programming-II	2	2	-	-
20	EE211	Computer Architecture	2	2	-	-
21	EE212	Laboratories 3	3	-	10	-
22	EE213	Laboratories 4	3	-	10	-
Total for 2nd Year			32	26	20	5
23	CS301	Engineering Analysis	3	3	-	1
24	CS302	Engineering Numerical Methods	3	3	-	1
25	CS303	AC Machines & Power Electronics	3	3	-	-
26	CS304	Power Systems	3	3	-	-
27	CS305	Control Theory I	3	3	-	1
28	CS306	Control Theory II	3	3	-	1
29	CS307	Analog Electronics	2	2	-	1
30	CS308	Digital Electronics	2	2	-	1
31	CS309	Electromagnetic Fields	2	2	-	1
32	CS310	Embedded Computing Systems	2	2	-	1
33	CS311	Communication Theory & Systems I	2	2	-	1
34	CS312	Communication Theory & Systems II	2	2	-	1
35	CS313	Laboratories 5	2	-	6	-
36	CS314	Laboratories 6	2	-	6	-
Total for 3rd Year/ CS			34	30	12	10
37	PM301	Engineering Analysis	3	3	-	1
38	PM302	Engineering Numerical Methods	3	3	-	1
39	PM303	Induction Machines	3	3	-	-
40	PM304	Synchronous Machines	3	3	-	-
41	PM305	Electric Power Generation & Transmission	3	3	-	1
42	PM306	Electric Power Distribution	3	3	-	1
43	PM307	Analog Electronics	2	2	-	1
44	PM308	Digital Electronics	2	2	-	1
45	PM309	Electromagnetic Fields	2	2	-	1



No.	Subject Code	Subject	Units	Weekly hours		
				Th.	Prac.	Tut.
46	PM310	Communication Systems	2	2	-	1
47	PM311	Control Theory	2	2	-	1
48	PM312	High Voltage Engineering	2	2	-	1
49	PM313	Laboratories 5	2	-	6	-
50	PM314	Laboratories 6	2	-	6	-
Total for 3rd Year/ PM			34	30	12	10
51	CS401	Programmable Logic Controller	3	3	-	-
52	CS402	Industrial Automation	3	3	-	-
53	CS403	Modern Control Theory	3	3	-	1
54	CS404	Process Control	3	3	-	1
55	CS405	Principles of Robotics	3	3	-	1
56	CS406	Soft Computing Techniques	3	3	-	1
57	CS407	Laboratories 7	2	-	6	-
58	CS408	Laboratories 8	2	-	6	-
Total for 4th Year/ CS			22	18	12	4
59	CE401	Digital Communication I	3	3	-	1
60	CE402	Digital Communication II	3	3	-	1
61	CE403	Microwave Engineering I	3	3	-	-
62	CE404	Microwave Engineering II	3	3	-	-
63	CE405	Antenna & Propagation I	3	3	-	1
64	CE406	Antenna & Propagation II	3	3	-	1
65	CE407	Laboratories 7	2	-	6	-
66	CE408	Laboratories 8	2	-	6	-
Total for 4th Year/ CE			22	18	12	4
67	PM401	Power Electronics	3	3	-	-
68	PM402	Special Machines	3	3	-	-
69	PM403	Power System Analysis I	3	3	-	1
70	PM404	Power System Analysis II	3	3	-	1
71	PM405	Power System Protection	3	3	-	1
72	PM406	Renewable Energy	3	3	-	1
73	PM407	Laboratories 7	2	-	6	-
74	PM408	Laboratories 8	2	-	6	-
Total for 4th Year/ PM			22	18	12	4
Total			111	92	58	24
				174		



#### 4.2.2.6 EE Program: Electives: (4+8) Units

##### 4.2.2.6.1 Control & Systems Specialization:

NO.	Subject Code	Subject Title	Units	Weekly hours		
				Th.	Prac.	Tut.
		3rd Year				
1	CS315	Microprocessors & Microcontrollers	2	2	-	1
2	CS316	Data Transmission & Computer Networks	2	2	-	1
3	CS317	Signal & Systems	2	2	-	1
4	CS318	Digital Signal Processing	2	2	-	1
5	CS319	System Identification	2	2	-	1
6	CS320	Data Structure	2	2	-	1
7	CS321	Optimization	2	2	-	1
8	CS322	Random Signals & Systems	2	2	-	1
9	CS323	Digital Filter Design	2	2	-	1
4th Year						
10	CS409	Robotics	2	2	-	1
11	CS410	Process Control	2	2	-	1
12	CS411	Industrial Drives & Control	2	2	-	1
13	CS412	Mechatronics	2	2	-	1
14	CS413	Electrical Design & Sustainability	2	2	-	1
15	CS414	Biomedical Engineering	2	2	-	1
16	CS415	Digital Image Processing	2	2	-	1
17	CS416	Robust Control	2	2	-	1
18	CS417	Optimal Control	2	2	-	1
19	CS418	Adaptive Control	2	2	-	1





#### 4.2.2.6.2 Communication & Electronics Specialization:

NO.	Subject Code	Subject Title	Units	Weekly hours		
		3rd Year		Th.	Prac.	Tut.
1	CE315	Data Transmission & Computer Networks	2	2	-	1
2	CE316	Digital Signal Processing	2	2	-	1
3	CE317	Random Signals & Signal Processing	2	2	-	1
4	CE318	Information Theory & Coding	2	2	-	1
4th Year						
5	CE409	Optical Communications	2	2	-	1
6	CE410	Optoelectronics	2	2	-	1
7	CE411	PLC & Industrial Automation	2	2	-	1
8	CE412	Wireless & Mobile Communications	2	2	-	1
9	CE413	Communication Electronics	2	2	-	1
10	CE414	Microcontrollers	2	2	-	1
11	CE415	Satellite Communications	2	2	-	1
12	CE416	Introduction to EMC	2	2	-	1
13	CE417	Radar & Navigation Systems	2	2	-	1
14	CE418	TV Engineering	2	2	-	1

#### 4.2.2.6.3 Power & Machines Specialization:

NO.	Subject Code	Subject Title	Units	Weekly hours		
		3rd Year		Th.	Prac.	Tut.
1	PM315	Computer Networks	2	2	-	1
2	PM316	Microcontrollers	2	2	-	1
3	PM317	Lighting Engineering	2	2	-	1
4	PM318	Power System Operation & Control	2	2	-	1
5	PM319	Utilization of Electric Power	2	2	-	1
6	PM320	Digital Signal Processing	2	2	-	1
4th Year						
7	PM409	Electrical Design & Sustainability	2	2	-	1
8	PM410	Programmable Logic Controller	2	2	-	1
9	PM411	Industrial Automation	2	2	-	1
10	PM412	Grounding	2	2	-	1
11	PM413	Smart Grid	2	2	-	1



12	PM414	Distribution System Automation	2	2	-	1
13	PM415	Electric Drives	2	2	-	1
14	PM416	Electric Heating	2	2	-	1
15	PM417	Illumination Technology	2	2	-	1
16	PM418	Power System Operation & Control	2	2	-	1

#### 4.2.2.7 EE Program: Curriculum

Typical degree program is shown in the following Tables for Civil Engineering, where recommended CE course plan by semester is presented

##### First Year

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
English Language	2	2	-	-	Technical Writing	2	2	-	-
Mathematics-I	3	3	-	1	Mathematics-II	3	3	-	1
Basic of Electrical Engineering- I	3	3	-	1	Basic of Electrical Engineering-II	3	3	-	1
Mechanical Engineering (Static & Dynamics)*	3	2	2	1	Digital Logic-I	3	3	-	-
Basic Physics	3	3	-	-	Basic Electronics	3	3	-	1
Computer Programming-I	2	2	-	-	Computer Programming-II	2	2	-	1
Engineering Drawing I (Basic)	1	-	3	-	Engineering Drawing-II (AutoCAD)	1	-	3	-
Laboratories-I [Basic of Electrical Engineering+ Computer Programming]	2	-	3+3	-	Laboratories-II [Basic of Electrical Engineering+ Computer Programming]	2	-	3+3	-
Total	19	15	11	3	Total	19	16	9	4
		29					29		



## Second Year

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Measurements & Instrumentation	3	3	-	-	Human Rights and Democracy	2	2	-	-
Engineering Mathematics -I	2	2	-	1	Engineering Mathematics- II	2	2	-	1
Electrical Circuits Analysis	3	3	-	1	Introduction to Electrical Networks	3	3	-	1
Electronic Circuits I	2	2	-	1	Electronic Circuits II	3	3	-	-
Advanced Programming-I	2	2	-	-	Advanced Programming-II	2	2	-	-
DC Machines	2	2	-	1	Electrical Transformers	2	2	-	1
Digital Logic-II	2	2	-	-	Computer Architecture	2	2	-	-
Laboratories-3 [DC Machines+ Electrical & Electronic Circuits+ Computer Programming+ Digital Techniques]	3	-	3+3+2+2	-	Laboratories-4 [DC Machines+ Electrical & Electronic Circuits+ Matlab Programming+ Digital Techniques]	3	-	3+3+2+2	-
Total	19	16	10	4	Total	19	16	10	3
		30					29		

## Third Year / Control & Systems

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Engineering Analysis	3	3	-	1	Engineering Numerical Methods	3	3	-	1
AC Machines & Power Electronics	3	3	-	-	Power Systems	3	3	-	-
Control Theory-I	3	3	-	1	Control Theory-II	3	3	-	1
Analog Electronics	2	2	-	1	Digital Electronics	2	2	-	1
Communication Theory & Systems I	2	2	-	1	Communication Theory & Systems II	2	2	-	1
Electromagnetic Fields	2	2	-	1	Embedded Computing Systems	2	2	-	1
Elective	2	2	-	1	Elective	2	2	-	1
Laboratories-5 [AC Electrical Machines+ Control+ Electronics & Communications]	2	-	6	-	Laboratories-6 [AC Electrical Machines+ Control+ Electronics & Communications]	2	-	6	-
Total	19	17	6	6	Total	19	17	6	6
		29					29		



### Electives for 3rd Year CS

Subject Code	Subject Title	Units	Weekly hours		
			Th.	Prac.	Tut.
3 <sup>rd</sup> Year					
CS315	Microprocessors & Microcontrollers	2	2	-	1
CS316	Data Transmission & Computer Networks	2	2	-	1
CS317	Digital Signal Processing	2	2	-	1
CS318	Signal & Systems	2	2	-	1
CS319	Digital Filter Design	2	2	-	1
CS320	Building Electrical Systems Design	2	2	-	1

### Forth Year/Control & Systems

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Engineering Project*I	2	1	3	-	Engineering Project*II	2	1	3	-
Engineering Economics	2	2	-	-	Project Management	2	2	-	-
Programmable Logic Controller	3	3	-	-	Industrial Automation	3	3	-	-
Modern Control Theory	3	3	-	1	Process Control	3	3	-	1
Principles of Robotics	3	3	-	1	Soft Computing Techniques	3	3	-	1
Elective	2	2	-	1	Elective	2	2	-	1
Elective	2	2	-	1	Elective	2	2	-	1
Laboratories-7 [PLC & Control Engineering]	2	-	6	-	Laboratories-8 [PLC & Control Engineering]	2	-	6	-
Total	19	16	9	4	Total	19	16	9	4
		29					29		

### Electives for 4<sup>th</sup> Year CS

Subject Code	Subject Title	Units	Weekly hours		
			Th.	Prac.	Tut.
4 <sup>th</sup> Year					
CS409	System Identification & Adaptive Control	2	2	-	1
CS410	Digital Control Systems	2	2	-	1
CS411	Nonlinear Control	2	2	-	1
CS412	Optimal Control & Filtering	2	2	-	1
CS413	Biomedical Engineering	2	2	-	1
CS414	Introduction to Nanotechnology	2	2	-	1
CS415	Mechatronics	2	2	-	1
CS416	Electrical Transportation Systems	2	2	-	1
CS417	Electrical Design & Sustainability	2	2	-	1



## Communications & Electronics Specialization

### Third Year/ Communications & Electronics

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Engineering Analysis	3	3	-	1	Engineering Numerical Methods	3	3	-	1
AC Machines	3	3	-	-	Power Systems	3	3	-	-
Control Theory & Systems-I	2	2	-	1	Control Theory & Systems-II	2	2	-	1
Analog Electronics	2	2	-	1	Digital Electronics	2	2	-	1
Communications Theory-I	3	3	-	1	Communications Theory-II	3	3	-	1
Electromagnetic Fields-I	2	2	-	1	Electromagnetic Fields-II	2	2	-	1
Elective	2	2	-	1	Elective	2	2	-	1
Laboratories-5 [AC Electrical Machines+ Electronics & Communications]	2	-	6	-	Laboratories-6 [AC Electrical Machines+ Electronics & Communications]	2	-	6	-
Total	19	17	6	6	Total	19	17	6	76
		29					29		

### Electives for 3<sup>rd</sup> Year CE

#### Communication & Electronics Specialization

Subject Code	Subject Title	Units	Weekly hours		
			Th.	Prac.	Tut.
3 <sup>rd</sup> Year					
CE315	Data Transmission & Computer Networks	2	2	-	1
CE316	Digital Signal Processing	2	2	-	1
CE317	Digital Filter Design				
CE318	Random Processes for Communications	2	2	-	1
CE319	Information Theory & Coding	2	2	-	1
CE420	Microprocessors & Microcontrollers	2	2	-	1





### Forth Year/ Communications & Electronics

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Engineering Project*	2	1	3	-	Engineering Project*	2	1	3	-
Engineering Economics	2	2	-	-	Project Management	2	2	-	-
Digital Communications-I	3	3	-	1	Digital Communications-II	3	3	-	1
Microwave Engineering-I	3	3	-	-	Microwave Engineering-II	3	3	-	-
Antenna & Propagation-I	3	3	-	1	Antenna & Propagation-II	3	3	-	1
Elective	2	2	-	1	Elective	2	2	-	1
Elective	2	2	-	1	Elective	2	2	-	1
Laboratories-7 [Control Engineering+ Antenna & Digital Communications]	2	-	6	-	Laboratories-8 [Control Engineering+ Antenna & Digital Communications]	2	-	6	-
Total	19	16	9	4	Total	19	16	9	4
		29					29		

### Electives for 4th Year CE

#### Communication & Electronics Specialization

Subject Code	Subject Title	Units	Weekly hours		
			Th.	Prac.	Tut.
4 <sup>th</sup> Year					
CE409	Optical Communications	2	2	-	1
CE410	Optoelectronics	2	2	-	1
CE411	PLC & Industrial Automation	2	2	-	1
CE412	Mobile Communications	2	2	-	1
CE413	Communication Electronics	2	2	-	1
CE414	Fundamentals of Biomedical Engineering	2	2	-	1
CE415	Satellite Communications	2	2	-	1
CE416	Introduction to EMC	2	2	-	1
CE417	Radar & Navigation Systems	2	2	-	1
CE418	TV Engineering	2	2	-	1



## Power & Machines Specialization

### Third Year/Power & Machines

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Engineering Analysis	3	3	-	1	Engineering Numerical Methods	3	3	-	1
Induction Machines	3	3	-	-	Synchronous Machines	3	3	-	-
Electric Power Generation & Transmission	3	3	-	1	Electrical Power Distribution	3	3	-	1
Analog Electronics	2	2	-	1	Digital Electronics	2	2	-	1
Electromagnetic Fields	2	2	-	1	High Voltage Engineering	2	2	-	1
Control Theory	2	2	-	1	Communication Systems	2	2	-	1
Elective	2	2	-	1	Elective	2	2	-	1
Laboratories-5 [AC Electrical Machines+ Control +Electronics & Communications]	2	-	6	-	Laboratories-6 [AC Electrical Machines+ Electronics & Communications]	2	-	6	-
Total	19	17	6	6	Total	19	17	6	6
		29					29		

### Electives for 3rd Year PM

### Power & Machines Specialization:

Subject Code	Subject Title	Units	Weekly hours		
			Th.	Prac.	Tut.
3 <sup>rd</sup> Year					
PM315	Data Transmissions & Computer Networks	2	2	-	1
PM316	Microprocessors & Microcontrollers	2	2	-	1
PM317	Lighting Engineering	2	2	-	1
PM318	Utilization of Electric Power	2	2	-	1
PM319	Digital Signal Processing	2	2	-	1
PM320	Building Electrical Systems Design	2	2	-	1



### Forth Year/Power & Machines

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Engineering Project*	2	1	3	-	Engineering Project*	2	1	3	-
Engineering Economics	2	2	-	-	Project Management	2	2	-	-
Power Electronics	3	3	-	-	Special Machines	3	3	-	-
Power System Analysis-I	3	3	-	1	Power System Analysis-II	3	3	-	1
Power System Protection	3	3	-	1	Renewable Energy	3	3	-	1
Elective	2	2	-	1	Elective	2	2	-	1
Elective	2	2	-	1	Elective	2	2	-	1
Laboratories-7 [Power Electronics & Machines+ PLC + Protection]	2	-	6	-	Laboratories-8 [Power Electronics & Machines+ PLC + Protection]	2	-	6	-
Total	19	16	9	3	Total	19	16	9	4
		29					29		

### Electives for 4th Year PM

#### Power & Machines Specialization:

Subject Code	Subject Title	Units	Weekly hours		
			Th.	Prac.	Tut.
4 <sup>th</sup> Year					
PM409	Electrical Design & Sustainability	2	2	-	1
PM410	Programmable Logic Controller	2	2	-	1
PM411	Industrial Automation	2	2	-	1
PM412	Grounding	2	2	-	1
PM413	Smart Grid	2	2	-	1
PM414	Distribution System Automation	2	2	-	1
PM415	Electric Drives	2	2	-	1
PM416	Electric Heating	2	2	-	1
PM417	Power System Planning	2	2	-	1
PM418	Power System Operation & Control	2	2	-	1



## 4.2.3 Mechanical Engineering Department

### 4.2.3.1 Course Description

The units are calculated such as, the theory hours (1 hour per semester = 1 unit), practical hours (2-3 hours per semester = 1 unit), and the tutorial hours (units = 0). Prerequisites, if any, are indicated at the course description. These have been established to assure an adequate and uniform background for students in advanced classes.

Course code is presented according to three requirements:

- 1- University requirement started by the letter **U**
- 2- Engineering College requirement is started by the letter **E**
- 3- Department Requirement (**M**echanical **E**ngineering) is started by the letters **ME**

Course code started by capital letters followed by number of 3-digits as following:

1<sup>st</sup> digit represents the class number

2<sup>nd</sup> digit represent the semester number

3<sup>rd</sup> digit represent the subject number

For eXamples:

EXample: U112 represents University requirements, first year, first semester, and third subject.

EXample: ME212 represents Department Requirements, second year, first semester, and second subject.



#### 4.2.3.2 Graduation Requirements

Requirements	Units	Total hours/Year
University Requirements	12	210
College Requirements	30	645
Department Requirements	111	2655
Total	153	3510

#### 4.2.3.3 University Requirements: 12 Units

Subject Code	Subject	Units	Weekly hours		
			Th.	Prac.	Tut.
U113	Principles of Computer Science	3	2	2	-
U123	Computer Programming	3	2	2	-
U118	English Language I	2	2	-	-
U128	English Language II	2	2	-	-
U217	Human Rights and Democracy	2	2	-	-
Total		12	14		

#### 4.2.3.4 College Requirements: 30 Units

No.	Subject Code	Subject	Units	Weekly hours		
				Th.	Prac.	Tut.
1	E111	Mathematics I	3	3	-	1
2	E121	Mathematics II	3	3	-	1
3	E114	Engineering Drawing I	2	1	2	-
4	E124	Engineering Drawing II	2	1	2	-
5	E117	Chemistry	2	2	-	-
6	E127	Physics	2	2	-	-
Total for 1 <sup>st</sup> Year			14	12	4	2
7	E211	Engineering Mathematics I	3	3	-	1
8	E221	Engineering Mathematics II	3	3	-	1
Total for 2 <sup>nd</sup> Year			6	6	-	2
9	E311	Engineering Analysis	3	3	-	1
10	E321	Numerical Analysis	3	2	2	1
Total for 3 <sup>rd</sup> Year			6	5	2	2
11	E418	Engineering Project	3	2	3	-
12	E428	Engineering Project (continued)	1	-	3	-
Total for 4 <sup>th</sup> Year			4	2	6	-
Total			30	25	12	6
				43		





#### 4.2.3.5 Department Requirements: 111 Units

Subject Code	Subject Title	Units	Weekly hours		
			Th.	Prac.	Tut.
ME112	Static Engineering Mechanics	3	3	1	1
ME114	Principle of production Engineering I	2	2	-	-
ME117	Electrical Engineering I	2	2	-	1
ME122	Dynamic Engineering Mechanics	3	3	-	1
ME124	Principle of production Engineering II	3	2	2	-
ME126	Electrical Engineering II	3	2	2	1
Total for 1st Year		16	14	5	4
ME212	Fluid Static	2	2	-	1
ME213	Thermodynamics I	2	2	-	1
ME214	Engineering Metallurgy I	3	2	3	-
ME215	Mechanics of Materials	3	2	3	1
ME216	Mechanical Drawing I	2	1	2	-
ME217	Programming of Computers	3	2	2	-
ME222	Fluid Dynamics	3	2	3	1
ME223	Thermodynamics II	3	2	3	1
ME224	Engineering Metallurgy II	2	2	-	-
ME225	Strength of Materials	2	2	-	1
ME226	Mechanical Drawing II	2	1	2	-
ME227	Advanced Programming	3	2	2	-
Total for 2nd Year		30	22	20	6
ME312	Heat Transfer I	2	2	-	1
ME313	Theory of Mechanisms	3	2	3	1
ME314	Internal Combustion Engines I	3	2	3	1
ME315	Gas Dynamics	2	2	-	1
ME316	Electrical Machines I	2	2	-	1
ME317	Manufacturing Processes I	3	2	3	-
ME322	Heat Transfer II	3	2	3	1
ME323	Theory of Machines	2	2	-	1
ME324	Internal Combustion Engines II	2	2	-	1
ME325	Turbo Machinery	3	2	3	1
ME326	Electrical Machines II	3	2	2	1
ME327	Manufacturing Processes II	2	2	-	-
Total for 3rd Year		30	24	17	10



Subject Code	Subject Title	Units	Weekly hours		
			Th.	Prac.	Tut.
ME411	Design of Machine Elements I	4	3	3	1
ME412	Control	2	2	-	1
ME413	Air Conditioning and Refrigeration I	3	2	3	1
ME414	Engineering Materials	2	2	-	-
ME415	Theory of Vibrations	2	2	-	1
ME416	Power Plants I	2	2	-	1
ME417	Industrial Engineering	2	2	-	-
ME421	Design of Machine Elements II	3	3	-	1
ME422	Measurements	3	2	3	1
ME423	Air Conditioning and Refrigeration II	2	2	-	1
ME424	Failure of Engineering Materials	2	2	-	-
ME425	Vibrations Applications	3	2	3	1
ME426	Power Plants II	3	2	3	1
ME427	Project Managment	2	2	-	-
Total for 4th Year		35	30	15	10
TOTAL		111	90	57	30
			177		



#### 4.2.3.6 ME Program: Curriculum

Typical degree program is shown in the following Tables for Mechanical Engineering, where recommended ME course plan by semester is presented

#### First Year

First Semester						Second Semester					
Code	Subject	Units	Weekly hours			Code	Subject	Units	Weekly hours		
			Th	Prac	Tut				Th	Prac	Tut
E111	Mathematics I	3	3	-	1	E111	Mathematics II	3	3	-	1
ME112	Static Engineering Mechanics	3	3	1	1	ME122	Dynamic Engineering Mechanics	3	3	-	1
U113	Principles of Computer Science	3	2	2	-	U123	Computer Programming	3	2	2	-
E114	Engineering Drawing I	2	1	2	-	E124	Engineering Drawing II	2	1	2	-
ME115	Principle of production Engineering I	2	2	-	-	ME125	Principle of production engineering II	3	2	2	-
ME116	Electrical Engineering I	2	2	-	1	ME126	Electrical Engineering II	3	2	2	1
E117	Chemistry	2	2	-	-	E127	Physics	2	2	-	-
U118	English Language I	2	2	-	-	U128	English Language II	2	2	-	-
Total		19	17	5	3	Total		21	17	8	3
			25						28		

#### Second Year

First Semester						Second Semester					
Code	Subject	Units	Weekly hours			Code	Subject	Units	Weekly hours		
			Th	Prac	Tut				Th	Prac	Tut
E211	Engineering Mathematics I	3	3	-	1	E221	Engineering Mathematics II	3	3	-	1
ME212	Fluid Static	2	2	-	1	ME222	Fluid Dynamics	3	2	3	1
ME213	Thermodynamics I	2	2	-	1	ME223	Thermodynamics II	3	2	3	1
ME214	Engineering Metallurgy I	3	2	3	-	ME224	Engineering Metallurgy II	2	2	-	-
ME215	Mechanics of Materials	3	2	3	1	ME225	Strength of Materials	2	2	-	1
ME216	Mechanical Drawing I	2	1	2	-	ME226	Mechanical Drawing II	2	1	2	-
ME217	Programming of Computers	3	2	2	-	ME227	Advanced Programming	3	2	2	-
U218	Human Rights and Democracy	2	2	-	-						
Total		20	16	10	4	Total		18	14	10	4
			30						28		



### Third Year

First Semester						Second Semester					
Code	Subject	Units	Weekly hours			Code	Subject	Units	Weekly hours		
			Th	Prac	Tut				Th	Prac	Tut
E311	Engineering Analysis	3	3	-	1	E312	Numerical Analysis	3	2	2	1
ME312	Heat Transfer I	2	2	-	1	ME322	Heat Transfer II	3	2	3	1
ME313	Theory of Mechanisms	3	2	3	1	ME323	Theory of Machines	2	2	-	1
ME314	Internal Combustion Engines I	3	2	3	1	ME324	Internal Combustion Engines II	2	2	-	1
ME315	Gas Dynamics	2	2	-	1	ME325	Turbo Machinery	3	2	3	1
ME316	Electrical Machines I	2	2	-	1	ME326	Electrical Machines II	3	2	2	1
ME317	Manufacturing Processes I	3	2	3	-	ME327	Manufacturing Processes II	2	2	-	-
Total		18	15	9	6	Total		18	14	10	6
			30						30		

### Fourth Year

First Semester						Second Semester					
Code	Subject	Units	Weekly hours			Code	Subject	Units	Weekly hours		
			Th	Prac	Tut				Th	Prac	Tut
ME411	Design of Machine Elements I	4	3	3	1	ME412	Design of Machine Elements II	3	3	-	1
ME412	Control	2	2	-	1	ME422	Measurements	3	2	3	1
ME413	Air Conditioning and Refrigeration I	3	2	3	1	ME423	Air Conditioning and Refrigeration II	2	2	-	1
ME414	Engineering Materials	2	2	-	-	ME424	Failure of Engineering Materials	2	2	-	-
ME415	Theory of Vibrations	2	2	-	1	ME425	Vibrations Applications	3	2	3	1
ME416	Power Plants I	2	2	-	1	ME426	Power Plants II	3	2	3	1
ME417	Industrial Engineering	2	2	-	-	ME427	Project Managment	2	2	-	-
E418	Engineering Project	3	2	3	-	E428	Engineering Project (continued)	1	-	3	-
Total		20	17	9	5	Total		19	15	12	5
			31						32		



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## 4.2.4 Chemical Engineering Department

### 4.2.4.1 Course Description

The units are calculated such as, the theory hours (1 hour per semester = 1 unit), practical hours (2-3 hours per semester = 1 unit), and the tutorial hours (units = 0). Prerequisites, if any, are indicated at the course description. These have been established to assure an adequate and uniform background for students in advanced classes.

Course code is presented according to three requirements:

- 1- University requirement started by the letter **U**
- 2- Engineering College requirement is started by the letter **E**
- 3- Department Requirement (**Chemical Engineering**) is started by the letters **CHE**

Course code started by capital letters followed by number of 3-digits as following:

1<sup>st</sup> digit represents the class number

2<sup>nd</sup> digit represents the semester number

3<sup>rd</sup> digit represents the subject number

For eXamples:

EXample: U112 represents University requirements, first year, first semester, and third subject.





EXample: E212 represents Department Requirements, second year, first semester, and second subject.

#### 4.2.4.2 Graduation Requirements

Requirements	Units	Total hours/Year
University Requirements	6	90
College Requirements	22	420
Department Requirements	128	2535
Total	156	3045

#### 4.2.4.3 University Requirements: 6 Units

Subject Code	Subject	Units	Weekly hours		
			Th.	Prac.	Tut.
U111	Technical English I	2	2	-	-
U121	Technical English II	2	2	-	-
U211	Human Rights & Democracy	2	2	-	-
Total		6	6		

#### 4.2.4.4 College Requirements: 22 Units

No.	Subject Code	Subject	Units	Weekly hours		
				Th.	Prac.	Tut.
1	E112	Mathematics I	3	3	-	1
2	E122	Mathematics II	3	3	-	1
3	E116	Engineering Drawing I	1	-	2	-
4	E113	Workshop Technology	1	-	2	-
5	E123	Physics	2	2	-	-
Total for 1 <sup>st</sup> Year			10	8	4	2
6	E212	Applied Mathematics I	3	3	-	1
7	E222	Applied Mathematics II	3	3	-	1
Total for 2 <sup>nd</sup> Year			6	6	0	2
Total for 3 <sup>rd</sup> Year			0	0	0	0
8	E411	Engineering Project I	2	-	2	-
9	E421	Engineering Project II	2	-	2	-
10	E422	Projects Management	2	-	-	2
Total for 4 <sup>th</sup> Year			6	-	4	2
Total			22	14	8	6
			28			



#### 4.2.4.5 Department Requirements: 128 Units

Subject Code	Subject Title	Units	Weekly hours		
			Th.	Prac.	Tut.
CHE114	Computer Programming I	3	2	2	-
CHE115	Analytical Chemistry	3	2	2	-
CHE117	Chemical Engineering Principles I	3	3	-	1
CHE118	Engineering Mechanics	2	2	-	-
CHE124	Organic Chemistry	3	2	2	-
CHE125	Process Flow Sheetting	1	-	2	-
CHE126	Chemical Engineering Principles II	3	2	--	1
CHE127	Strength of Materials	2	2	-	-
	Total for 1st Year	20	15	8	2
CHE213	Fluid Mechanics I	3	3	-	1
CHE214	Physical Chemistry	3	2	2	1
CHE215	Electrical Technologies	3	2	2	-
CHE216	Chemical Engineering Principles III	2	2	-	1
CHE217	Engineering Statistics	2	2	-	-
CHE218	Virtual BASIC	3	2	2	-
CHE222	Fluid Mechanics II	4	3	2	1
CHE223	Chemical Eng. Thermodynamics I	3	3	-	1
CHE224	Physical Chemistry II	2	2	-	1
CHE225	Fuels and Sustainable Energy	2	2	-	-
CHE226	Chemical Engineering Principles IV	2	2	-	1
CHE227	MATLAB Engineering	3	2	2	-
CHE228	Environmental Pollution	2	2	-	-
	Total for 2nd Year	34	29	10	7
CHE311	Chemical Engineering Mathematics I	3	3	-	1
CHE312	Heat Transfer I	4	3	2	1
CHE313	Mass Transfer I	3	3	-	1
CHE314	Chemical Eng. Thermodynamics II	3	3	-	1
CHE315	Engineering Materials Properties	3	2	2	-
CHE316	Petrochemical Engineering	2	2	-	-
CHE317	Water Technologies	2	2	-	-
CHE321	Chemical Engineering Mathematics II	3	3	-	1
CHE322	Heat Transfer II	3	3	-	1
CHE323	Mass Transfer II	3	3	-	1



CHE324	Corrosion Engineering	2	2	-	-
CHE325	Engineering Economics	2	2	-	-
CHE326	Chemical Industries	2	2	-	-
CHE327	Reactor design I	3	3	-	1
	Total for 3rd Year	38	36	4	8
CHE412	Unit Operation	4	3	2	1
CHE413	Process Dynamics	3	3	-	1
CHE414	Equipment Design I	2	2	-	1
CHE415	Reactor Design II	3	3	-	1
CHE416	Petroleum Refinery I	3	3	-	1
CHE417	Numerical Methods	3	2	2	-
CHE423	Transport Phenomena	3	3	-	1
CHE424	Process Control and Instrumentation	4	3	2	1
CHE425	Equipment Design II	2	2	-	1
CHE426	Catalytic Reactor Design	2	2	-	-
CHE427	Petroleum Refinery II	4	3	2	1
CHE428	Simulation & Optimization	3	2	2	-
	Total for 4th Year	36	31	10	9
TOTAL		128	111	32	26
			169		

#### 4.2.4.6 CHE Program: Curriculum

Typical degree program is shown in the following Tables for Chemical Engineering, where recommended CHE course plan by semester is presented.

#### First Year First Semester

No	CODE	SUBJECT	Hours/Week			Units
			Th.	Prac.	Tut	
1	U111	Technical English I	2	-	-	2
2	E112	Mathematics I	3	-	1	3
3	E113	Workshop Technology	-	2	-	1
4	CHE114	Computer Programming I	2	2	-	3
5	CHE115	Analytical Chemistry	2	2	-	3
6	CHE116	Engineering Drawing	-	2	-	1
7	CHE117	Chemical Engineering Principles I	3	-	1	3
8	CHE118	Engineering Mechanics	2	-	-	2
Total			14	8	2	18
			24			



## Second Semester

No	CODE	SUBJECT	Hours/Week			Units
			Th.	Prac.	Tut	
1	U121	Technical English II	2	-	-	2
2	E122	Mathematics II	3	-	1	3
3	E123	Physics	2	-	-	2
4	CHE124	Organic Chemistry	2	2	-	3
5	CHE125	Process flow sheeting	-	2	-	1
6	CHE126	Chemical Engineering Principles II	3	-	1	3
7	CHE127	Strength of Materials	2	-	-	2
Total			14	4	2	16
			20			

## Second Year

### First Semester

No	CODE	SUBJECT	Hours/Week			Units
			Th.	Prac.	Tut	
1	U211	Human Rights& Democracy	2	-	-	2
2	E212	Applied Mathematics I	3	-	1	3
3	CHE213	Fluid Mechanics I	3	-	1	3
4	CHE214	Physical Chemistry	2	2	1	3
5	CHE215	Electrical Technologies	2	2	-	3
6	CHE216	Chemical Engineering Energy Balance	2	-	1	2
7	CHE217	Engineering Statistics	2	-	-	2
8	CHE218	Virtual BASIC	2	2	-	3
Total			18	6	4	21
			28			



## Second Semester

No	CODE	SUBJECT	Hours/Week			Units
			Th.	Prac.	Tut	
1	E221	Applied Mathematics II	3	-	1	3
2	CHE222	Fluid Mechanics 11	3	2	1	4
3	CHE223	Chemical Eng. Thermodynamics I	3	-	1	3
4	CHE224	Physical Chemistry II	2	-	1	2
5	CHE225	Fuels and Sustainable Energy	2	-	-	2
6	CHE226	Materials and Energy Balance	2	-	1	2
7	CHE227	MATLAB Engineering	2	2	-	3
8	CHE228	Environmental Pollution	2	-	-	2
Total			19	4	5	21
			28			

## Third Year

### First Semester

No	CODE	SUBJECT	Hours/Week			Units
			Th.	Prac.	Tut	
1	CHE311	Chemical Eng. Analysis I	3	-	1	3
2	CHE312	Heat Transfer I	3	2	1	4
3	CHE313	Mass Transfer I	3	-	1	3
4	CHE314	Chemical Eng. Thermodynamics II	3	-	1	3
5	CHE315	Engineering Materials Properties	2	2	-	3
6	CHE316	Petrochemical Engineering	2	-	-	2
7	CHE317	Water Technologies	2	-	-	2
Total			18	4	4	20
			26			





## Second Semester

No	CODE	SUBJECT	Hours/Week			Units
			Th.	Prac.	Tut	
1	CHE321	Chemical Eng. Analysis II	3	-	1	3
2	CHE322	Process Heat Transfer	3	-	1	3
3	CHE323	Mass Transfer II	3	-	1	3
4	CHE324	Corrosion Engineering	2	-	-	2
5	CHE325	Engineering Economics	2	-	-	2
6	CHE326	Chemical Industries	2	-	-	2
7	CHE327	Reactor design I	3	-	1	3
Total			18	-	4	18
			22			

\*Evaluation of Industrial training carried out by students after the second semester is to be evaluated.

## Fourth Year

### First Semester

No	CODE	SUBJECT	Hours/Week			Units
			Th.	Prac.	Tut	
1	E411	Engineering Project I	-	2	-	2
2	CHE412	Unit Operation	3	2	1	4
3	CHE413	Process Dynamics	3	-	1	3
4	CHE414	Equipment Design I	2	-	1	2
5	CHE415	Reactor Design II	3	-	1	3
6	CHE416	Petroleum Refinery I	3	-	1	3
7	CHE417	Numerical Methods	2	2	-	3
Total			16	6	5	20
			27			



## Second Semester

No	CODE	SUBJECT	Hours/Week			Units
			Th.	Prac.	Tut	
1	E421	Engineering Project II	-	2	-	2
2	E422	Projects Management & Ethics	2	-	-	2
3	CHE423	Transport Phenomena	3	-	1	3
4	CHE424	Process Control &Instrumentation	3	2	1	4
5	CHE425	Equipment Design II	2	-	1	2
6	CHE426	Catalytic Reactor Design	2	-	-	2
7	CHE427	Petroleum Refinery II	3	2	1	4
8	CHE428	Optimization and Simulation	2	2	-	3
Total			17	8	4	22
			29			



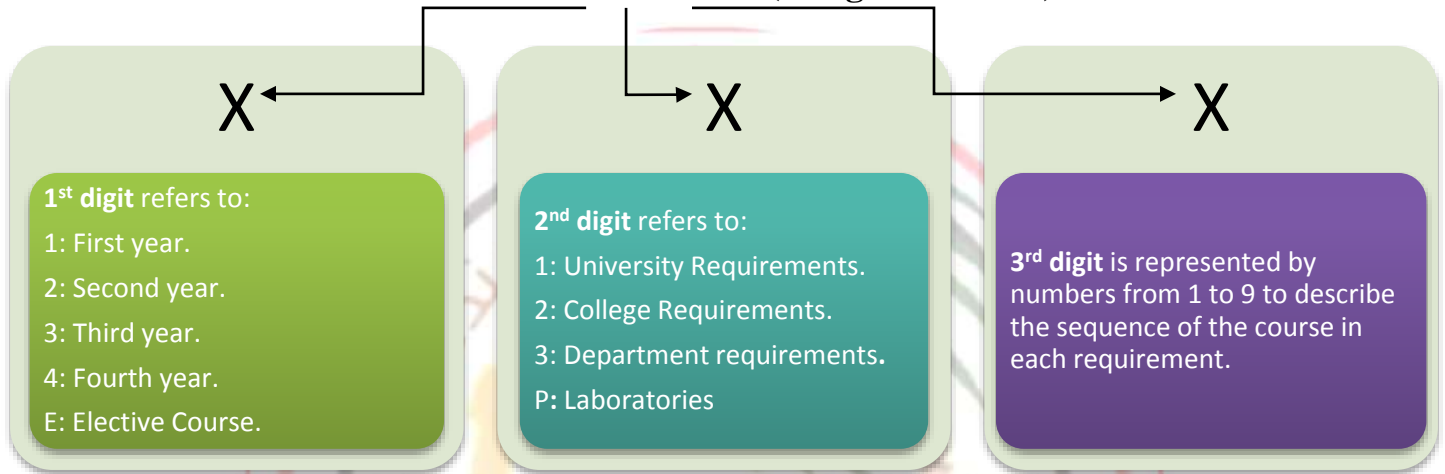
## 4.2.5 Computer Engineering Department

### 4.2.5.1 Course Description

In computer engineering department, each curricular is described by:

1. Curricular/Course Number and Title: each course is coded as:

**Course Number = CoE + X X X (3 Digits Number)**



For eXample: **CoE432 Computer Network** means that this is a computer engineering department course that is given to the **fourth year**; it is the **second course** within the **department requirement** courses.

2. Required or elective: whether it is required course for the program or an elective one.
3. Course description: defines what the course is designed for and why it is given to the students.
4. Prerequisites (if any): these have been established to assure an adequate and uniform background for students in advanced classes.
5. Course Topics: detailed syllabi of the course.



#### 4.2.5.2 Graduation Requirements

To graduate, students have to complete 157 credit hours during her/his four years study

Total CoE Requirements: 157 credit hours / 56 courses		
Requirements	Credit-hours "Units"	Total hours
University Requirements	15	225
College Requirements	29	555
Department Requirements	113	2340
Total	157	3120

Total CoE Requirements: 157credit hours / 56 courses	
Requirements	Credit-hours "Units"
Humanities and Social Sciences CoE 112, CoE 114, CoE 212, CoE 422	8
Mathematics and Basic Sciences CoE 121, CoE 122, CoE 221, CoE 222, CoE 223, CoE 231, CoE 321, CoE 111, CoE 113, CoE 211	28
Computer Engineering Other courses	121
Total	157

Total CoE Requirements: 157credit hours / 56 courses	
Topics	Credit-hours
Mathematics	19
Basic Science (Physics, Chemistry)	9
English, humanities and social sciences	8
Required computer science	9
Required computer engineering	94
Elective computer engineering	9
Other engineering courses	9
Total	157
Credit Hours for Computer Engineering Program	



#### 4.2.5.3 University Requirements: 15 Units

Subject Code	Subject	Units Credit- hours	Weekly hours		
			Th.	Prac.	Tut.
CoE 111	General Chemistry	3	3		
CoE 112	English Language I	2	2		
CoE 114	English Language II/ Technical Writing	2	2		
CoE 113	Basic Physics	3	3		
CoE 211	Electronic Device Physics	3	3		
CoE 212	Human Rights, Democracy & Freedom	2	2		
Total		15	15	0	0
			15		

#### 4.2.5.4 College Requirements: 29 Units

Subject Code	Subject	Units	Weekly hours		
			Th.	Prac.	Tut.
CoE 121	Calculus I	3	3		1
CoE 122	Calculus II	3	3		1
CoE 123	Engineering Design / Auto CAD	3	2	2	
CoE 221	Calculus III	3	3		1
CoE 222	Differential Equations	3	3		1
CoE 223	Probability and Statistics	2	2		1
CoE 321	Linear Algebra	3	3		
CoE 322	Engineering Economics	2	2		
CoE 323	Random Signals & Systems	3	3		1
CoE 421	Ethics, Society, Profession	2	2		
CoE 422	Project management	2	2		1
Total		29	28	2	7
			37		





#### 4.2.5.5 Department Requirements: 113 Units

Subject Code	Subject Title	Units	Weekly hours		
			Th.	Prac.	Tut.
CoE 131	Electric Circuits	3	3		1
CoE 132	Programming & Prob. Solving	3	3		1
CoE 133	Fundamentals of Logic systems	2	2		1
CoE 1P1	Lab1(Programming+ Electrical Circuits)	3		6	
CoE 134	Digital Logic Circuits	2	2		1
CoE 135	Object Oriented Programming and Data Structure	3	3		1
CoE 1P2	Lab2(OOP + Digital Logic)	3		6	
CoE 231	Discrete Structures	2	2		1
CoE 232	Signals & Systems	3	3		1
CoE 233	Digital System Design	3	3		1
CoE 2P1	Lab3(Digital System Design+ Device Physics)	3		6	
CoE 234	Computer Organization	3	3		
CoE 235	Algorithms	3	3		
CoE 236	Digital Electronics	3	3		1
CoE 237	Instrumentation	3	3		
CoE 2P2	Lab4(Computer Organization+ Algorithms)	3		6	
CoE 331	Computer Architecture	3	3		
CoE 332	Operating Systems	3	3		
CoE 333	Digital Signal Processing	3	3		1
CoE 334	Analog Electronics	3	3		
CoE 3P1	Lab5( OS + DSP + Electronics)	4		8	
CoE 335	Microprocessor Interface	3	3		
CoE 336	Operating system Programming	2	2		
CoE 337	Digital Communication	2	2		1
CoE 338	Computer Maintenance	2	1	2	
CoE E3X	CoE Elective I (X= 1,2,3, .....,9)	3	3		
CoE 3P2	Lab6( Microprocessor+ OSP + Matlab)	4		8	
CoE 431	Software Design	3	3		
CoE 432	Computer Network	3	3		
CoE 433	Control System	3	3		1
CoE 434	Engineering Project ( Two semesters)	6	1*2	4*2	
CoE E3X	CoE Elective II (X= 1,2,3, .....,9)	3	3		
CoE 4P1	Lab7(Software Design+ Control system)	3		6	
CoE 435	Embedded Computing Systems	3	3		



CoE 436	Network Technology	3	3		
CoE 437	Parallel Processing Architecture	3	3		
CoE E3X	CoE Elective III (X= 1,2,3, .....,9)	3	3		
CoE 4P2	Lab8(Embedded Computing+ Networks)	3		6	
TOTAL		113	82	62	12
			156		

#### 4.2.5.6 COE Program: Curriculum

##### First year Semester 1

Code	Subject	Number of Hours Per Week			Credit Units
		Theoretical	Practical	Tutorial	
CoE 121	Calculus I	3		1	3
CoE 131	Electric Circuits	3		1	3
CoE 132	Programming & Prob. Solving	3		1	3
CoE 133	Fundamentals of Logic systems	2		1	2
CoE 111	General Chemistry	3			3
CoE 112	English Language I	2			2
CoE 1P1	Lab1(Programming+ Electrical Circuits)		6		3
Total		16	6	4	19
		26			

##### Semester 2

Code	Subject	Number of Hours Per Week			Credit Units
		Theoretical	Practical	Tutorial	
CoE 122	Calculus II	3		1	3
CoE 134	Digital Logic Circuits	2		1	2
CoE 135	Object Oriented Programming and Data Structure	3		1	3
CoE 123	Engineering Design / Auto CAD	2	2		3
CoE 113	Basic Physics	3			3
CoE 114	English language II/ Technical Writing	2			2
CoE 1P2	Lab2(OOP + Digital Logic)		6		3
Total		15	8	3	19
		26			



**Second year  
Semester 3**

Code	Subject	Number of Hours Per Week			Credit Units
		Theoretical	Practical	Tutorial	
CoE 221	Calculus III	3		1	3
CoE 231	Discrete Structures	2		1	2
CoE 232	Signals & Systems	3		1	3
CoE 233	Digital System Design	3		1	3
CoE 211	Electronic Device Physics	3			3
CoE 212	Human Rights, Democracy & Freedom	2			2
CoE 2P1	Lab3(Digital Design + Device Physics)		6		3
Total		16	6	4	19
		26			

**Semester 4**

Code	Subject	Number of Hours Per Week			Credit Units
		Theoretical	Practical	Tutorial	
CoE 222	Differential Equations	3		1	3
CoE 223	Probability and Statistics	2		1	2
CoE 234	Computer Organization	3			3
CoE 235	Algorithms	3			3
CoE 236	Digital Electronics	3		1	3
CoE 237	Instrumentation	3			3
CoE 2P2	Lab4(Computer Organization+ Algorithms)		6		3
Total		17	6	3	20
		26			

**Third year  
Semester 5**

Code	Subject	Number of Hours Per Week			Credit Units
		Theoretical	Practical	Tutorial	
CoE 321	Linear Algebra	3			3
CoE 331	Computer Architecture	3			3
CoE 332	Operating Systems	3			3
CoE 333	Digital Signal Processing	3		1	3
CoE 334	Analog Electronics	3			3
CoE 322	Engineering Economics	2			2
CoE 3P1	Lab5( OS + DSP + Electronics)		8		4
Total		17	8	1	21
		26			



### Semester 6

Code	Subject	Number of Hours Per Week			Credit Units
		Theoretical	Practical	Tutorial	
CoE 323	Random Signals & Systems	3		1	3
CoE 335	Microprocessor Interface	3			3
CoE 336	Operating system Programming	2			2
CoE 337	Digital Communication	2		1	2
CoE 338	Computer Maintenance	1	2		2
CoE E3X	CoE Elective I (X= 1,2,3, .....,9)	3			3
CoE 3P2	Lab6( Microprocessor+ OSP + Matlab)		8		4
Total		14	10	2	19
		26			

### Fourth year

### Semester 7

Code	Subject	Number of Hours Per Week			Credit Units
		Theoretical	Practical	Tutorial	
CoE 431	Software Design	3			3
CoE 432	Computer Network	3			3
CoE 433	Control System	3		1	3
CoE 434	Engineering Project (continued)	1	4		continued
CoE 421	Ethics, Society, Profession	2			2
CoE E3X	CoE Elective II (X= 1,2,3, .....,9)	3			3
CoE 4P1	Lab7(Software Design+ Control system)		6		3
Total		15	10	1	17
		26			

### Semester 8

Code	Subject	Number of Hours Per Week			Credit Units
		Theoretical	Practical	Tutorial	
CoE 422	Project management	2		1	2
CoE 435	Embedded Computing Systems	3			3
CoE 436	Network Technology	3			3
CoE 437	Parallel Processing Architecture	3			3
CoE 434	Engineering Project	1	4		6
CoE E3X	CoE Elective III (X= 1,2,3, .....,9)	3			3
CoE 4P2	Lab8(Embedded Computing+ Networks)		6		3
Total		15	10	1	23
		26			



## 4.2.6 Materials Engineering Department

### 4.2.6.1 Course Description

The units are calculated such as, the theory hours (1 hour per semester = 1 unit), practical hours (2-3 hours per semester = 1 unit), and the tutorial hours (units = 0). Prerequisites, if any, are indicated at the course description. These have been established to assure an adequate and uniform background for students in advanced classes.

Course code is presented according to three requirements:

- 1- University requirement started by the letter **U**
- 2- Engineering College requirement is started by the letter **E**
- 3- Department Requirement (**Materials** Engineering) is started by the letters **MAE**

Course code started by capital letters followed by number of 3-digits as following:

1<sup>st</sup> digit represents the class number

2<sup>nd</sup> digit represent the semester number, **1**: 1<sup>st</sup> Semester, **2**: 2<sup>nd</sup> Semester, **0**: Yearly

3<sup>rd</sup> digit represent the subject number

For eXamples:

EXample: U112 represents University requirements, first year, first semester, and second subject.





EXample: MAE212 represents Department Requirements, second year, first semester, and second subject.

#### 4.2.6.2 Graduation Requirements

Requirements	Units	Total hours/Year
University Requirements	10	210
College Requirements	26	615
Department Requirements	112	2280
Total	148	3105

#### 4.2.6.3 University Requirements: 10 Units

Subject Code	Subject	Units	Weekly hours		
			Th.	Prac.	Tut.
U116	Principles of Computer Science	3	2	2	-
U126	Computer Science	3	2	2	-
U119	English	1	1	-	1
U129	English / Technical	1	1	-	1
U218	Human Rights & Democracy Concepts	2	2	-	-
Total		10	14		

#### 4.2.6.4 College Requirements: 26 Units

No.	Subject Code	Subject	Units	Weekly hours		
				Th.	Prac.	Tut.
1	E111	Mathematics I	3	3	-	1
2	E121	Mathematics II	3	3	-	1
3	E114	Engineering Drawing I	2	1	2	-
4	E124	Engineering Drawing II	2	1	2	-
5	E127	Applied Sciences	2	2	-	-
Total for 1 <sup>st</sup> Year			12	10	4	2
6	E211	Applied Mathematics I	2	2	-	2
7	E221	Applied Mathematics II	2	2	-	2
Total for 2 <sup>nd</sup> Year			4	4	0	4
8	E311	Engineering Analysis	3	2	2	2
9	E321	Numerical Analysis	3	2	2	1
Total for 3 <sup>rd</sup> Year			6	4	4	3
10	E407	Engineering Project	4	2	4	-
Total for 4 <sup>th</sup> Year			4	2	4	0
Total			26	20	12	9
				41		



#### 4.2.6.5 Department Requirements: 112 Units

Subject Code	Subject Title	Units	Weekly hours		
			Th.	Prac.	Tut.
MAE112	Engineering Mechanics / Static (MAE112)	3	3	-	1
MAE113	Materials EXtraction Technology (MAE113)	2	2	-	1
MAE115	Principles of Electrical Engineering (MAE115)	3	2	2	-
MAE117	Principles of Engineering Materials (MAE117)	2	2	-	-
MAE118	Engineering Workshops (I)	1	-	2	-
MAE122	Engineering Mechanics / Dynamic (MAE122)	3	3	-	1
MAE123	Materials EXtraction Methods (MAE123)	2	2	-	1
MAE125	Electrical Engineering (MAE125)	3	2	2	-
MAE128	Engineering Workshops (I)	1	-	2	-
Total for 1 <sup>st</sup> Year		20	16	8	4
MAE212	Metallurgical Thermodynamics (MAE212)	2	2	-	-
MAE213	Physical Metallurgy (MAE213)	2	2	-	-
MAE214	Mechanics of Materials (MAE214)	3	3	-	1
MAE215	Thermodynamics (MAE215)	2	2	-	-
MAE216	Introduction to Computer Programming (MAE216)	3	2	2	-
MAE217	Mechanical Drawing (I) (MAE217)	2	1	2	-
MAE219	Laboratory (I) (MAE219)	2	-	3	-
MAE222	Chemical Metallurgy (MAE222)	2	2	-	-
MAE223	Engineering Metallurgy (MAE223)	2	2	-	-
MAE224	Strength of Materials (MAE224)	3	3	-	1
MAE225	Fluid Mechanics (MAE225)	2	2	-	-
MAE226	Computer Programming (MAE226)	3	2	2	-
MAE227	Mechanical Drawing II (MAE227)	2	1	2	-
MAE228	Laboratory (II) (MAE228)	2	-	3	-
Total for 2 <sup>nd</sup> Year		32	24	14	2
MAE312	Behavior of Engineering Materials (MAE312)	3	3	-	-
MAE313	Heat Treatments of Ferrous metals (MAE313)	2	2	-	1
MAE314	Engineering Materials Technology (MAE314)	2	2	-	1
MAE315	Ceramic Materials (MAE315)	2	2	-	-
MAE316	Corrosion (I) (MAE316)	2	2	-	1
MAE317	Conduction Heat Transfer (MAE317)	2	2	-	1



MAE318	Laboratories (I) (MAE318)	2	-	3	-
MAE322	Failure of Engineering Materials (MAE322)	3	3	-	-
MAE323	Heat Treatments of non-ferrous metals (MAE323)	2	2	-	1
MAE324	Welding and Cutting (MAE324)	2	2	-	1
MAE325	Polymers Engineering (MAE325)	2	2	-	-
MAE326	Corrosion (II) (MAE326)	2	2	-	1
MAE327	Convection Heat Transfer (MAE327)	2	2	-	1
MAE328	Laboratories (II) (MAE328)	2	-	3	-
Total for 3 <sup>rd</sup> Year		30	26	6	8
MAE411	Mechanical Design (MAE411)	3	2	2	-
MAE412	Non-Destructive Testing (MAE412)	2	2	-	1
MAE413	Composite Materials (MAE413)	2	2	-	1
MAE414	Powder Metallurgy (MAE414)	2	2	-	1
MAE415	CAD & CAM (MAE415)	2	2	-	-
MAE416	Industrial Engineering (MAE416)	2	2	-	1
MAE418	Laboratories (I) (MAE418)	2	-	3	-
MAE421	Selection of Engineering Materials for Design (MAE421)	2	2	-	1
MAE422	X-Ray Diffraction and Microscopy (MAE422)	2	2	-	1
MAE423	Advance Materials (MAE423)	2	2	-	1
MAE424	Stress Analysis and Plasticity (MAE424)	2	2	-	1
MAE425	Nano Materials (MAE425)	2	2	-	-
MAE426	Project Management (MAE426)	3	2	2	2
MAE428	Laboratories (II) (MAE428)	2	-	3	-
Total for 4 <sup>th</sup> Year		30	24	10	10
TOTAL		112	90	38	24
			152		



#### 4.2.6.6 MAE Program: Curriculum

Typical degree program is shown in the following Tables for Materials Engineering, where recommended MAE course plan by semester is presented

#### First Year

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Mathematics I (E111)	3	3	-	1	Mathematics II (E121)	3	3	-	1
Engineering Mechanics / Static (MAE112)	3	3	-	1	Engineering Mechanics / Dynamic (MAE122)	3	3	-	1
Materials EXtraction Technology (MAE113)	2	2	-	1	Materials EXtraction Methods (MAE123)	2	2	-	1
Engineering Drawing I (E114)	2	1	2	-	Engineering Drawing II (E124)	2	1	2	-
Principles of Electrical Engineering (MAE115)	3	2	2	-	Electrical Engineering (MAE125)	3	2	2	-
Principles of Computer Science (U116)	3	2	2	-	Computer Science (U126)	3	2	2	-
Principles of Engineering Materials (MAE117)	2	2	-	-	Applied Sciences (E127)	2	2	-	-
Engineering Workshops (I) (MAE118)	1	-	2	-	Engineering Workshops (II) (MAE128)	1	-	2	-
English (U119)	1	1	-	1	English / Technical (U129)	1	1	-	1
Total	20	16	8	4	Total	20	16	8	4
		28					28		



## Second Year

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Applied Mathematics I (E211)	2	2	-	2	Applied Mathematics II (E221)	2	2	-	2
Metallurgical Thermodynamics (MAE212)	2	2	-	-	Chemical Metallurgy (MAE222)	2	2	-	-
Physical Metallurgy (MAE213)	2	2	-	-	Engineering Metallurgy (MAE223)	2	2	-	-
Mechanics of Materials (MAE214)	3	3	-	1	Strength of Materials (MAE224)	3	3	-	1
Thermodynamics (MAE215)	2	2	-	-	Fluid Mechanics (MAE225)	2	2	-	-
Introduction to Computer Programming (MAE216)	3	2	2	-	Computer Programming (MAE226)	3	2	2	-
Mechanical Drawing (I) (MAE217)	2	1	2	-	Mechanical Drawing II (MAE227)	2	1	2	-
Human Rights and Democracy Concepts (U218)	2	2	-	-	Laboratory (II) [Chemical Metallurgy+ Engineering Metallurgy + Strength of Mat. + Fluid Mechanics] (MAE228)	2	-	3	-
Laboratory (I) [Metallurgical thermo. + Physical Metallurgy + Mechanics of Mat. + Thermodynamics] (MAE219)	2	-	3	-					
Total	20	16	7	3	Total	18	14	7	3
		26					24		





### Third Year

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Engineering Analysis (E311)	3	2	2	2	Numerical Analysis (E321)	3	2	2	1
Behavior of Engineering Materials (MAE312)	3	3	-	-	Failure of Engineering Materials (MAE322)	3	3	-	-
Heat Treatments of Ferrous metals (MAE313)	2	2	-	1	Heat Treatments of non-ferrous metals (MAE323)	2	2	-	1
Engineering Materials Technology (MAE314)	2	2	-	1	Welding and Cutting (MAE324)	2	2	-	1
Ceramic Materials (MAE315)	2	2	-	-	Polymers Engineering (MAE325)	2	2	-	-
Corrosion (I) (MAE316)	2	2	-	1	Corrosion (II) (MAE326)	2	2	-	1
Conduction Heat Transfer (MAE317)	2	2	-	1	Convection Heat Transfer (MAE327)	2	2	-	1
Laboratories (I) [Heat treatments + Eng. Mat. Technology + ceramic + corrosion + heat transfer] (MAE318)	2	-	3	-	Laboratories (II) [Heat treatments + Welding & Cutting + Polymers + corrosion + heat transfer] (MAE328)	2	-	3	-
Total	18	15	5	6	Total	18	15	5	5
		26					25		



## Forth Year

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Mechanical Design (MAE411)	3	2	2	-	Selection of Engineering Materials for Design (MAE421)	2	2	-	1
Non-Destructive Testing (MAE412)	2	2	-	1	X-Ray Diffraction and Microscopy (MAE422)	2	2	-	1
Composite Materials (MAE413)	2	2	-	1	Advance Materials (MAE423)	2	2	-	1
Powder Metallurgy (MAE414)	2	2	-	1	Stress Analysis and Plasticity (MAE424)	2	2	-	1
CAD & CAM (MAE415)	2	2	-	-	Nano Materials (MAE425)	2	2	-	-
Industrial Engineering (MAE416)	2	2	-	1	Project Management (MAE426)	3	2	2	2
Engineering Project (E407)	2	1	2	-	Engineering Project (E407)	2	1	2	-
Laboratories (I) [Non-destructive Tests + Powder Metallurgy + CAD& CAM] (MAE418)	2	-	3	-	Laboratories (II) [Eng. Mat. Selection + X-Ray Diffraction + Nano Mat. ] (MAE428)	2	-	3	-
Total	17	13	7	4	Total	17	13	7	6
		24					26		



## 4.2.7 Architectural Engineering Department

### 4.2.7.1 Course Description

The units are calculated such as, the theory hours (1 hour per semester = 1 unit), and practical hours (2-3 hours per semester = 1 unit). Prerequisites, if any, are indicated at the course description. These have been established to assure an adequate and uniform background for students in advanced classes.

Course code is presented according to three requirements:

- 1- University requirement started by the letter **U**
- 2- Engineering College requirement is started by the letter **E**
- 3- Department Requirement (**Architecture** Engineering) is started by the letters **ARE**

Course code started by capital letters followed by number of 3- digits as following:

1<sup>st</sup> digit represents the class number.

2<sup>nd</sup> digit represents the semester number.

3<sup>rd</sup> digit represents the subject number.

Note. When the second digit is 0 that's mean the system of study is annual.

For eXamples:

EXample: U112 represents University requirements, first year, first semester, and second subject.

EXample: ARE212 represents Department Requirements, second year, first semester, and second subject.



#### 4.2.7.2 Graduation Requirements

Requirements	Units	Total hours/Year
University Requirements	4	60
College Requirements	26	570
Department Requirements	163	3405
Total	193	4035

#### 4.2.7.3 University Requirements: 4 Units

Subject Code	Subject	Units	Weekly hours	
			Th.	Prac.
U111	English Language	1	1	-
U121	English Language	1	1	-
U221	Human Rights & Democracy	2	2	-
Total		4	4	

#### 4.2.7.4 College Requirements: 26 Units

No.	Subject Code	Subject	Units	Weekly hours	
				Th.	Prac.
1	E111	Mathematics I	2	2	
2	E121	Mathematics II	2	2	
3	E112	Computer Fundamentals	2	1	2
4	E122	Computer Applications	2	1	2
Total for 1 <sup>st</sup> Year			8	6	4
5	E211	Engineering Mechanics	2	2	-
6	E221	Strength of Materials	2	2	-
Total for 2 <sup>nd</sup> Year			4	4	0
Total for 3 <sup>rd</sup> Year			0	0	0
Total for 4 <sup>th</sup> Year			0	0	0
7	E511	Thesis	14	2+2	4+16
Total for 5 <sup>th</sup> Year			14	4	20
Total			26	14	24
				38	



#### 4.2.7.5 Department Requirements: 163 Units

Subject Code	Subject Title	Units	Weekly hours	
			Th.	Prac.
ARE101	Architectural Design I	12	2	8
ARE102	Architectural Graphic I	4	1	2
ARE103	Free hand drawing I	3	-	3
ARE111	Principles of Art & Architecture I	2	2	-
ARE121	Principles of Art & Architecture II	2	2	-
ARE112	Building Materials I	2	2	-
ARE122	Building Materials II	2	2	-
Total for 1 <sup>st</sup> Year		27	11	13
ARE201	Architectural Design II	12	2	8
ARE202	Architectural Graphic II	4	1	2
ARE203	Free hand drawing II	3	-	3
ARE211	Building Construction I (Bearing Walls System )	3	1	3
ARE221	Building Construction II (Skeleton System)	3	1	3
ARE212	History of Architecture I (Mesopotamia & old Egypt Architecture)	2	2	-
ARE222	History of Architecture II (Greek & Roman Architecture)	2	2	-
ARE213	Design methodology and logic	2	2	-
ARE214	AutoCAD I	2	1	2
ARE224	AutoCAD II	2	1	2
Total for 2 <sup>nd</sup> Year		35	13	23
ARE301	Architectural Design III	14	2	10
ARE311	Building Construction III (Precast building)	3	1	4
ARE321	Building Construction IV (Steel Structure)	3	1	4
ARE312	History of Architecture III (Christian & renaissance Architecture)	2	2	-
ARE322	History of Architecture IV (Post-Renaissance Architecture)	2	2	-
ARE313	Principles of Urban Planning	2	2	-
ARE323	Principles of Urban Design	2	2	-
ARE314	3d-maX I	2	1	2
ARE324	3d-maX II	2	1	2
ARE315	Structures I (Structural Behavior )	2	2	-
ARE325	Structures II (Structural Design)	2	2	-
ARE316	Sanitary services	2	2	-
ARE326	surveying	2	1	2
ARE317	Air-conditioning services	2	2	-
Total for 3 <sup>rd</sup> Year		42	23	24
ARE401	Architectural Design IV	14	2	10
ARE411	Interior Spaces Design	2	1	2
ARE421	EXterior Spaces Design	2	1	2
ARE412	Housing	2	2	-
ARE422	Islamic Architecture	2	2	-





ARE413	Theory of Architecture I	2	2	-
ARE423	Theory of Architecture II	2	2	-
ARE414	Climate & Architecture	2	2	-
ARE424	Architectural Acoustics	2	2	-
ARE415	Building Technology	2	2	-
ARE425	Engineering services	2	2	-
ARE416	Architecture & society	2	2	-
ARE426	Sustainable Architecture	2	2	-
	Total for 4 <sup>th</sup> Year	38	24	14
ARE511	Architectural Design V	7	2	10
ARE512	Arabic Temporary Architecture	2	2	-
ARE522	Iraqi Temporary Architecture	2	2	-
ARE513	Architectural Philosophy	2	2	-
ARE523	Architectural Criticism	2	2	-
ARE514	Estimating & Specifications	2	2	-
ARE524	Occupational Practice	2	2	-
ARE525	Engineering Economy	2	2	-
	Total for 5 <sup>th</sup> Year	21	16	10
TOTAL		163	87	84
			171	

#### 4.2.7.6 ARE Program: Curriculum

Typical degree program is shown in the following Tables for Architecture engineering, where recommended ARE course plan by semester is presented

##### A. Annual subjects

###### First Year

Subject	Units	Weekly hours	
		Th.	Prac.
Architectural Design I	12	2	8
Architectural Graphic I	4	1	2
Free hand drawing I	3	-	3
Total	19	3	13
		16	



### Second Year

Subject	Units	Weekly hours	
		Th.	Prac.
Architectural Design II	12	2	8
Architectural Graphic II	4	1	2
Free hand drawing II	3	–	3
Total	19	3	13
		16	

### Third Year

Subject	Units	Weekly hours	
		Th.	Prac.
Architectural Design III	14	2	3 10
Total	14	12	

### Fourth Year

<	Units	Weekly hours	
		Th.	Prac.
Architectural Design IV	14	2	10
Total	14	12	

### Fifth Year

Subject	Units	First Semester		Second Semester	
		Weekly hours		Weekly hours	
		Th.	Prac.	Th.	Prac.
Thesis	14	2	4	2	16
Total	14	6		18	



## B. Semester Subjects

### First Year

First Semester				Second Semester			
Subject	Units	Weekly hours		Subject	Units	Weekly hours	
		Th.	Prac.			Th.	Prac.
English Language	1	1	-	English Language	1	1	-
Mathematics I	2	2	-	Mathematics II	2	2	-
Principles of Art & Architecture I	2	2	-	Principles of Art & Architecture II	2	2	-
Building Materials I	2	2	-	Building Materials II	2	2	-
Computer Fundamentals	2	1	2	Computer Applications	2	1	2
Total	9	8	2	Total	9	8	2
		10				10	

### Second Year

First Semester				Second Semester			
Subject	Units	Weekly hours		Subject	Units	Weekly hours	
		Th.	Prac.			Th.	Prac.
Building Construction I (Bearing Walls System )	3	1	3	Building Construction II (Skeleton System)	3	1	3
History of Architecture I (Mesopotamia & old Egypt Architecture)	2	2	-	History of Architecture II (Greek & Roman Architecture)	2	2	-
AutoCAD I	2	1	2	AutoCAD II	2	1	2
Engineering Mechanics	2	2	-	Strength of Materials	2	2	-
Design methodology and logic	2	2	-	Human Rights& Democracy	2	2	-
Total	11	8	5	Total	11	8	5
		13				13	



### Third Year

First Semester				Second Semester			
Subject	Units	Weekly hours		Subject	Units	Weekly hours	
		Th.	Prac.			Th.	Prac.
Building Construction III (Precast building)	3	1	4	Building Construction IV (Steel Structure)	3	1	4
History of Architecture III (Christian&Renaissance Architecture)	2	2	-	History of Architecture IV (Post-Renaissance Architecture)	2	2	-
Principles of Urban Planning	2	2	-	Principles of Urban Design	2	2	-
3d-maX I	2	1	2	3d-maX II	2	1	2
Structures I (Structural Behavior )	2	2	-	Structures II (Structural Design)	2	2	-
Sanitary services	2	2	-	surveying	2	1	2
Air-conditioning services	2	2	-				
Total	15	12	6	Total	13	9	8
		18				17	

### Fourth Year

First Semester				Second Semester			
Subject	Units	Weekly hours		Subject	Units	Weekly hours	
		Th.	Prac.			Th.	Prac.
Interior Spaces Design	2	1	2	EXterior Spaces Design	2	1	2
Housing	2	2	-	Islamic Architecture	2	2	-
Theory of Architecture I	2	2	-	Theory of Architecture II	2	2	-
Climate & Architecture	2	2	-	Architectural Acoustics	2	2	-
Building Technology	2	2	-	Engineering services	2	2	-
Architecture & society	2	2	-	Sustainable Architecture	2	2	-
Total	12	11	2	Total	12	11	2
		13				13	



### Fifth Year

First Semester				Second Semester			
Subject	Units	Weekly hours		Subject	Units	Weekly hours	
		Th.	Prac.			Th.	Prac.
Architectural Design	7	2	10	Iraqi Contemporary Architecture	2	2	-
Arabic Contemporary Architecture	2	2	-	Architectural Criticism	2	2	-
Architectural Philosophy	2	2	-	Occupational Practice	2	2	-
Estimating & Specifications	2	2	-	Engineering Economy	2	2	-
Total	13	8	10	Total	8	8	-
		18				8	

## 4.2.8 Petroleum Engineering Department

### 4.2.8.1 Graduation Requirements

Requirements	Units	Total hours/Year
University Requirements	4	120
College Requirements	16	420
Department Requirements	140	3120
Total	160	3600

### 4.2.8.2 University Requirements: 4 Units

Subject Code	Subject	Units	Weekly hours		
			Th.	Prac.	Tut.
U111	English Language	2	2	-	2
U211	Human Rights & Democracy	2	2	-	2
Total		4	8		





#### 4.2.8.3 College Requirements: 16 Units

No.	Subject Code	Subject	Units	Weekly hours		
				Th.	Prac.	Tut.
1	E112	Mathematics I	2	2	-	2
2	E122	Mathematics II	2	2	-	2
3	E118	Engineering Drawing I	2	1	-	2
4	E12	Engineering Drawing II	2	1	-	2
		Total for 1 <sup>st</sup> Year	8	6	0	8
5	E212	Applied Mathematics I	2	2	-	2
6	E222	Applied Mathematics II	2	2	-	2
		Total for 2 <sup>nd</sup> Year	4	4	0	4
		Total for 3 <sup>rd</sup> Year	0	0	0	0
7	E402	Engineering Project	2	1	2	-
8	E403	Engineering Project	2	1	2	-
		Total for 4 <sup>th</sup> Year	4	2	4	0
		Total	16	12	4	12
				28		

#### 4.2.8.4 Department Requirements: 140 Units

Subject Code	Subject Title	Units	Weekly hours ( Two Semesters )		
			Th.	Prac.	Tut.
PeE111	General Geology I	3	2	3	-
PeE121	General Geology II	3	2	3	-
PeE112	Computer Programming I	3	2	-	2
PeE122	Computer Programming II	3	2	-	2
PeE113	Analytical Chemistry	3	2	3	-
PeE123	Organic Chemistry	3	2	3	-
PeE114	Statics Mechanical Engineering	3	3	2	-
PeE124	Dynamics Mechanical Engineering	3	3	2	-
PeE115	Physics I	2	2	-	-
PeE125	Physics II	2	2	-	-
	Total for 1 <sup>st</sup> Year	28	22	16	4
PeE211	Static Fluid	3	2	3	-



PeE221	Dynamic Fluid	3	2	3	-
PeE212	Advanced Programming	3	2	-	2
PeE222	Computer Architecture	3	2	-	2
PeE213	Structural Geology	3	2	-	2
PeE223	Petroleum Geology	3	2	-	2
PeE214	Static Mechanics of Materials	3	3	1	-
PeE224	Dynamics Mechanics of Materials	3	3	1	-
PeE215	Electrical Engineering Technology	3	2	2	-
PeE225	Oil Properties	3	2	2	-
PeE216	Fundamental Of Petroleum Engineering I	3	2	3	-
PeE226	Fundamental Of Petroleum Engineering II	3	2	3	-
	Total for 2 <sup>nd</sup> Year	36	24	16	12
PeE311	Engineering & Numerical Analysis I	2	2	-	2
PeE321	Engineering & Numerical analysis II	2	2	-	2
PeE312	Petroleum Reservoir Engineering I	3	2	-	2
PeE322	Petroleum Reservoir Engineering II	3	2	-	2
PeE313	Petroleum Drilling Engineering I	3	2	2	2
PeE323	Petroleum Drilling Engineering II	3	2	2	2
PeE314	Petroleum Production Engineering I	3	2	2	-
PeE324	Petroleum Production Engineering II	3	2	2	-
PeE315	Basic of Thermodynamics	2	2	-	1
PeE325	Thermodynamics ( Cycles )	2	2	-	1
PeE316	Well Logging I	3	2	-	2
PeE326	Well Logging II	3	2	-	2
PeE317	Engineering Economics	2	2	-	-
PeE327	Engineering Statistics	2	2	-	-
PeE318	Geophysics	2	2	1	-
PeE328	Pollution & Industrial Safety	2	2	1	-
	Total for 3 <sup>rd</sup> Year	40	32	10	18
PeE411	Numerical Methods	2	2	-	2
PeE421	Reservoir Simulation	2	2	-	2
PeE412	Petroleum Reservoir Engineering III	3	2	-	2
PeE422	Petroleum Reservoir Engineering V	3	2	-	2
PeE413	Petroleum Drilling Engineering III	3	2	2	2
PeE423	Petroleum Drilling Engineering V	3	2	2	2



PeE414	Petroleum Production Engineering III	3	2	2	-
PeE424	Petroleum Production Engineering V	3	2	2	-
PeE415	Secondary Oil Recovery I	3	2	-	2
PeE425	Secondary Oil Recovery II	3	2	-	2
PeE416	Gas Technology I	2	2	-	1
PeE426	Gas Technology II	2	2	-	1
PeE417	Reservoir Management	2	2	-	-
PeE427	Petroleum Management	2	2	-	-
Total for 4 <sup>th</sup> Year		36	28	8	18
TOTAL		140	106	50	52
			208		

#### 4.2.8.5 PeE Program: Curriculum

Typical degree program is shown in the following Tables for Petroleum Engineering, where recommended PeE course plan by semester is presented

##### First Year

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
English Language I	1	1	-	1	English Language II	1	1	-	1
Mathematics-I	3	2	-	2	Mathematics-II	3	2	-	2
Engineering Drawing I (Basic)	2	1	-	2	Engineering Drawing-II (AutoCAD)	2	1	-	2
General Geology I	3	2	3	-	General Geology II	3	2	3	-
Computer Programming I	3	2	-	2	Computer Programming II	3	2	-	2
Analytical Chemistry	3	2	3	-	Organic Chemistry	3	2	3	-
Statics Mechanical Engineering	3	3	2	-	Dynamics Mechanical Engineering	3	3	2	-
Physics I	2	2	-	-	Physics II	2	2	-	-
Total	20	15	8	7	Total	20	15	8	7
		30					30		



## Second Year

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Human Rights	1	1		1	Democracy	1	1		1
Applied Mathematics I	2	2	-	2	Applied Mathematics- II	2	2	-	2
Static Fluid	3	2	2	-	Dynamic Fluid	3	2	2	-
Advanced Programming I	3	2	-	2	Advanced Programming II	3	2	-	2
Structural Geology	3	2	-	2	Petroleum Geology	3	2	-	2
Electrical Engineering Technology	3	2	2	-	Oil Properties	3	2	2	-
Static Mechanics of Materials	3	3	1	-	Dynamics Mechanics of Materials	3	3	1	-
Fundamental Of Petroleum Engineering 1	2	2	2	-	Fundamental Of Petroleum Engineering II	2	2	2	-
Total	20	16	7	7	Total	20	16	7	7
		30					30		

## Third Year

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Engineering & Numerical Analysis-I	2	2	-	2	Engineering & Numerical Analysis- II	2	2	-	2
Petroleum Reservoir Engineering I	3	2	-	2	Petroleum Reservoir Engineering II	3	2	-	2
Petroleum Drilling Engineering I	3	2	2	2	Petroleum Drilling Engineering II	3	2	2	2
Petroleum Production Engineering I	3	2	2	-	Petroleum Production Engineering II	3	2	2	-
Basic of Thermodynamics	2	2	-	1	Thermodynamics ( Cycles )	2	2	-	1
Well Logging I	3	2	2	-	Well Logging II	3	2	2	-
Engineering Economics	2	2	-	-	Engineering Statistics	2	2	-	-
Geophysics	2	2	1	-	Pollution & Industrial Safety	2	2	1	-
Total	20	16	7	7	Total	20	16	7	7
		30					30		



**Forth Year**

First Semester					Second Semester				
Subject	Units	Weekly hours			Subject	Units	Weekly hours		
		Th.	Prac.	Tut.			Th.	Prac.	Tut.
Engineering Project	2	1	2	-	Engineering Project	2	1	2	-
Numerical Methods	2	2	-	2	Reservoir Simulation	2	2	-	2
Petroleum Reservoir Engineering III	3	2	-	2	Petroleum Reservoir Engineering V	3	2	-	2
Petroleum Drilling Engineering III	3	2	2	2	Petroleum Drilling Engineering V	3	2	2	2
Petroleum Production Engineering III	3	2	2	-	Petroleum Production Engineering V	3	2	2	-
Secondary Oil Recovery I	3	2	2	-	Secondary Oil Recovery II	3	2	2	-
Gas Technology I	2	2	-	1	Gas Technology II	2	2	-	1
Reservoir Management	2	2	-	-	Petroleum Management	2	2	-	-
Total	20	15	8	7	Total	20	15	8	7
		30					30		





### 4.3 Mapping of Course Learning Outcomes to Program Outcomes

An academic program is, in effect, the superposition of a set of courses, somehow, linked together to achieve program outcome. This means that courses in any academic program represent the building blocks of that program. Assessment of the program would only be possible if the course learning outcomes are mapped to the program outcomes. Course learning outcomes of individual program courses are listed in the detailed course syllabus which are prepared by faculty teaching that particular course and submitted to the student in the beginning of the year. Each year, immediately after tallying the final grades of all courses, mapping between the courses and program outcomes is also established.

#### 4.3.1 Civil Engineering Department

**Table 4.13: Mapping of the Civil Engineering Courses to the Program Outcomes**

Course No.	Course Title	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
First Year												
CiE132	Engineering Geology	X				X		X		X	X	X
CiE121	Mathematics I	X	X			X		X	X			
CiE133	Computer Science and Programming	X	X			X		X	X	X	X	X
CiE122	Statistics Engineering	X	X	X		X			X			
CiE131	Engineering Mechanics	X	X	X		X		X	X		X	
CiE111	Physics and chemistry						X		X			
CiE123	Engineering Workshops				X			X		X		X
CiE134	Engineering Drawing	X	X	X	X	X		X	X	X	X	X
Second Year												
CiE221	Mathematics II	X				X		X	X	X	X	
CiE231	Survey Engineering	X				X		X	X		X	
CiE234	Concrete Properties			X		X		X		X		X
CiE233	Fluid Mechanics	X		X		X		X	X	X	X	
CiE232	Strength of Materials	X	X	X		X		X	X		X	
CiE235	Computer Programming	X		X		X		X	X	X	X	X
CiE211	Democracy and Freedom Concepts						X		X			



Course No.	Course Title	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
CiE236	Laboratories	X	X	X	X	X		X	X	X	X	X
Third Year												
CiE321	Engineering and Numerical Analysis	X	X			X			X			
CiE333	Soil Mechanics			X			X	X	X	X		
CiE334	Concrete Design	X		X		X		X	X	X	X	
CiE335	Irrigation and drainage engineering			X				X	X	X	X	X
CiE336	Traffic Engineering	X	X	X		X		X	X		X	
CiE332	Theory of Structure	X		X		X			X		X	
CiE331	Management and Economic engineering	X		X		X		X	X	X	X	X
CiE337	Laboratories	X	X	X	X	X		X	X	X	X	X
Fourth Year												
CiE431	Design and analysis of the foundations	X		X			X	X	X	X		
CiE435	Hydrology	X		X		X		X	X	X	X	X
CiE434	Design of reinforced concrete	X		X		X			X		X	
CiE433	Design of steel Structures	X		X		X		X	X		X	
CiE432	Methods of Construction and Estimating								X	X	X	X
CiE436	Hydraulic Structure	X		X		X			X	X	X	X
CiE421	Engineering Project	X	X	X	X	X	X	X	X	X	X	X
CiE437	Laboratories	X	X	X	X	X		X	X	X	X	X

### 4.3.2 Electrical Engineering Department

Table 4.14: Mapping of the Electrical Engineering Courses to the Program Outcomes

Course No.	Course title	Program outcomes										
		a	b	c	d	e	f	g	h	i	j	k
First year												
EEE101	Fundamentals of Democracy						X		X			
EEE102	Digital Techniques	X	X	X		X						
EEE103	Engineering Drawing	X				X					X	X
EEE104	Computer Science	X				X				X		X
EEE105	Principle of Mechanical Eng.	X		X		X						
EEE106	Mathematics (I)	X				X						
EEE107	Electronics (I)	X		X		X						



Course No.	Course title	Program outcomes										
		a	b	c	d	e	f	g	h	i	j	k
EEE108	Basics of Electrical Eng.	X		X		X						
EEE109	Laboratories		X	X	X	X	X	X	X			X
Second year												
EEE201	Fundamentals of Freedom						X		X			
EEE202	Mathematics (II)	X				X						
EEE203	Computer Programming	X				X				X		X
EEE204	Electronics (II)	X		X		X						
EEE205	Electrical Circuits	X		X		X						
EEE206	Electrical Machines (I)	X		X		X						
EEE207	Electromagnetic Fields	X		X		X						
EEE208	Laboratories		X	X	X	X	X	X	X			X
Third year												
EEE301	Eng. and Numerical Analysis	X				X						
EEE302	Electrical Machines (II)	X		X		X						
EEE303	Electrical Power	X		X		X						
EEE304	Electronics (III)	X		X		X						
EEE305	Communication (I)	X		X		X						
EEE306	Microprocessor	X		X		X						
EEE307	Control (I)	X		X		X						
EEE308	Elective Subject											
EEE309	Laboratories		X	X	X	X	X	X	X			X
Fourth year												
EEE401	Engineering Project	X	X	X	X	X	X	X	X	X	X	X
EEE402	Communication (II)	X		X		X						
EEE403	Power Electronics & Applications	X		X		X						
EEE404	Electronics	X		X		X						
EEE405	Power System Analysis	X		X		X						
EEE406	Control (II)	X		X		X						
EEE407	Elective Subject											
EEE408	Laboratories		X	X	X	X	X	X	X			X



### 4.3.3 Mechanical Engineering Department

Table 4.15: Mapping of the Mechanical Engineering Courses to the Program Outcomes

Course No.	Course Title	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
First Year												
ME131	Engineering Mechanics I (Static)	X	X	X	X	X				X	X	X
ME122	Mathematics I	X			X	X						X
ME113	Computer Programming I					X		X		X	X	X
ME134	Principle of Production Engineering	X				X			X	X	X	
ME125	Engineering Drawing and Descriptive Geometry			X		X		X		X		
ME136	Metallurgy	X	X			X			X	X	X	X
ME137	Electrical Engineering I		X			X				X	X	
ME118	Principles of Human Rights						X	X				
Second Year												
ME221	Mathematics II	X			X	X						X
ME232	Thermodynamics	X	X			X			X	X	X	
ME233	Engineering Mechanics II (Dynamic)	X	X	X	X	X				X	X	X
ME234	Strength of Materials	X	X	X	X	X				X	X	X
ME235	Fluid Mechanics I	X	X	X		X				X	X	
ME236	Mechanical Drawing			X	X	X		X		X		
ME227	Computer Programming II	X				X		X		X	X	X
ME218	Concepts of Freedom and Democracy						X	X				
Third Year												
ME321	Numerical and Engineering Analysis	X			X	X						X
ME332	Heat Transfer	X	X	X	X	X				X	X	
ME333	Theory of Machines	X	X	X	X	X				X	X	X
ME334	Electrical Engineering II		X			X				X	X	
ME335	Internal Combustion Engines	X	X	X	X	X			X	X	X	
ME336	Fluid Mechanics II	X	X	X		X				X	X	
ME337	Introduction to Manufacture Processes	X	X						X	X	X	X
Fourth Year												
ME431	Design of Machine Elements	X	X	X	X	X				X	X	X
ME432	Control and Measurements	X	X		X	X				X	X	X
ME433	Air-Conditioning and Refrigeration		X	X	X	X			X	X	X	X
ME434	Engineering Materials					X				X	X	X
ME435	Mechanical Vibrations	X	X			X			X	X	X	X
ME436	Power Plants		X	X	X	X			X	X	X	X
ME437	Industrial Engineering	X			X	X	X	X	X	X	X	X
ME418	Engineering Project	X	X	X	X	X	X	X	X	X	X	X



### 4.3.4 Chemical Engineering Department

Table 4.16: Mapping of the Chemical Engineering Courses to the Program Outcomes

Course No.	Course Title	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
First Year												
CHE101	organic chemistry		X		X	X			X	X		
CHE102	analytical chemistry		X		X	X			X	X	X	
CHE103	Engineering drawing	X	X		X	X	X	X		X	X	
CHE104	statistics & strength of materials	X	X		X	X		X	X			X
CHE105	Principles of chemical engineering		X		X	X		X		X	X	X
CHE103	workshop technology		X		X	X	X		X	X		X
Second Year												
CHE201	fluid flow		X		X	X	X			X	X	
CHE202	electrical technology	X	X			X	X			X		X
CHE203	physical chemistry		X			X	X	X				X
CHE204	environmental pollution & industrial safety		X		X	X				X		
CHE205	chemical engineering principles		X		X	X	X			X		
CHE202	Computer programming	X	X			X		X		X	X	
Third Year												
CHE301	chemical Engineering mathematical	X	X	X	X	X	X	X				X
CHE302	chemical engineering thermodynamics		X	X		X	X				X	X
CHE303	mass transfer operation		X	X		X	X	X		X		X
CHE304	properties of engineering materials	X	X	X		X		X	X			X
CHE305	heat transfer& related topics		X	X		X		X		X		X
CHE306	chemical engineering economics and statistics	X	X	X	X	X						X
CHE307	chemical and industries		X	X	X	X		X				X
Fourth Year												
CHE401	unit operation	X	X	X	X	X		X				X
CHE402	petrochemical industries	X		X		X				X		X
CHE403	petroleum refining	X	X	X	X				X			X
CHE404	reactor design	X	X	X	X			X			X	
CHE405	process dynamics and control	X	X	X				X				X
CHE407	optimization and numerical methods'	X	X	X		X		X	X			
CHE408	equipment plant design	X	X		X	X		X				X





### 4.3.5 Computer Engineering Department

Table 4.17: Mapping of the Computer Engineering Courses to the Program Outcomes

Course No.	Course Title	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
First Year												
CoE132	Fundamentals of Digital Systems	X				X		X		X	X	X
CoE121	Mathematics I	X	X			X		X	X			
CoE133	Computer Science and Programming	X	X			X		X	X	X	X	X
CoE122	Electronic Physics	X	X	X		X			X			
CoE131	Electrical Circuits	X	X	X		X		X	X		X	
CoE123	Chemistry and physics				X			X		X		X
CoE111	Principles of Human Rights						X		X			
CoE135	Engineering Drawing using Computer				X			X		X		X
CoE134	Electrical Circuits Laboratory	X	X	X	X	X		X	X	X	X	X
Second Year												
CoE221	Mathematics II	X				X		X	X	X	X	
CoE236	Power Conversion	X				X		X	X		X	
CoE231	Design of Digital Systems			X		X		X		X		X
CoE234	Microprocessor and Microcomputer I	X		X		X		X	X	X	X	
CoE233	Electronic Circuits	X	X	X		X		X	X		X	
CoE232	Communications	X		X		X		X	X	X	X	X
CoE235	Computer Algorithms and data Structures	X	X			X		X	X	X	X	X
CoE211	Democracy and Freedom Concepts						X		X			
CoE237	Laboratories	X	X	X	X	X		X	X	X	X	X
Third Year												
CoE321	Engineering and Numerical Analysis	X	X			X			X			
CoE333	Computer Architecture I			X			X	X	X	X		
CoE334	Microprocessor and Microcomputer II	X		X		X		X	X	X	X	
CoE335	Operating Systems			X				X	X	X	X	X
CoE332	Digital Electronics	X	X	X		X		X	X		X	
CoE336	Digital Signals Processing (elective)	X		X		X			X		X	
CoE331	Digital Communications and Information Transmission	X		X		X		X	X	X	X	X
CoE337	Laboratories	X	X	X	X	X		X	X	X	X	X
Fourth Year												
CoE431	Computer Architecture II	X		X			X	X	X	X		
CoE435	Computer Networks	X		X		X		X	X	X	X	X
CoE434	Real Time Computer Systems	X		X		X			X		X	
CoE433	Control Systems	X		X		X		X	X		X	
CoE432	Software Engineering								X	X	X	X
CoE436	Artificial Intelligence (elective)	X		X		X			X	X	X	X



Course No.	Course Title	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
CoE421	Engineering Project	X	X	X	X	X	X	X	X	X	X	X
CoE437	Laboratories	X	X	X	X	X		X	X	X	X	X

### 4.3.6 Materials Engineering Department

Table 4.18: Mapping of the Materials Engineering Courses to the Program Outcomes

Course No.	Course Title	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
First Year												
ME111	Fundamental of computer science	X	X			X		X	X	X	X	X
ME121	Mathematics 1 **	X				X		X	X		x	
ME122	Physics and Chemistry**		X			X	X					X
ME123	Engineering drawing				X			X		X		X
ME131	Engineering mechanics	X	X			X						X
ME132	Methods of extracting engineering materials	X	X	X					X			X
ME133	Fundamental of Materials production engineering	X	X	X		X		X	X	X		X
ME134	Fundamental of electrical engineering	X	X	X		X			X			X
Second Year												
ME211	Democracy and freedom concepts						X		X			
ME221	Mathematics II	X				X		X	X	X	X	
ME231	Computers programming	X	X			X		X	X	X	X	X
ME232	Mechanical drawing	X		X					X			X
ME233	Chemical metallurgy	X				X			X			X
ME234	Engineering metallurgy	X	X	X		X		X	X	X		X
ME235	Mechanics of Materials	X	X	X		X			X			X
ME236	Fundamentals of thermodynamic	X	X	X					X			X
Third Year												
ME331	Heat Transfer	X	X	X					X			X
ME332	Vibrations and Theory of machines	X		X		X			X		X	X
ME333	Behavior of engineering materials	X	X	X		X		X	X	X		X
ME334	Technology of materials engineering 1	X	X	X		X		X	X	X		X
ME335	Materials electrical engineering	X	X	X		X		X	X	X		X
ME336	Heat Treatments of engineering materials	X	X	X					X			X
ME337	Nonmetallic engineering materials	X	X	X		X		X	X	X		X
ME321	Engineering and Numerical analysis	X				X		X	X	X	X	X
Fourth Year												
ME421	Engineering Project	X	X	X	X	X	X	X	X	X	X	X



Course No.	Course Title	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
ME431	Mechanical design by computer	X	X	X		X			X		X	X
ME432	Design and Selection of engineering materials	X	X	X		X			X		X	X
ME433	Technology of engineering materials 2	X	X	X		X		X	X	X		X
ME434	Stresses analysis and Plasticity	X	X			X			X		X	X
ME435	CAD/CAM	X	X	X		X			X		X	X
ME436	Testing of materials engineering	X	X	X		X		X	X	X		X
ME437	Industrial engineering	X	X	X		X			X		X	X

### 4.3.7 Architectural Engineering Department

Table 4.19: Mapping of the Architectural Engineering Courses to the Program Outcomes

Course No.	Course Title	Program Outcomes											
		a	b	c	d	e	f	g	h	i	j	k	
First Year													
ARE131	Architectural Design	X	X	X	X	X	X	X			X	X	X
ARE 132	Architectural Graphics	X	X		X	X	X	X	X	X	X	X	X
ARE 133	Hand Sketch	X	X		X	X		X	X		X	X	
ARE 134	Arch. & Art Fundamentals	X	X		X	X	X		X	X	X	X	
ARE 135	Building Construction I	X	X	X	X	X	X	X	X	X	X	X	X
ARE121	Mathematics I	X	X	X	X	X	X	X	X	X	X	X	X
ARE122	Engineering Drawing using Computer (I)	X	X	X	X	X	X	X	X	X	X	X	X
ARE111	Principles of Human Rights							X	X		X		
Second Year													
ARE 231	Architectural Design	X	X	X	X	X	X	X	X	X	X	X	X
ARE 232	Architectural Graphics	X	X	X	X			X	X	X	X	X	
ARE 233	Hand Sketch	X	X	X	X	X	X	X	X	X	X	X	X
ARE 234	Building Construction (II)	X		X	X	X	X	X			X	X	
ARE 235	Arch. History	X	X	X	X		X	X	X	X			
ARE 236	Design Methodology (1 <sup>st</sup> Semester only)	X	X	X	X	X	X	X	X	X	X	X	X
ARE 237	Structural Analysis (I)	X	X		X	X	X	X	X		X	X	
ARE 238	Survey (2 <sup>nd</sup> Semester only)	X	X	X	X		X		X	X	X	X	
ARE221	Engineering Drawing using Computer (II)	X	X	X	X		X	X	X	X	X	X	
Third Year													
ARE 331	Architectural Design	X	X	X	X	X	X	X	X	X	X	X	X
ARE 332	Building Construction (III)	X	X	X	X	X	X	X	X	X	X	X	X
ARE 333	Arch. History (II)	X	X	X	X		X	X	X	X			
ARE 334	Principles of Planning (1 <sup>st</sup> Semester only)	X	X	X	X	X	X	X	X	X	X	X	
ARE 335	Urban Design (2 <sup>nd</sup> Semester only)	X	X	X	X	X	X	X	X	X	X	X	X



Course No.	Course Title	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
ARE 333	Sanitary Engineering (1 <sup>st</sup> Semester only)	X	X		X	X	X	X	X	X	X	X
ARE 337	Air-conditioning Services (2 <sup>nd</sup> Semester only)	X		X		X	X			X	X	X
ARE 338	Structural Design	X	X	X	X	X	X	X	X	X	X	X
ARE321	Engineering Drawing using Computer (III)	X	X		X	X	X		X		X	X
<b>Fourth Year</b>												
ARE 431	Architectural Design	X	X	X	X	X	X	X	X	X	X	X
ARE 432	Interior Spaces Design	X	X	X	X	X	X	X	X		X	X
ARE 433	Exterior Spaces Design	X	X	X	X	X	X	X	X		X	X
ARE 434	Housing Planning (1 <sup>st</sup> Semester only)	X	X	X		X	X	X	X	X	X	X
ARE 434''	Housing (2 <sup>nd</sup> Semester only)	X	X	X	X	X	X	X	X	X	X	X
ARE 435	Islamic Architect	X	X	X	X	X	X	X	X	X	X	X
ARE 436	Architectural Theory	X	X	X	X		X	X	X	X	X	X
ARE 437	Climate & Arch. (1 <sup>st</sup> Semester only)	X	X	X	X	X			X	X	X	X
ARE 438	Acoustic Architectural (2 <sup>nd</sup> Semester only)	X	X	X	X	X	X	X	X	X	X	X
ARE 439	Building Technology	X	X	X	X	X	X	X	X	X	X	X
<b>Fifth Year</b>												
ARE 531	Architectural Design	X	X	X	X	X	X	X	X	X	X	X
ARE 532	Theses	X	X	X		X				X	X	X
ARE 533	Architectural History (III)	X	X	X	X	X	X	X	X	X	X	X
ARE 534	Architectural Criticism (1 <sup>st</sup> Semester only)	X	X	X	X	X	X	X	X	X	X	X
ARE 535	Architectural Philosophy (2 <sup>nd</sup> Semester only)	X	X	X	X	X	X	X	X			
ARE 536	Estimating & Specifications (1 <sup>st</sup> Semester only)			X	X	X	X	X	X	X	X	X
ARE 537	Engineering Applications (2 <sup>nd</sup> Semester only)	X	X	X	X	X			X	X	X	X

### 4.3.8 Petroleum Engineering Department

Table 4.20: Mapping of the Petroleum Engineering Courses to the Program Outcomes

Course No.	Course Title	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
First Year												
PeE121	Mathematics 1	X	X			X		X	X			
PeE122	General Geology	X	X			X		X	X	X	X	X
PeE123	Engineering Drawing & Descriptive Geometry	X	X	X		X			X			
PeE124	Computer Programming 1	X	X	X		X		X	X		X	
PeE125	General Chemistry						X		X			
PeE126	Engineering Mechanics				X			X		X		X
PeE127	Physics				X			X				X



Course No.	Course Title	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
Second Year												
PeE219	Democracy and Freedom Concepts	X				X		X	X	X	X	
PeE222	Mathematics 2	X				X		X	X		X	
PeE223	Fluids Mechanics			X		X		X		X		X
PeE224	Electrical Technology (1st Semester)	X		X		X		X	X	X	X	
PeE226	Mechanics of Material	X	X	X		X		X	X		X	
PeE227	Structural and Petroleum Geology	X		X		X		X	X	X	X	X
PeE228	Computer Programming 2	X	X			X		X	X	X	X	X
PeE231	Principles of Petroleum Engineering						X		X			
PeE235	Oil Properties (2nd semester)	X	X	X	X	X		X	X	X	X	X
Third Year												
PeE327	Thermodynamics	X	X			X			X			
PeE328	Engineering Mathmatics	X	X			X			X			
PeE331	Reservoir Engineering I			X			X	X	X	X		
PeE332	Drilling Engineering I	X		X		X		X	X	X	X	
PeE333	Petroleum Production Engineering I			X				X	X	X	X	X
PeE334	Geophysics (1st semester)	X	X	X		X		X	X		X	
PeE335	Pollution and Industrial Safety (2nd semester)	X		X		X			X		X	
PeE329	Engineering Economy and statistics	X	X			X			X			
PeE336	Well Logging	X		X		X		X	X	X	X	X
Fourth Year												
PeE431	Reservoir Engineering II	X		X			X	X	X	X		
PeE432	Drilling Engineering II	X		X		X		X	X	X	X	X
PeE433	Petroleum Production Engineering II	X		X		X			X		X	
PeE434	Petroleum Project Management	X		X		X		X	X		X	
PeE435	Secondary Oil Recovery								X	X	X	X
PeE436	Numerical Methods and Reservoir Simulation	X		X		X			X	X	X	X
PeE437	Gas Technology	X	X	X	X	X	X	X	X	X	X	X
PeE438	Engineering Project & Ethics	X	X	X	X	X		X	X	X	X	X





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#### **4.4 Questions and Answers:**

1. Why have the used curriculum been put in this way? Do they enhance the development and progress of students? Do they facilitate the intended program outcomes?

The curricula in all of engineering departments in Iraq have been put by the ministry itself. That's why, there is a 70% to 80% match between these curricula around Iraq. They definitely help in developing students since they are much similar to the most highly prestigious used international curricula.

2. Has the departments mapped together the curriculum, learning outcomes, and assessments? Are there any gaps or significant overlaps? If so, what changes are planned and when?

This is the first time the departments uses learning outcomes and assessments. Starting from the neXt academic year, the department would be able to consider changes and modifications based on what it has realized this year.

3. What evidence does the departments have that standards of the program are appropriate?

There is no evidence.

4. Have the departments put the curriculum, learning outcomes, and assessment schemes? Are their any pitfalls, breaches, or interferences in them? If so, what are the intended changes and when will they be applied?

Starting from this year, the departments have put the learning outcomes, assessment schemes. Therefore, before seeing the results of the newly used schemes, we'd not be able to decide the breaches in them.



5. Does the departments have an official scheme to evaluate, revise, and improve its curriculum?

Yes, there is a "curricula development" committee in the department that is responsible of updating and refining the curricula.

## 4.5 The SWOT analysis

		Helpful (to achieving the objective)	Harmful (to achieving the objective)
Internal origin (attributes of the department)	<b>Strengths</b>	<ul style="list-style-type: none"> <li>- The total credit hours in every department are equal to the number of credit hours at other departments in Iraq and worldwide.</li> <li>- The used teXtbooks are updated by the faculty member her/himself using the internet. Thus, no outdated teXtbooks are used.</li> </ul>	<b>Weaknesses</b> <ul style="list-style-type: none"> <li>- There are no elective courses,.</li> <li>- The ministry rules do not allow changing all the curricula.</li> <li>- Low eXperimental courses</li> </ul>
	<b>Opportunities</b>	<ul style="list-style-type: none"> <li>- If each faculty member writes and updates her/his curriculum outcomes well, she/he will definitely help in improving the overall POs of the program.</li> </ul>	<b>Threats</b> <ul style="list-style-type: none"> <li>- Each faculty member can only change 10% of the curriculum content.</li> <li>- The inability to include new curriculum since the Ministry rules do not allow such changes.</li> </ul>



## CRITERION FIVE: STUDENTS

### 5.1 Admission Process and Enrollment

Students are admissible to the college of engineering according to a central admission process called (grades comparison) managed by the Iraqi Ministry of Higher Education and Scientific Research / Studies, Planning, and Prosecution Office / Central Admission Department. The accepted students are coming from:

1. High school graduates (scientific disciplines only).
2. Institutions graduates (only who are in top 25% rank).
3. Industrial technical secondary schools (only who are in top 5% rank).
4. Distinguished employees in governmental offices who are originally institutions graduates.

After the names of the accepted students are announced, the registration committee which contains at least ten members including the dean's assistant has only ten days to meet the accepted students and to register them at the college. They are distributed again according to their high school grades on the eight departments in the college (petroleum engineering, architecture engineering, computer engineering, civil engineering, electrical engineering, chemical engineering, mechanical engineering, and materials engineering). The numbers of the newly enrolled students in the past eight years are shown in Table 5.1.

**Table 5.1: Records of Admissions Standards applied over the past 5 years**

Academic Year	Percentile Rank in Secondary School	Number of New Students Enrolled
	% MIN	
2015-2016	90.28	681
2014-2015	83.23	740
2013-2014	84.14	616
2012-2013	90.28	689
2011-2012	89.57	623



## 5.2 Evaluating Students' Performance

The students of college of engineering are evaluated using the following means:

1. Daily, monthly, semester, and final exams.
2. Their laboratories reports.
3. Assignments.
4. Senior year project.
5. Summer industrial training reports.

## 5.3 Advising and Guidance

During the past years, the college of engineering had an educational advising scheme where one or two advisors were assigned to give advice to one level of study (1st, 2nd, 3rd, or 4th) year. Starting from year 2011-2012, the departments have the intention to apply a new scheme of advising with the following steps:

1. In each department, an advising and guidance committee (Chief Departmental Advisor "CDA") is formed to be responsible of arranging the work of the advisors, delivering its reports to the chairman of the department, and its recommendations of solving any problems that may face both the advisors and the students.
2. The chairman of the department distributes the students on the selected faculty members (advisors) such as each advisor is assigned a number of advisees. Each month the advisor meets her/his assigned advisees according to a pre-scheduled appointments.



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3. Each advisor delivers her/his monthly report (Appendix A contains the proposed advisor report form) to the advising and supervision committee which in turn sends it to the chairman.
  4. These appointments can be classified as:
    - a. Evaluation meeting: assess the student's readiness and abilities and accordingly determine the best advising approach to follow.
    - b. Diagnostic meeting: usually is used to make tests and answering questions to reach an accurate diagnosis in order to lay out the work plan of advising.
    - c. Guidance/Treatment meeting: where the treatment is applied according to the plan set in the previous meeting. This treatment depends a lot on the skills and abilities of the advisor.

#### **5.4 Graduation Requirements**

Graduation requirements vary in different departments, but in general every student should be achieved a number of units (Credit Hours) which is specifying for each program. These units are distributed over a range of subjects for a period of four years for all programs (except the architecture program which is defined by five years). Table 5.2 describes the number of units required in each department of the engineering college.





**Table 5.2: Credit hours for each department**

Department	Required Credit Hours
Civil Engineering	156
Electrical Engineering	152
Mechanical Engineering	153
Chemical Engineering	156
Computer Engineering	157
Materials Engineering	148
Architecture Engineering	193
Petroleum Engineering	160

#### **5.4.1 Graduation Requirements for Civil Engineering Department**

In the Civil Engineering Department, the student has to complete 150 credit hours in order to get a Bachelor of Science degree; these credit hours are divided across four years of study as:

For the 1<sup>st</sup> year:

1. 8/38 credits (21.6%) are of Civil Engineering courses requirements.
2. 21/38 credits (56.8%) are of College courses requirements.
3. 8/38 credits (21.62%) are of university courses requirements.

For the 2<sup>nd</sup> year:

1. 15/40 credits (37.5%) are of Civil Engineering courses requirements.
2. 17/40 credits (42.5%) are of College courses requirements.
3. 8/40 credits (20%) are of university courses requirements.



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For the 3<sup>rd</sup> year:

1. 27/34 credits (88.88%) are of Civil Engineering courses requirements.
2. 4/34 credits (11.42%) are of College courses requirements.
3. 4/34 credits (11.42%) are of university courses requirements.

For the 4<sup>th</sup> year:

1. 35/38 credits (94.73%) are of Civil Engineering courses requirements.
2. 4/38 credits (10.25%) are of College courses requirements.
3. 0/38 credits (0%) are of university courses requirements.

Overall credits during four years:

1. 85/150 credits (56.29%) are of Civil Engineering courses requirements.
2. 46/150 credits (30.46%) are of College courses requirements.
3. 20/150 credits (13.24%) are of university courses requirements.

Table 5.3 and illustrate the records over the past five academic years including new enrolled students and the number of graduated students.

**Table 5.3: Total enrollment and graduates trends for the past five years**

	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
New enrolled students	169	152	124	103	103
Graduated students	120	109	118	93	72



#### 5.4.2 Graduation Requirements for Electrical Engineering Department

In the Electrical Engineering department, the student has to complete 158 credit hours in order to get his Bachelor of Science degree; these credit hours are divided through her/his four years of study as:

1. 124/158 credits (78.5%) are of Electrical Engineering courses requirements.
2. 20/158 credits (12.6%) are of College courses requirements.
3. 14/158 credits (8.8%) are of university courses requirements.

#### 5.4.3 Graduation Requirements for Mechanical Engineering Department

Table 5.4 shows the records, over the past five academic years, of the total number of full time students enrolled in the program and the corresponding number of graduates each year.

**Table (5.4): Total Enrollment and Graduates Tends for Past Five Academic Years**

	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
New enrolled students	552	518	525	518	504
Graduated students	60	58	66	90	139

To obtain a bachelor's degree majoring in mechanical engineering, the student must successfully pass the materials distributed to section four years of study, which represents a total of 153 units, distributed as follows:-

1st year:

1. 19/39 credits (48.71%) are of Mechanical Engineering courses requirements.
2. 11/39 credits (28.20%) are of College courses requirements.
3. 9/39 credits (23.07 %) are of university courses requirements.

2nd year:



- 
1. 21/36 credits (58.33%) are of Mechanical Engineering courses requirements.
  2. 11/36 credits (30.55%) are of College courses requirements.
  3. 4/36 credits (11.11%) are of university courses requirements.

3rd year:

1. 30/37 credits (81.08%) are of Mechanical Engineering courses requirements.
2. 7/37 credits (18.91%) are of College courses requirements.
3. 0/37 credits (0%) are of university courses requirements.

4th year:

1. 37/41 credits (90.24%) are of Mechanical Engineering courses requirements.
2. 4/41 credits (9.75%) are of College courses requirements.
3. 0/41 credits (0%) are of university courses requirements.

Overall percentile during four years:

1. 107/153 credits (69.93%) are of Mechanical Engineering courses requirements.
2. 33/153 credits (21.56%) are of College courses requirements.
3. 13/153 credits (8.49%) are of university courses requirements.

#### **5.4.4 Graduation Requirements for Chemical Engineering Department**

In the ChE department, the student has to complete **160** credit hours in order to get a Bachelor of Science degree; these credit hours are divided across four years of study as:

For the 1<sup>st</sup> year:

1. 23/39 credits (58.97%) are of Chemical Engineering courses requirements.
2. 12/39 credits (30.76%) are of College courses requirements.
3. 4/39 credits (10.25%) are of university courses requirements.



For the 2<sup>nd</sup> year:

1. 31/41 credits (75.60 %) are of Computer Engineering courses requirements.
2. 6/41 credits (14.63 %) are of College courses requirements.
3. 4/41 credits (9.75 %) are of university courses requirements.

For the 3<sup>rd</sup> year:

1. 34/38 credits (89.47%) are of Computer Engineering courses requirements.
2. 4/38 credits (10.52%) are of College courses requirements.
3. 0/38 credits (0%) are of university courses requirements.

For the 4<sup>th</sup> year:

1. 40/42 credits (95.23%) are of Computer Engineering courses requirements.
2. 2/42 credits (4.76%) are of College courses requirements.
3. 0/42 credits (0%) are of university courses requirements.

**Overall percentile during four years:**

1. 120/160 credits (75 %) are of Computer Engineering courses requirements.
2. 24/160 credits (15 %) are of College courses requirements.
3. 8/160 credits (5 %) are of university courses requirements.

**Table (5.5): Total Enrollment and Graduates Tends for Past Five Academic Years**

	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
New enrolled students	235	240	245	246	300
Graduated students	6	6	8	4	7





### 5.4.5 Graduation Requirements for Computer Engineering Department

In the CoE department, the student has to complete 160 credit hours in order to get his Bachelor of Science degree; these credit hours are divided through her/his four years of study as:

For the 1<sup>st</sup> year:

1. 21/37 credits (56.75%) are of Computer Engineering courses requirements.
2. 12/37 credits (32.43%) are of College courses requirements.
3. 4/37 credits (10.82%) are of university courses requirements.

For the 2<sup>nd</sup> year:

1. 30/40 credits (75%) are of Computer Engineering courses requirements.
2. 6/40 credits (15%) are of College courses requirements.
3. 4/40 credits (10%) are of university courses requirements.

For the 3<sup>rd</sup> year:

1. 36/40 credits (90%) are of Computer Engineering courses requirements.
2. 4/40 credits (10%) are of College courses requirements.
3. 0/40 credits (0%) are of university courses requirements.

For the 4<sup>th</sup> year:

1. 39/43 credits (90.69%) are of Computer Engineering courses requirements.
2. 2/43 credits (9.31%) are of College courses requirements.
3. 0/43 credits (0%) are of university courses requirements.



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Overall percentile during four years:

1. 128/160 credits (80%) are of Computer Engineering courses requirements.
2. 24/160 credits (15%) are of College courses requirements.
3. 8/160 credits (5%) are of university courses requirements.

**Table5.5** shows the records, over the past five academic years, of the total number of full time students enrolled in the program and the corresponding number of graduates each year.

**Table 5.5: Total enrollment and graduates trends for the past five years**

	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
New enrolled students	250	230	203	176	186
Graduated students	45	42	45	37	21

#### 5.4.6 Graduation Requirements for Materials Engineering Department

In the ME department, each student has to complete **157** credit hours in order to obtain a Bachelor of Science (B. Sc.) degree; these credit hours are divided across four years of study as:

**For the 1<sup>st</sup> year, this has a weighting factor of [10 % X 1<sup>st</sup> year Aggregate]:**

1. 30/38 credits (78.95 %) as Materials Engineering requirements
2. 4/38 credits (10.525 %) as College requirements
3. 4/38 credits (10.525 %) as University requirements

**For the 2<sup>nd</sup> year, this has a weighting factor of [20 % X 2<sup>nd</sup> year Aggregate]:**

1. 37/45 credits (82.22%) as Materials engineering courses requirements
2. 4/45 credits (8.89%) as College courses requirements



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3. 4/45 credits (8.89%) as University courses requirements.

**For the 3<sup>rd</sup> year, this has a weighting factor of [30 % X 3<sup>rd</sup> year Aggregate]:**

1. 30/36 credits (83.33%) as Materials Engineering requirements
2. 6/36 credits (16.67%) as College requirements
3. 0/36 credits (0%) as University requirements

**For the 4<sup>th</sup> year, this has a weighting factor of [40 % X 4<sup>th</sup> year Aggregate]:**

1. 34/38 credits (89.47%) as Materials Engineering requirements
2. 4/38 credits (10.53%) as College requirements
3. 0/38 credits (0%) as University requirements

**Overall Credit Percentage over the four years:**

1. 131/157 credits (83.44 %) as Materials engineering requirements
2. 18/157 credits (11.465 %) as College requirements
3. 8/157 credits (5.095 %) as University courses requirements.

**Table 5.6** shows the records, over the past five academic years, of the total number of full time students enrolled in the program and the corresponding number of graduates for each year.

**Table 5.6: Total enrollment and graduates trends for the past five years**

	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
New enrolled students	211	231	220	275	189
Graduated students	38	44	40	55	52



### 5.4.7 Graduation Requirements for Architectural Engineering Department

In the AE department, the student has to complete **197** credit hours in order to get a Bachelor of Science degree; these credit hours are divided across four years of study as:

For the 1<sup>st</sup> year:

1. 27/39 credits (69.25%) are of Architectural Engineering courses requirements.
2. 8/39 credits (20.5%) are of College courses requirements.
3. 4/39 credits (10.25%) are of university courses requirements.

For the 2<sup>nd</sup> year:

1. 36/44 credits (81.82%) are of Architectural Engineering courses requirements.
2. 4/44 credits (9.09%) are of College courses requirements.
3. 4/44 credits (9.09%) are of university courses requirements.

For the 3<sup>rd</sup> year:

1. 36/40 credits (90%) are of Architectural Engineering courses requirements.
2. 4/40 credits (10%) are of College courses requirements.
3. 0/40 credits (0%) are of university courses requirements.

For the 4<sup>th</sup> year:

1. 40/40 credits (100%) are of Architectural Engineering courses requirements.
2. 0/40 credits (0%) are of College courses requirements.
3. 0/40 credits (0%) are of university courses requirements.



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For the 5<sup>th</sup> year:

1. 34/34 credits (100%) are of Architectural Engineering courses requirements.
2. 0/34 credits (0%) are of College courses requirements.
3. 0/34 credits (0%) are of university courses requirements.

**Overall percentile during five years:**

1. 173/197 credits (87.8%) are of Computer Engineering courses requirements.
2. 16/197 credits (8.12%) are of College courses requirements.
3. 8/197 credits (4.08%) are of university courses requirements.

**Table 5.7** shows the records, over the past five academic years, of the total number of full time students enrolled in the program and the corresponding number of graduates each year.

**Table 5.7: Total enrollment and graduates trends for the past five years**

	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
New enrolled students	34	36	26	50	49
Graduated students	19	33	25	21	37





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### 5.4.8 Graduation Requirements for Petroleum Engineering Department

In the petroleum engineering department, the student has to complete 148 credit hours in order to get a Bachelor of Science degree; these credit hours are divided across four years of study as:

For the 1<sup>st</sup> year:

1. 0/38 credits (0%) are of Petroleum Engineering courses requirements.
2. 38/38 credits (100%) are of College courses requirements.
3. 0/38 credits (0%) are of university courses requirements.

For the 2<sup>nd</sup> year:

1. 4/40 credits (10%) are of Petroleum Engineering courses requirements.
2. 32/40 credits (80%) are of College courses requirements.
3. 4/40 credits (10%) are of university courses requirements.

For the 3<sup>rd</sup> year:

1. 24/36 credits (66.6%) are of Petroleum Engineering courses requirements.
2. 12/36 credits (33.3%) are of College courses requirements.
3. 0/36credits (0%) are of university courses requirements.

For the 4<sup>th</sup> year:

1. 34/34 credits (100%) are of Petroleum Engineering courses requirements.
2. 0/34 credits (0%) are of College courses requirements.
3. 0/34 credits (0%) are of university courses requirements.



### **Overall percentile during four years:**

1. 62/148 credits (41.8%) are of Petroleum Engineering courses requirements.
2. 82/148 credits (55.4%) are of College courses requirements.
3. 4/148 credits (2.7%) are of university courses requirements.

Table 5.8 shows the records, over the past six academic years, of the total number of full time students enrolled in the program and the corresponding number of graduates each year.

**Table 5.8: Total enrollment and graduates trends for the past five years**

	2012–2013	2013–2014	2014–2015	2015–2016	2015–2016
Full-time students	298	303	303	322	310
Graduates	65	74	59	93	67

### **5.5 Transfer Students**

Each year, the Iraqi Ministry of Higher Education and Scientific Research issues the regulations of transferring succeeded students from/to all colleges and universities in Iraq. It also issues the nomination's modifications for the deferred and failed students. The college of engineering carries out the ministry instructions using a form given by the ministry plus other needed documents. The Students Affairs Department at the University of Basrah keeps following the transferring process that happens during summer holidays, i.e., July – August. Each transferred student undergoes what is called the scientific reprise executed by the department if the curriculum and credit hours of the two colleges are similar in more than 80%. Table 5.9 shows the numbers of the transferred students from/to the college over the past five years.



**Table 5.9: Number of students transferred during the last five years.**

Academic Year	Number of Transfer Students Enrolled	
	From the College	To the College
2016-2017	14	53
2015-2016	23	82
2014-2015	58	66
2013-2014	56	45
2012-2013	47	87

#### 4.6 SWOT ANALYSIS

The SWOT analysis for this criterion is shown below:

		Helpful (to achieving the objective)	Harmful (to achieving the objective)
Internal origin (attributes of the department)	<b>Strengths</b>	<ul style="list-style-type: none"> <li>- According the valid rules of central admission, the college receives only those high-grade students each year.</li> <li>- Many aspects are used in evaluating the students.</li> </ul>	<b>Weaknesses</b> <ul style="list-style-type: none"> <li>- According the valid rules of central admission, the new students delayed on the lectures while the students in the other stages started with lectures</li> </ul>
	<b>Opportunities</b>	<ul style="list-style-type: none"> <li>- Now, the newly admitted students' have better chances of learning due to the Improvement in and availability of the eXperimental works and improved laboratories.</li> <li>- Training opportunities are much more available now.</li> </ul>	<b>Threats</b> <ul style="list-style-type: none"> <li>- The summer training reports provided by the various companies do not give a good feedback including what students have achieved; whether they were active or not; what their flaws and their strengths are, etc...</li> <li>- The Training course is very short to grant the student sufficient eXperience in his field of specialty.</li> </ul>



## **CRITERION SIX: FACULTY**

### **6.1 Leadership Responsibilities**

The dean of the engineering college is the most pivotal of all positions concerned with the instructional development. The policies of the college, as outlined by the College Board, delegate the prime responsibility of the college daily operation to the dean. The dean is thus, assigned the task of running and management of the college. As the executive officer, the dean is responsible to both the university president and the college. It is the chairman who maintains daily contacts with the administration, with departments and with students. It is in this last context where the chairman has to ensure that the college's mission and educational objectives are met. This could be achieved through the following;

#### **6.1.1 College Affairs**

Developing and accomplishing college missions and objectives within those of the University; establishing college policies; conducting college meetings; involving faculty members and students in college decision making and activities.

#### **6.1.2 Academic Affairs**

Through the assistant dean for Scientific Affairs, the dean contributes in establishing departmental degree programs and curricula; evaluating, updating and improving program curricula, and the enforcing the quality of instruction.

#### **6.1.3 External communication**

Conveying University policies and actions to the college and departments, representing the college in the university, the University and all external agencies



(professional associations, government agencies, and the public) and communicating college programs and activities to students.

#### **6.1.4 Budgetary Affairs**

Preparing annual college budget requests; administering budgetary allocations (preparing requisitions, authorizing eXpenditures, maintaining budget records); promoting college cost-effectiveness (income generated from tuition, state subsidies, and grants versus eXpenditures); allocating faculty travel and research funds.

#### **6.1.5 Office Management**

Through the heads of departments, assistant dean for administrative affairs, and assistant dean for scientific and student affairs , the dean of the college administering college facilities; hiring, supervising, evaluating staff personnel (secretaries, clerks, laboratory assistants); establishing file and record systems (faculty, students, courses, academic data, correspondence); maintaining equipment and other department properties; requisitioning supplies; ordering textbooks.

#### **6.1.6 Faculty Affairs**

With the help of heads of departments, assistant dean for administrative affairs, and assistant dean for scientific and student affairs, the dean of engineering college supervise the following activities:

Recruiting, hiring, and orienting new faculty members; supporting and encouraging faculty growth and high performance in teaching, research,





conference attendance, seminars, workshops, short courses, and other professional activities;

Enforcing faculty responsibilities and protecting faculty rights; evaluating faculty members and making documented recommendations to the university president for their retention, promotion, and annual salary increments.

### 6.1.7 Student Affairs

The assistant dean for scientific and student affairs give the help to the college dean for:

- Facilitating a constructive environment to consolidate the program teaching and learning process.
- Curricular and career advising of students; awarding of departmental prizes and scholarships;
- Responding to student grievances and complaints;
- Certifying students for graduation.

### 6.1.8 Programs Affairs

- Arranging meetings with heads of departments to decide on further steps to improve the programs.
- Managing the essential funds for college, laboratory equipment, day-to-day functioning, other department social activities, etc.
- EXecuting the College Programs, alteration, and improvement proposed by program constituencies.



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## 6.2 Authority and Responsibility of Faculty

Faculty members are the back bone of the department and their role in the running of the department is very crucial. It is the department senate or faculty council that makes decisions, recommendations, proposals and policy changes within the department. The approval of the majority of the council is essential prior to passing to the chairman for further action. In effect, the department's council role is not limited only to academic matters but goes beyond that to include all aspects of governing the department. Though the responsibilities could vary among individuals in the department, all members participate in the following activities:

### 6.2.1 Teaching

proposing new curriculum courses, modifying and updating eXisting courses; course evaluation through conducting eXams, quizzes, assignments, projects, etc. In order to provide consistency in the college departments, faculty members in the engineering college departments are recommended to:

- Keeping up to date with relevant changes in their related fields and carefully preparing lectures and course materials.
- Being accessible to students for academic consultation during scheduled or prearranged office hours.
- Informing students regarding course formats, assignments, and methods of evaluation.
- Maintaining teaching schedules in all but eXceptional circumstances.
- Informing students of any necessary cancellation and rescheduling of instruction.



- Adhering to the schedules for submission of grades and evaluations by the department.

### **6.2.2 Research and Scientific Activities**

Devote a good portion of their time to carry out research or creative work, within the constraints of the relatively heavy teaching loads. All full time faculty members are encouraged to make the results of such activities available, to other researchers and academicians, through publications, lectures, and other appropriate means.

### **6.2.3 Service to the university**

Some faculty members in the College are assigned different tasks at the university level. This is realized, among other duties, through; reviewing of academic publications, editorial board members, organizing International conferences, and other academic associations and consultancy assignments.

## **6.3 Faculty**

The engineering college at university of Basrah has 250 full and part time faculty members, including the dean of the college. In terms of rank distribution, they are broken down as follows:

- 9 Full-Professors
- 30 Assistant Professors
- 60 Lecturers
- 152 Assistant Lecturers



Among our faculty, the number of years of teaching eXperience ranges from 2 to 33 years, with an average of  $321/25 = 12.84$  years. The number of years of teaching eXperience, at the University of Basrah, only, ranges from 2 to 27 years, with an average of  $287/25 = 11.48$  years. In the process of assessing the faculty activities in the engineering college it was realized that, on the average, the department is more tilted towards teaching rather than research and other scholarly activities. Detailed information regarding the classification of the faculty member in the engineering college is included in Tables 6.1, 6.2 and 6.3 below.

**Table 6.1.: Faculty Classification in Basrah College of Engineering**

No.	Department	Ph.D.	M.Sc.	Total
1.	Civil Engineering	43	30	73
2.	Electrical Engineering	24	19	43
3.	Mechanical Engineering	32	16	48
4.	Chemical Engineering	10	8	18
5.	Computer Engineering	10	18	28
6.	Materials Engineering	17	2	19
7.	Architecture Engineering	9	14	23
8.	Petroleum Engineering	3	8	11
Total		148	115	263

The following Table shows the distribution of faculty members according to their academic ranks.



**Table 6.2.: Faculty Academic Rank in Basrah College of Engineering**

No.	Department	Professor	Assist. Prof.	Lecturer	Assist. Lecturer	Total	Assist. lecturer/total (%)
1.	Civil Engineering	3	11	32	27	73	36.98
2.	Electrical Engineering	3	10	12	18	43	41.86
3.	Mechanical Engineering	4	8	25	11	48	22.91
4.	Chemical Engineering	1	3	6	8	18	44.44
5.	Computer Engineering	2	4	5	17	28	60.71
6.	Materials Engineering	1	5	12	1	19	5.26
7.	Architecture Engineering	-	2	7	14	23	60.86
8.	Petroleum Engineering	-	-	4	7	11	63.63
Total		14	43	103	103	263	39.16

**Table 6.3: Faculty Distribution in Basrah College of Engineering as a Full Time or Part Time.**

No.	Department	Full time	Part time	Total
1.	Civil Engineering	68	5	73
2.	Electrical Engineering	33	10	43
3.	Mechanical Engineering	35	13	48
4.	Chemical Engineering	16	3	18
5.	Computer Engineering	26	2	28
6.	Materials Engineering	17	2	19
7.	Architecture Engineering	18	5	23
8.	Petroleum Engineering	8	3	11
Total		221	43	263





### 6.3.1 Civil Engineering Faculty Members

The civil engineering department has 73 full and part time faculty members, including the chairman of department. In terms of rank, the faculty are distributed as follows:

- 3 Full-Professors
- 11 Assistant Professors
- 32 Lecturers
- 27 Assistant Lecturers

Among our faculty, the number of years of teaching experience ranges from 2 to 44 years. Detailed information regarding the credentials, experience of the faculty member in the CiE department is included in **Tables 6.4**.

**Table 6.4: Faculty Workload Summary for the Academic Year 2015-2016**

Faculty Member	Rank	Degree, Institution from which Degree Earned, Year	Prof. Society	Experience		
				Total Faculty	This Institution	Work & Other
Anis Abdulkudher Mohammad Ali	Professor	Ph.D. University of Edinburgh, UK 1983	Follow ASCE	33	33	7
Nabeel Abdulrazaq Jasim	Professor	Ph.D., University of Basrah, 1995		30	30	---
Salih Essa Khasaf	Professor	Ph.D., Technology University		26	26	
Mohamad Jawad kadhim	Professor	Ph.D., University of Arizona, USA, 2013		26	26	
Jamal Abdusamad Kdhir	Assist. Professor	Ph.D., University of Basrah, 2005		29	29	---
Haider Saad Yaseen	Assist. Professor	Ph.D., Iraq, 2002		24	10	---
Lamyaa Abduljalil Ahmad	Assist. Professor	Ph.D., University of Basrah, 2006		22	22	---
Kifah Muhammad Kudhier	Lecturer	Ph.D., University of Baghdad, 2000		29	29	---



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Faculty Member	Rank	Degree, Institution from which Degree Earned, Year	Prof. Society	Experience		
				Total Faculty	This Institution	Work & Other
David Abed Mohammad Jawad	Lecturer	Ph.D., University of Basrah, 2006		27	27	---
Samir Abdulbaqi Jabar	Lecturer	Ph.D., University of Basrah, 2000		12	12	---
Mahdi Ali Jawad	Lecturer	Ph.D., Politecnica Valencia University, 1989		16	14	---
Abdulamir AtaAllah Kariem	Lecturer	Ph.D., University of Basrah, 2008		18	18	---
Uday Adnan Abdulrazaq	Lecturer	Ph.D., University of Basrah, 2007		15	15	---
Alaa Chasib Kalib	Lecturer	Ph.D., University of Basrah, 2008		16	16	---
Abdulnasir Muhammad Abbas	Lecturer	Ph.D., University of Basrah, 2008		18	18	---
Wisam Sabeeh Neima	Lecturer	Ph.D., Chongqing University, 2008		14	14	---
Ahmad Sakban Sadoon	Lecturer	Ph.D., University of Basrah, 2011		13	13	---
Thaer Mohammed Saeed	Lecturer	Ph.D., University of Wollongong, 2011		13	13	---
Jaafar Ahmad Kadhim	Lecturer	Ph.D., University of Basrah, 2012		18	18	---
Ali Hassan Duhaime	Lecturer	Ph.D., University of Basrah, 2012		14	14	---
Abdulhussain Abdulkareem Abbas	Lecturer	Ph.D., Chongqing University, 2010		19	19	---
Ihab Sabri Salih	Lecturer	Ph.D., University of Basrah, 2010		7	7	---
Zuhal Abdulhadi Hamza	Lecturer	M.Sc., University of Basrah, 1991		31	31	---
Haleem Kadhim Hussain	Assist. Lecturer	M.Sc., University of Basrah, 2000		14	14	---
Khalid Abduljalil Abdulrazaq	Lecturer	M.Sc., University of Basrah, 1994		24	24	
Amar Salman Dawwd	Lecturer	M.Sc., University of Basrah, 2002		15	15	
Aseel Yassen Ahmad	Assist. Lecturer	M.Sc., University of Basrah, 1997		19	19	
Imad Hassan Muheraldin	Assist. Lecturer	M.Sc., University of Basrah, 1991		30	30	---
Fatima Abdulemam Jiad	Assist. Lecturer	M.Sc., University of Basrah, 2006		24	24	---
Ahmad Nasih Ahmad	Assist. Lecturer	M.Sc., University of Basrah, 1994		17	14	2
Aqil Hatem Jkheor	Assist. Lecturer	M.Sc., University of Basrah, 2003		14	14	---
Fatima Kalie Ibrahim	Assist.	M.Sc., University of		17	17	---



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Faculty Member	Rank	Degree, Institution from which Degree Earned, Year	Prof. Society	Experience		
				Total Faculty	This Institution	Work & Other
	Lecturer	Basrah, 2006				
Zainab Abdulelah Abdullatif	Assist. Lecturer	M.Sc., University of Basrah, 2008		24	24	---
Hussain Ali Hussain	Assist. Lecturer	M.Sc., University of Basrah, 2003		14	14	---
Wesam Qasim Flaih	Assist. Lecturer	M.Sc., NIT Warangal, 2011		10	10	
Husham Taha Yasin	Assist. Lecturer	M.Sc., University of Basrah, 2001		15	15	---
Aiman Alak Hassan	Assist. Lecturer			14	14	---
Fareed Hamid Majied	Assist. Lecturer	M.Sc., University of Basrah, 2002		11	11	---
Saad Aboalhail Arab	Assist. Lecturer	M.Sc., University of Basrah, 2003		14	14	---
Amar Ashor Akash	Assist. Lecturer	M.Sc., University of Basrah, 2003		14	14	---
Majid Ashor Kalaf	Assist. Lecturer			13	13	---
Zahir Muhammad Naji	Assist. Lecturer	M.Sc., University of Basrah, 2006		9	9	---
Jawad Abid Maatuk	Assist. Lecturer	M.Sc., University of Basrah, 2006		7	7	
Muhammad Hamid Sabhan	Assist. Lecturer	M.Sc., University of Basrah, 2006		9	9	---
Ehsan Qasim Muhammad	Assist. Lecturer	M.Sc., University of Basrah, 2002		14	14	---
Kadhim Zuboon Nasir	Assist. Lecturer	M.Sc., University of Basrah, 2002		8	12	4
Samuaal Mahdi Salih	Assist. Lecturer	M.Sc., University of Basrah, 2002		14	14	---
Adel Ahmad AbdulZahra	Assist. Lecturer	M.Sc., University of Basrah, 2001		14	14	---
Abdullah Abdulameer Abdullah	Assist. Lecturer	M.Sc., University of Basrah, 2002		14	14	---
Ahad Zuhair Hamody	Assist. Lecturer	M.Sc., University of Basrah, 2002		14	14	---
Sarmad Abdullah Abbas	Assist. Lecturer	M.Sc., University of Basrah, 2003		14	14	---
Usama Sailm Abdulkariem	Assist. Lecturer	M.Sc., University of Basrah, 2001		9	9	---
Rana Uda Mutashar	Assist. Lecturer	M.Sc., University of Basrah, 2008		10	10	---
Falah Majeed Hameed	Assist. Lecturer	M.Sc., University of Basrah, 2008		10	10	---
Ansam Zuhair Thamir	Assist. Lecturer	M.Sc., University of Basrah, 2009		10	10	---
Mazen Abdulemam Ahmad	Assist.	M.Sc., University of		10	10	---



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Faculty Member	Rank	Degree, Institution from which Degree Earned, Year	Prof. Society	Experience		
				Total Faculty	This Institution	Work & Other
	Lecturer	Basrah, 2009				
Khaldoon Shehab Ahmed	Assist. Lecturer	M.Sc., Salford University, 2009		6	6	
Ammar Jasim Dakil	Assist. Lecturer	M.Sc., University of Basrah, 2007		7	7	
Mustafa Sharif	Assist. Lecturer	M.Sc., University of Basrah, 2009		5	5	
Dina Ali Yassin	Assist. Lecturer	M.Sc., University of Basrah, 2009		13	13	
Yosif Jabar	Assist. Lecturer	M.Sc., University of Basrah, 2006				
Muthana Shakir	Assist. Lecturer	M.Sc., University of Basrah, 2011		11	11	
Haider Abdulredha	Assist. Lecturer	M.Sc., University of Basrah, 2011		11	11	
Ahamd Naiema	Assist. Lecturer	M.Sc., University of Basrah, 2011		10	10	
Alyaa Shati Muhan	Assist. Lecturer	M.Sc. University of Basrah, 2010		6	6	---
Reem Abdulameer	Assist. Lecturer	M.Sc. University of Basrah, 2010				
Zaid F. Abdul Abbas	Assist. Lecturer	M.Sc., University Technology Malaysia, 2009		6	6	
Mayada Yuhia Muhammad	Assist. Lecturer	M.Sc. University of Basrah, 2009		8	8	
Wisam Abid Ali	Assist. Lecturer	M.Sc. University of Basrah, 2003		7	7	
Muhammad Jabar Mawat	Assist. Lecturer					
Mudhar Hassan Katea	Assist. Lecturer					
Maha Ata Faraon	Assist. Lecturer					





### 6.3.2 Electrical Engineering Faculty Members

The electrical engineering department has 43 full and part time faculty members, including the chairman of department. In terms of rank distribution, they are broken down as follows:

- 3 Professors
- 10 Assistant Professors
- 12 Lecturers
- 18 Assistant lecturer

Also, our faculty are distributed on Electrical Engineering fields as follows:-

- 9 in electrical power specialty
- 7 in power electronics specialty
- 4 in electrical machines specialty
- 8 in communication specialty
- 10 in control and systems specialty
- 2 in computer science
- 2 in optical electronics specialty
- 1 in microelectronics specialty
- 1 in optical communication specialty

Among our faculty, the number of years of teaching eXperience ranges from 2 to 33 years.

In Table 6.5, we list the faculty names and their ranks and specialties.





**Table 6.5 Faculty names with their ranks and specialty**

No.	Name	Rank	Specialty
1	Dr. Rabea Hashim Thijeel. (deen)	Prof.	Power
2	Dr. Ali Fadil Marhoon	Prof.	Comp. & Cont.
3	Dr. Ramzy Salim Ali (head)	Asis. Prof.	Comp. & Cont.
4	Dr. Abdoalkareem Saoady	Asis. Prof.	Communication
5	Dr. Abbas Hafis	Asis. Prof.	Power
6	Dr. Jawad Radi Mahmood	Asis. Prof.	Power
7	Dr. Haider Mohmed Al sabag	Asis. Prof.	Communication
8	Dr. Fadil Rohma Tahir	Asis. Prof.	optoelectronics
9	Dr. Basil Hani Jasim	Asis. Prof.	Comp. & Cont.
10	Dr. khairia Abdoaljaleel	Asis. Prof.	Power
11	Dr.Mofeed Turki Rasheed	Asis. Prof.	Comp. & Cont.
12	Dr.Amar Abdoashaheed	Asis. Prof.	Comp. & Cont.
13	Dr. Abdoaljabar Hadi Homadi	Lecturer	Power
14	Dr. Hamed wassfi	Lecturer	Power & Machine
15	Dr. Basim Talib Kadim	Lecturer	Power
16	Dr. Gaidaa Jawad kadim	Lecturer	Comp. & Cont.
17	Dr.Abdoalmotalib Turki Rasheed	Lecturer	Comp. & Cont.
18	Dr.Khalid mahdi Abdoalhassan	Lecturer	Power elect.
19	Dr.Falih Mahdi Musa	Lecturer	Communication
20	Dr.Ali Kadim	Lecturer	Power & Machine
21	Dr.Habeeb Jaber Nakad	Lecturer	Power elect.
22	Dr. Ali Ameen Abdoaljabar	Lecturer	Communication
23	Dr. Hosham Lateef Saoady	Lecturer	Communication
24	Khlood Musa	Lecturer	Communication
25	Osama Yaseen	Asis. Lecturer	Power
26	Ydae Basher	Asis. Lecturer	Power elect.
27	Ayad Shaker Mahmood	Asis. Lecturer	Comp. & Cont.
28	Hanan Majeed Hameed	Asis. Lecturer	Communication
29	Samya Dawood Shaker	Asis. Lecturer	Comp. & Cont.
30	Basema Abraheem	Asis. Lecturer	Power elect.
31	Ali Mohamed	Asis. Lecturer	Communication
32	Aeada Kadum Albedri	Asis. Lecturer	computer
33	Nabeel Kadim	Asis. Lecturer	Communication
34	Raonig Ali habeeb	Asis. Lecturer	Power elect.
35	Maha Kadim Gontab	Asis. Lecturer	Power & Machine
36	Aylaf Jaleel Majeed	Asis. Lecturer	Power elect.
37	Ali Abdallah	Asis. Lecturer	Comp. & Cont.
38	Ali Abdoalhady	Asis. Lecturer	Communication
39	Anwer Musa	Asis. Lecturer	Comp. & Cont.
40	Saomar Sahib Hardan	Asis. Lecturer	Power & Machine
41	Majed abdalbagi	Asis. Lecturer	Comp. & Cont.
42	Abdalbast abdsamad	Asis. Lecturer	Power & Machine
43	Intsar Taess	Asis. Lecturer	Comp. & Cont.



### 6.3.3 Mechanical Engineering Faculty Members

The mechanical engineering department has 48 full, among these faculty there are 19 members of Ph. D. and part time faculty members, including the chairman of department. There are 10 of M. Sc. in Ph. D. study among them there is only one completely forked outside the country the remainder study in department partly forked. In terms of rank distribution, they are broken down as follows and shown as percentage in Fig.3.1:

- 4 Full-Professors
- 8 Assistant Professors
- 25 Lecturers
- 11 Assistant Lecturers

In the process of assessing the faculty activities in the mechanical engineering department it was realized that, on the average, the department is more tilted towards teaching rather than research and other scholarly activities. In addition to teaching staff the department also has engineers, technicians, and administrators employees. Detailed information regarding the faculty staff members, technicians and administrators with their names, certificates, gender, ages and rank were mentioned in tables 6.6 and 6.7 respectively.

**Table (6.6) : ME Department Faculty Members**

No.	Faculty	Area of Interest		Curricular Areas
		General	Specific	
1.	Salah Ismail Najim	Mech. Engg.	Energy Conversion	Power Plants- Thermodynamics
2.	Abdul Muhsin Abood Rageb	Mech. Engg.	Heat Transfer	Heat Transfer
3.	Ameen Ahmed Nassar	Mech. Engg.	Applied Mechanics	Theory of Machines
4.	Abdul Kareem F. Hassan	Mech. Engg.	Applied Mechanics	Manufacturing Process
5.	Salman Hasham Hamady	Mech. Engg.	Heat Transfer	Air Conditioning and Refrigeration



No.	Faculty	Area of Interest		Curricular Areas
		General	Specific	
6.	Abdul Baki K. Ali	Mech. Engg.	Applied Mechanics	Design
7.	NatheraAbdelhassan Salah	Mech. Engg.	Applied Mechanics	Strength of Materials
8.	MuneerAbdulJaleel Ismael	Mech. Engg.	Fluid Mechanics	Fluid Mechanics (2)
9.	FalahAhsyAbood Al-Mansory	Mech. Engg.	Heat Transfer	Fluid Mechanics (1)
10.	Hussein Sadeq Sultan	Mech. Engg.	Heat Transfer	Thermodynamics
11.	Ali Abdul-MonemAbedalmehseen	Mech. Engg.	Heat Transfer	Air Conditioning and Refrigeration
12.	RafilMahmoodLaftah Al-Jabery	Mech. Engg.	Applied Mechanics	Control
13.	QusaiTalibAbdulwahab	Mech. Engg.	Applied Mechanics	Control
14.	Khaled Baker SaleemAl-Jassim	Mech. Engg.	Fluid Mechanics	Fluid Mechanics (2)
15.	SajedHusen Ali	Mech. Engg.	Heat Transfer	Power Plants
16.	Emad Abdullah Khazal	Mech. Engg.	Fluid Mechanics	Mathematics (2)
17.	Murtadha Abbas Jabber	Mech. Engg.	Material Engineering	Manufacturing Process
18.	Abbas JasimSabeeh	Mech. Engg.	Applied Mechanics	Strength of Materials
19.	HassaneinIbraheemKhalaf	Mech. Engg.	Applied Mechanics	Programming-Autocad
20.	Ali HasanAbedalahlJawal	Mech. Engg.	Applied Mechanics	Vibration
21.	RaheemKhazalMuswel	Mech. Engg.	Applied Mechanics	Engineering Mechanics (2)
22.	AbdAlbaseerShariBahedh	Mech. Engg.	Applied Mechanics	Mechanical Drawing (1)
23.	AsmaAhsyKawy Al-Maleky	Mech. Engg.	Applied Mechanics	Mathematics (1)
24.	SanaMahdyShrama Al-Jabery	Mech. Engg.	Heat Transfer	Heat Transfer
25.	JaferKalef Ali Al-Selety	Mech. Engg.	Applied Mechanics	Numerical & Engineering Analysis
26.	Mahmood Shaker Jamel	Mech. Engg.	Heat Transfer	Power Plants
27.	Ali KademHady Al-Helfy	Mech. Engg.	Heat Transfer	Heat Transfer
28.	HederKazelMhbas Al-Snesel	Mech. Engg.	Applied Mechanics	Theory of Machines
29.	Raad Jamal Jassim	Mech. Engg.	Applied Mechanics	Engineering Mechanics (2)
30.	BaselShnenMnahy Al-Jorany	Mech. Engg.	Applied Mechanics	Computer Programming
31.	Imad Abdul-KadhemKheioon	Mech. Engg.	Applied Mechanics	Control
32.	Ali HabelZuaibel	Mech. Engg.	Applied Mechanics	Mathematics (2)
33.	HaiderMahedyLaeth Al-Jabery	Mech. Engg.	Heat Transfer	Heat Transfer
34.	AlaaHlejy Mohammed	Mech. Engg.	Applied Mechanics	Engineering Drawing (1)
35.	FatehallelhFadelKalf	Mech. Engg.	Mathematics Science	Computer Programming
36.	RafedJhbar Mohammed	Mech. Engg.	Fluid Mechanics	Fluid Mechanics (1)
37.	RanaLatefNtoshDawed	Mech. Engg.	Heat Transfer	Heat Transfer



No.	Faculty	Area of Interest		Curricular Areas
		General	Specific	
38.	Heder Ali FadelHwash Al-Ezerj	Mech. Engg.	Applied Mechanics	Mathematics (2)
39.	Zenab Kareem Rady Al-Esady	Mech. Engg.	Heat Transfer	Mathematics (1)
40.	Kahtan Adnan Jwad	Mech. Engg.	Applied Mechanics	Computer Programming
41.	Yahya Mohammed Ameen	Mech. Engg.	Applied Mechanics	Internal Combustion Engines
42.	Mohammed Baker Mehzen	Mech. Engg.	Heat Transfer	Internal Combustion Engines
43.	SanaJaferAbas Al-Moswy	Mech. Engg.	Heat Transfer	Heat Transfer
44.	Mohammed KerallelKadem	Mech. Engg.	Heat Transfer	Heat Transfer
45.	Ahmad Abdulkareem Mahdi	Mech. Engg.	Heat Transfer	Heat Transfer
46.	FerasMoterKelf	Mech. Engg.	Heat Transfer	Power Plants
47.	Huda AbedallhaAbedalkrem	Mech. Engg.	Heat Transfer	Heat Transfer
48.	EhsanNadehmJewad	Mech. Engg.	Heat Transfer	Heat Transfer
49.	Hassanein Sami Abdul-Hadi	Mech. Engg.	Applied Mechanics	Engineering Mechanics (1)

**Table (6.7) : Engineers, Technicians, and Labs' Administrators in ME department**

No.	Name	Appointment Address	Certificate	Gender	Age
1	JehadMarzokHasan	Premier Boss Engineer	B. Sc. Mech. Engg.	Male	47
2	SaefAldeenEsmaelSahem	Assist. Boss Engineer	B. Sc. Mech. Engg.	Male	38
3	SohadTahAbas	Assist. Boss Engineer	B. Sc. Mech. Engg.	Female	37
4	EmanHashm Aziz	Premier Engineer	B. Sc. Mech. Engg.	Female	34
5	HusenMohammd Ali	Assist. Engineer	B. Sc. Mech. Engg.	Male	34
6	AbedalhasanHanonMshary	Premier Boss Programmer	B. Sc. Mech. Engg.	Male	34
7	SafaHafdHeder	Technical	Dip. Mech. Tech.	Male	36
8	AbassSadonHreja	Assist. Technical	Intermediate	Male	34
9	Eklas Ali Abedalkrem		Preparatory	Female	46
10	YesraYaseenMohammd		Preparatory	Female	47
11	BasmaHusenYosef	Premier Technical	Dip. Mech. Tech.	Female	35
12	EkbaiQodadaMurad	Assist. Noticeable	Dip. Management	Female	40
13	AedaYaseenMohammd	Assist. Noticeable	Preparatory	Female	40
14	Marem Tama Hafd	Service Officer	Illiteracy	Female	29
15	JamelaHafdHusen	Premier Service Officer	Primary	Female	30





**Table (6.8): Faculty Involvement in Regular Committees at the Department**

No.	Committee	Members	
1	Scientific Advisory and Graduate Affairs Committee	-Ali A. Abedalmehseen - Abdul Muhsin A. Rageb -Ameen Ahmed Nassar	-Abdul Kareem F. Hassan -Salman H.Hamady
2	Examination Committee	-Emad Abdullah Khazal -AsmaAhsyKawy -Ammar Ali Ojimi	-Murtadha Abbas Jabber - Hussein Sadeq Sultan - Maher Abdullah Khalid
3	Importation Committee	-QusaiTalibAbdulwahab -Hassanein I.Khalaf	-Murtadha Abbas Jabber - Abbas JasimSabeeh
4	Summer Industrial Training Committee	-Ahmad A. Mahdi -Hasanain S. AbdulHadi	-HusenMohammd Ali -SafaHafdHeder
5	Gratis Book Committee	-Ammar Ali Ojimi -AedaYaseenMohammd -YesraYaseenMohammd	-HaiderMahedyLaeth -BasmaHusenYosef -Eklas Ali Abedalkrem
6	Laboratory Maintenance Committee	- Maher Abdullah Khalid -Saef A.EsmaelSaheb -AbassSadonHreja	-AlaaHlejy Mohammed -JehadMarzokHasan
7	Quality Assurance Committee	-Abdul Kareem F. Hassan	-Khaled Baker Saleem

#### 6.3.4 Chemical Engineering Faculty Members

The chemical engineering department has 18 full time faculty members, including the chairman of department. In terms of rank distribution, they are broken down as follows:

- 1 Professor
- 3 Assist professor
- 6 Lecturers
- 8 Assist lecturer

Among our faculty, the number of years of teaching eXperience ranges from 2 to 33 years, In the process of assessing the faculty activities in the ChE department it was realized that, on the average, the department is more tilted towards teaching rather than research and other scholarly activities. Detailed information regarding





the credentials, eXperience, workload, and committees' involvement of the faculty member in the ChE department is included in Tables 6.9

The chemical engineering department constitutes of:

- 1- The **chairman** of the department who manages the departments academic and administrative affairs, **the chairman administrative support staff** (chairman's reservist, assistant, and secretary).
- 2- The **department panel** which includes all of the faculty members of the department whose names are listed in table6.9.

**Table6.9:ChE Department Faculty Members**

Full Name	Rank	Age
Ala'a Abdulrazzaq jasim	Professor	45
Salah Abdulwahab Neama	Assist. Professor	60
Abdulwahed abdulhassan	Assist. Professor	52
Sa'ib Abdullah Yousif	Lecturer	57
Hyder Hadi Jasim	Assist. Professor	44
Ali Naser Kalaf	Lecturer	55
Shrooq Shbber Ghallib	Assist. Lecturer	42
Shymm'a Mahdi Shayeb	Assist. Lecturer	37
Raed abdulhussein	Assist. Lecturer	57
Ansam Daher Hussain	Assist. Lecturer	38
Anwar Abdulhassan	Lecturer	43
Hyff'a Lattef Swady	Lecturer	43
Russel Nasser	Lecturer	33
Ghadder Jasim Mohammed	Assist. Lecturer	33
Wed Khaled Ghanem	Assist. Lecturer	35
Mohammed Naser Fares	Lecturer	45
Hyder Hammed	Assist. Lecturer	42
Ahmed Showky	Assist. Lecturer	33
Ahlam Abdulreza	Assist. Lecturer	42



3- The department also has engineers, technicians, and administrators employees with their names mentioned in **Table6.10**.

**Table6.10: Engineers, Technicians, and administrators in CoE department**

Name	Position and Specialty	Age
Hassan Wathik	Engineer – B.Sc. Chemical Engineering	30
Ahmed Showky	Engineer – B.Sc. Chemical Engineering	28
Nassyma Ghaddu'a	Chemical – B.Sc. Chemistry	35
Nawras Talib	Biological – B.Sc. Biology	28
Ahlam Abdulreza	Chemical – B.Sc. Chemistry	28
Zainab Ali Jasim	Laboratory Assistant, Secretary – Bachelor Chemical	40
Muslim Ghareeb	Technical	49
Sadeaa' Kamil Jabber	Service	58
Kamyssa Shalif Salman	Service	67
Wahedda Abdulhussain Suhyl	Service	41
Badder Hussain Ubaied	Technical	49
Noor younis adulrazak	Engineer – B.Sc. Computer Engineering	27

### 6.3.5 Computer Engineering Faculty Members

The computer engineering department has 28 full and part time faculty members, including the chairman of department. In terms of rank distribution, they are broken down as follows:

- 2 Full-Professors
- 4 Assistant Professors
- 5 Lecturers
- 17 Assistant Lecturers



Among our faculty, the number of years of teaching eXperience ranges from 2 to 33 years, with an average of  $321/25 = 12.84$  years. The number of years of teaching eXperience, at the University of Basrah, only, ranges from 2 to 27 years, with an average of  $287/25 = 11.48$  years. In the process of assessing the faculty activities in the CoE department it was realized that, on the average, the department is more tilted towards teaching rather than research and other scholarly activities. Detailed information of the faculty member in the CoE department is included in **Tables 6.11**

**Table6.11: Faculty Workload Summary for the Academic Year 2016-2017**

Faculty Member	FT or PT	Rank	Degree, Institution from which Degree Earned, Year
Majid Abdulnabi Alwan Altameemi	FT	Lecturer	PhD, Basrah University, Iraq, 2002
Abduladhem Abdulkareem Ali	FT	Professor	PhD, Basrah University, Iraq, 1997
Turki Younis Abdullah	FT	Professor	PhD, Basrah University, Iraq, 2000
Ghaida A. Al-Suhail	FT	Assist. Professor	PhD, Basrah University, Iraq, 2007
Haroutuon Intranik Hairik	FT	Assist. Professor	PhD, Basrah University, Iraq, 2005
Fatima Kadhum Hasan	FT	Lecturer	PhD, Basrah University, Iraq, 2006
Fadhil Abdulabbas Ali	FT	Lecturer	PhD, Nahrain University, Iraq, 2006
Ali Ahmed abed	FT	Lecturer	PhD, Basrah University, Iraq, 2012
Abbas Abdulameer Jasim Alsankor	FT	Lecturer	PhD, Basrah University, Iraq 2012
Mohammed Abedali Jodah	FT	Lecturer	PhD Basrah University, Iraq, 2014
Wasan Abdulrazaq Wali	FT	Lecturer	PhD, Basrah University, Iraq 2014
Abdulkareem Khamees Hasan	FT	Lecturer	MSc, Basrah University, Iraq, 1986
Lu'ai Talib Alubaichi	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2004
Alaa' Falah Abdulhasan Alibadi	FT	Assist. Lecturer	
Ali Esam Hameed Alhadad	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2006
Atheel Kadhum Abdulzahraa	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2008
Dunia Sattar Tahir Aljubori	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2006



Faculty Member	FT or	Rank	Degree, Institution from which Degree Earned, Year
Mus'aab Adel Ali	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2006
Ghasaq Chasib Almayahi	FT	Assist. Lecturer	MSc, Basrah University, 2006
Intisar Tua'ess Huaidi	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2006
Musatafa Isma'eel Ali Alhumairi	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2005
Hiba Hakim Abdulzahraa	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2004
Israa' Sabri Abdulameer	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2009
Mohaned Hamid Khalaf	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2007
Imad Abdulrazzaq Jassim	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2005
Hassanin Shaker Husein	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2010
Ali Nabeel Ibrahim	FT	Assist. Lecturer	MSc, GGS University, India, 2009
Mohammed Kati' Audah	FT	Assist. Lecturer	MSc, Basrah University, Iraq, 2012
Ali Mohammed Ahmed	FT	Assist. Lecturer	MSc., Basrah University, Iraq, 2012

### 6.3.6 Materials Engineering Faculty Members

The materials engineering department has 10 full-time, 5 part-time and 3 PhD students two of them studying outside Iraq as the faculty members, including the Head of the department. In terms of scientific title distribution, they are distributed as follows:

- 1 Professors
- 5 Assistant Professors
- 12 Lectures
- 1 Assistant Lectures

Among our faculty, the number of years of teaching eXperience ranges from 1 to 20 years, with an average of  $251/18 = 13.94$  years. The number of years of teaching eXperience, at the University of Basrah, only, ranges from 1 to 20 years, with an average of  $287/18 = 15.944$  years. In the process of



assessing the faculty activities in the ME department it was realized that, on average, the department is more inclined towards teaching rather than research and other scholarly activities. Detailed information regarding the faculty members in the ME department is included in **Tables 6.13**

**Table 6.13: Faculty Workload Summary for the Academic Year 2016-2017**

Faculty Member	FT Or PT	Rank	Degree, Institution from which Degree Earned, Year
Dhia'a CH. Ali		Lecturer	Ph. D, Basrah University, Iraq, 2008
Mohammed M.Abedlhafd		Assist. Lecturer	MSc, Jawaharlal Nehru tech. University, India, 2010
Qais A.Rishaq	FT	Assist. Professor	PhD, Basra University, Iraq, 2003
Safaa A. S. Almtori	FT	Assist. Professor	PhD, Basra University, Iraq, 1999/2000
Saad Matti Potrous	FT	Assist. Professor	PhD, University of Dundee, U.K., 1990
Haider M. Mohammed	FT	Assist. Professor	Ph. D., Basrah University, Iraq, 2010
Atheed Habeeb Taha	FT	Lecturer	PhD, Basrah University, Iraq, 2011
Nuha Hadi Jasem	-	. Lecturer	Ph.D., Basrah University, Iraq, 2014
Hayder A. Abood	FT	Lecturer	Ph.D., Huazhong University of Science and Technology, China, 2013
Emad Obed Bajee	PT	Lecturer	Ph.D, Basrah University, Iraq, 2013
Azzam Dawod Hassan	PT	Assist. Lecturer	MSc, Basrah University, Iraq, 2002
Khulood Ibraheem Dawood	FT	Lecturer	Ph.D., Basrah University, Iraq 2012
Usama Jasem Naem	FT	Lecturer	Ph.D, Basrah University, Iraq, 2014
Haider Kasem Meshry #	FT	Lecturer	MSc, Basrah University, Iraq 2012
Safaa' Khairy Ja'az #		Assist. Lecturer	MSc, Basrah University, Iraq 2002
Atef Na'mah Jerad #		Assist. Lecturer	MSc, Basrah University, Iraq, 2001
Isra'a Habeeb Kadem	PT	Lecturer	Ph.D, Basrah University, Iraq, 2014
Asa'ad Abdul Sayed	PT	Lecturer	Ph.D, Basrah University, Iraq, 2014





### 6.3.7 Architectural Engineering Faculty Members

The Architectural engineering department has 23 full and part time faculty members, including the chairman of department. In terms of rank distribution, they are broken down as follows:

- 2 Assistant Professor
- 7 Lecturers
- 14 Assistant Lecturers

**Table6.14: Faculty Workload Summary for the Academic Year 2016-2017**

Rank	Full Name	FT or PT	Degree, Institution from which Degree Earned, Year	Avg. load hrs/week
Lecturer	Dr.Tahssen Ali Majeed	FT	Ph.D Architectural Engineering	32
Assist Professor	Dr. Amjad Almusaed	FT	Ph.D Architectural Engineering	24
Lecturer	Dr. Asad Ghalib	FT	Ph.D Architectural Engineering	30
Lecturer	Dr. Alwaleed Khaleed	FT	Ph.D Architectural Engineering	30
Lecturer	Dr. Abas Kathim	FT	Ph.d. Architectural Engineering	30
Lecturer	Dr.Sadam Khalaf Falih	FT	PhD. Civil engineering	32
Assist. Lecturer	Dawod Salim Risn	FT	MSc. Architectural Engineering	30
Assist. Lecturer	Qusay Abdulkareem Mustafa	PT	MSc. Architectural Engineering	7
Assist. Lecturer	Hamed Haiab Samir	FT	MSc. Architectural Engineering	0
Assist. Lecturer	Qaed Zqair Khalaf	FT	MSc. Architectural Engineering	0
Assist. Lecturer	Fatima Abdulzahar Bader	FT	MSc. Architectural Engineering	30
Assist. Lecturer	Mohammed Abdulmahdy Shinan	FT	MSc. Architectural Engineering	30
Assist. Lecturer	Zainab Abd Alkarim	FT	MSc. Architectural Engineering	0
Assist. Lecturer	Armin Sarkees Khorsof	FT	MSc. Architectural Engineering	30
Assist. Lecturer	Alaa Husein Nasar	FT	MSc. Civil Engineering	30
Assist. Lecturer	Aqil Salih Faisal	FT	Msc. Arts	30
Assist. Lecturer	Khitam Mula Kwam	FT	MSc. Computer Science	0
Assist. Lecturer	Satar Jabar Hashim	FT	Msc. Mechanical Engineering	30



Rank	Full Name	FT or PT	Degree, Institution from which Degree Earned, Year	Avg. load hrs/week
Assist. Lecturer	Suhad Abdulameer		MSc. Civil Engineering	0
Assist. Lecturer	Ahmed Atta Feraaon		MSc. Architectural Engineering	28
Assist. Lecturer	Mehdi Fakher Yaseen		MSc. Architectural Engineering	30
Assist. Lecturer	Ahmed Sagban		MSc. Civil Engineering	0
Assist. Lecturer	Ali Muyad		MSc. Computer Engineering	30

### 6.3.8 Petroleum Engineering Faculty Members

The petroleum engineering department has 11 full and part time faculty members, including the chairman of department. In terms of rank distribution, they are broken down as follows:

- 4 Lecturers
- 7 Assistant Lecturers

Among our faculty, the number of years of teaching eXperience ranges from 1 to 20 years. In the process of assessing the faculty activities in the PeE department it was realized that, on the average, the department is more tilted towards teaching rather than research and other scholarly activities. Detailed information regarding the faculty member in the PeE department is included in **Tables 6.15**



**Table 6.15: Faculty Workload Summary for the Academic Year 2016-2017**

Faculty Member	FT or PT	Rank	Degree, Institution from which Degree Earned, Year
Sajed Hussein Ali	FT	Lecturer	PhD, University of Al-Baker (University of Technology ), Iraq, 2003
Ammar Ali Ojimi	FT	Lecturer	PhD, Basrah University, Iraq, 2011
Hisham Kadhum Hashim	FT	Lecturer	PhD, UPM, Malaysia, 2012
Ali Kamil Marzook	FT	Lecturer	PhD, UPM, Malaysia, 2013
Salam Abd Alqader Falih	FT	Lecturer	M.Sc., Basrah University, Iraq, 2009
Ethar Hisham Khalil	FT	Assistant Lecturer	M.Sc., Baghdad University, Iraq, 2008
Amani Jalel Majeed	FT	Lecturer	M.Sc., Basrah University, Iraq, 2010
Khawlah Naeem Hammood	FT	Assistant Lecturer	M.Sc., Baghdad University, Iraq, 2008
Noor Hatem Obais	FT	Assistant Lecturer	M.Sc., Jawagher University, India, 2012
Jasmin Fadhel Jassim	FT	Assistant Lecturer	M.Sc., Basrah University, Iraq, 2009
Hasanain Sami Abd Alhadi	FT	Assistant Lecturer	M.Sc., Basrah University, Iraq, 2009
Nuhad Abd Al-Sada Taha	FT	Assistant Lecturer	M.Sc., Basrah University, Iraq, 2013
Hutheem Abdullah	PT	Assistant Prof.	PhD, Basrah University, Iraq
Basim Abd Al-Hassan	PT	Lecturer	PhD, Basrah University, Iraq
Tahseen A. Na'em	PT	Assist. Lecturer	M.Sc., Baghdad University, Iraq, 2008
Ali Noor El-Dean Abdul Kareem	PT	Assist. Lecturer	M.Sc., Baghdad University, Iraq, 2008
Ahmed Kadhum	PT	Lecturer	PhD, Basrah University, Iraq
Walla Majeed Khdeer	PT	Lecturer	PhD, Baghdad University, Iraq
Ali Hassan	PT	Lecturer	PhD, Basrah University, Iraq,
Ali Retha	PT	Lecturer	PhD, Tehran ,Iran
Mohammed Fazallee	PT	Lecturer	PhD, Tehran ,Iran
Ali Ashore	PT	Assistant Lecturer	M.Sc., Basrah University, Iraq
Mohammed Hussein Manhole	PT	Assistant Prof.	PhD, University England, 2009
Ra'ed K. Sabri	PT	Assistant Lecturer	M.Sc., Baghdad University, Iraq
Hadier Hade	PT	Lecturer	PhD, Basrah University, Iraq
Ala'a Omer	PT	Assistant Prof.	PhD, Basrah University, Iraq
Ahmed Radee	PT	Assistant Lecturer	M.Sc.,University of Baghdad, Iraq



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## CRITERION SEVEN: FACILITIES

### 7.1 Space

College of Engineering is located at Basra University campus in Qarmat-Ali district which is located at north of Basra. Engineering college buildings consists of six buildings for the departments of civil, electrical, mechanical, chemical, computers, and architecture as well as college buildings, engineering workshops building, college library building, college classroom building, student club, a college mosque.

#### 7.1.1 Space of Civil Engineering Department

The CiE Department is part of the campus of the college of engineering in Qarmat Ali district, north of Basrah, Basrah, Iraq. The department is a three story building that incorporates, in it, offices for the faculty members and the supporting staff together with classrooms and laboratories offices:

1. Administrative office: the office of the chairman is located on the second floor of the civil engineering department building with approximately 28 m<sup>2</sup>, in area.
2. Administrative Supporting Staff; this consists of one full time secretary whose job is to administratively assist the chairman; this office is 14 m<sup>2</sup>, in area, and is directly connected to the chairman's office. These two offices, the chairman's and the secretary's, combine to form the administrative office of the Civil Engineering Department.
3. Faculty offices are allocated in two different levels of the Department's Building. There are 24 faculty offices in the department, each of which is a





14 m<sup>2</sup> in area, each faculty (with a PhD or higher) is assigned a separate office. Every faculty office is furnished and equipped with 1 PC and an activated link to Internet.

4. Storage rooms: There are a total of two storage rooms in the department. Each of these rooms is of 110.25 m<sup>2</sup>, each.
5. Meeting room: this room is about 28 m<sup>2</sup>, is mainly used for departmental related meetings at different levels. This room is properly furnished and is equipped with data show.
6. EXamination Committee Room: it is located at the second floor near the administrative office with 28 m<sup>2</sup>, in area. Here is where students' records are held. It consists of one printing machine, one PC, and one photocopying/scanner machine.

### **Classrooms**

The civil engineering department contains 12 halls used as classrooms. A typical classroom in building is equipped with the following:

- 2X4 m<sup>2</sup> Whiteboard.
- Classroom space area 7m X 10.5m (73.5 m<sup>2</sup>).
- Air conditioning unit with adjustable temperature.
- Adequate classroom chairs for up to 60 chairs per classroom.

### **Laboratories**

The department of civil engineering has six fully equipped, laboratories, with a total area 650 m<sup>2</sup>, all of which are located in the building of the department. These labs are utilized to perform basic experiments needed to help the students





understand the engineering concepts covered in the different courses. These Lab facilities could also be utilized used for building the term projects and senior projects as well. The Civil Engineering Labs, however, were structured to be adaptable and upgradable to accommodate the inevitable changes. Enough efforts are eXerted in order to make sure that lab equipments are kept in good operating conditions. A summary of the 6 departmental laboratories is given, below, in **Table 7.1** Also, it shows the courses associated with each lab.

**Table7.1: Laboratories' Names, Space Areas, and Associated Courses**

Laboratory' Name	Area in m2	Associated Courses
Sanitary Engineering Lab.	200	CiE437
Structural Materials Lab.	200	CiE135, CiE234
Soil and Highways Engineering Lab.	200	CiE333, CiE438
Geology Engineering Lab.	150	CiE132
Light Structures/Traffic Engineering Lab.	200	CiE336
Fluid Engineering Lab.	200	CiE233
Computer Engineering Lab.	200	CiE133, CiE235
Surveying Engineering Lab.	200	CiE231

The civil engineering students' utilization of the lab space and equipments could be measured in terms of an index representing ratio between the number of students registered in a certain lab and the lab space area, at a given time slot. This is shown in **Table7.2**.



**Table7.2: Student Utilizing Space Area Ratio to Instructional laboratories  
Space Area**

Lab's Name	Sunday	Monday	Tuesday	Wednesday	Thursday
Sanitary Engineering Lab.	-	-	-	Open 4 hours (50.0%)	-
Structural Materials Lab.	Open 4 hours (36.28%)	Open 4 hours	Open 2 hours	Open 2 hours	-
Soil and Highways Engineering Lab.	-	-	Open 4 hours	Open 4 hours	-
Geology Engineering Lab.	Open 4 hours (33.33%)	-	Open 2 hours (16.67%)	-	-
Light Structures/Traffic Engineering Lab.					
Fluid Engineering Lab.	Open 3 hours (100%)	-	-	-	-
Computer Engineering Lab.					
Surveying Engineering Lab.	-	Open 2 hours (33.33%)	Open 2 hours (33.33%)	-	Open 2 hours (33.33%)

### **Labs Staff:**

As mentioned before, there are six major labs, in the department of civil engineering, that are fully utilized in civil engineering courses, term projects and senior design projects as well. The CiE labs are well maintained and properly run by a designated laboratories maintenance committee and the technical supporting team of technicians. The most recent load distribution among the technical staff is shown in **Table7.3**.



**Table7.3: Technicians Assigned Responsibilities for the Operation of the Labs**

Technician	Lab. Name
Dr. Kifah Mohammed Chief Eng. Najat Hantoosh	Sanitary Engineering Lab.
Dr. David Abid M. Jawad	Structural Materials Lab.
Dr. Mohamad Jawad K. Essa Ass. Proff. Lamya'a Abd Al-Jaleel	Soil and Highways Engineering Lab.
Proff. Dr. Majeed Abbood Jasim	Geology Engineering Lab.
Ass. Lec. Muthanna Shakir Ass. Lec. Wisam Qasim	Light Structures/Traffic Engineering Lab.
Dr., Ahmad Sagban	Computer Engineering Lab.
Dr. Aqeel Hatam Ass. Lec. Ahmed Nu'aima	Surveying Engineering Lab.

### 7.1.2 Space of Electrical Engineering Department

The Electrical Engineering Department is part of the campus of the college of engineering in Qarmat Ali district, north of Basra, Basra, Iraq. The department is a two story building that incorporates, in it, offices for the faculty members and the supporting staff together with classrooms and laboratories offices.

For the undergraduate students, the department facilities are enough to support researches, learning, and teaching activities as well as doing their eXperiments at laboratories

#### Offices

1. Administrative office: the office of the chairman is located on the second floor of the electrical engineering department building with approximately 35 m<sup>2</sup>, in area.
2. Administrative Supporting Staff; this consists of:



- 
- a. One full time secretary whose job is to administratively assist the chairman; this office is 14 m<sup>2</sup>, in area, and is directly connected to the chairman's office.
  - b. One head's assistant, who is a full-time faculty member whose job is to administratively assist the chairman. This office is 14 m<sup>2</sup>, in area.
- These three offices, the chairman's and the secretary', combine to form the administrative office of the electrical engineering Department.
3. Faculty offices are allocated in three different levels of the Department's Building. There are 26 faculty offices in the department, each of which is about 16 m<sup>2</sup> in area, some faculty members is assigned a separate office, while the others is shared one office for each two members. Every faculty office is furnished and equipped with one PC and a link to Internet.
  4. Meeting room: this room is about 35 m<sup>2</sup>, is mainly used for departmental related meetings at different levels. This room is properly furnished and is equipped with data show.
  5. EXamination Committee Room: it is located at the second floor near the administrative office with 35 m<sup>2</sup>, in area. Here is where students' records are held. It consists of one printing machine, one PC, and one photocopying/scanner machine.

### Classrooms

The electrical engineering department contains 8 halls as classrooms numbered from 1 to 8. The classroom area is 52 m<sup>2</sup>. The classrooms are air conditioned and equipped with blackboards and whiteboards for some of them.



## Laboratories

The department of electrical engineering has seven undergraduate, fully equipped, laboratories, with a total area of 1200 m<sup>2</sup>, all of which are located in the ground floor of building of the department. These labs are utilized to perform basic experiments needed to help the students understand the engineering concepts covered in the different courses. These Lab facilities could also be utilized for building the term projects and senior projects as well. The electrical Engineering Labs, however, were structured to be adaptable and upgradable to accommodate the inevitable changes in the electrical engineering curriculum. Enough efforts are exerted in order to make sure that lab equipments are kept in good operating conditions. A summary of the 7 departmental laboratories is given, below, in Table 7.4. The table also shows the courses associated with each lab.

**Table 7.4: Laboratories' Names, Space Areas, and Associated Courses**

Lab. Name	Area (m <sup>2</sup> )	Associated courses
Machine Lab.	185	EEE309
Power elec. Lab.	185	EEE408
Computer Lab.	178	EEE104, EEE203
Electronics cct. Lab.	110	EEE102
Electrical cct. Lab.	178	EEE109, EEE208
Communication Lab.	178	EEE305, EEE402
Computer & Cont. Lab	178	EEE406





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### 7.1.3 Space of Mechanical Engineering Department

The mechanical engineering department is part of the campus of the college of engineering in Qarmat Ali district, north of Basrah, Basrah, Iraq. The department is a three floors building that contains offices for the faculty members and the supporting staff together with classrooms and laboratories offices:

1. Administrative office: the office of the chairman is located on the second floor of the electrical engineering department building with approximately 27 m<sup>2</sup>, in area.
2. Administrative Supporting Staff; this consists of:
  - a. One full time secretary whose job is to administratively assist the chairman; this office is 17 m<sup>2</sup>, in area, and is directly connected to the chairman's office.
  - b. One head's assistant, who is a full-time faculty member whose job is to administratively assist the chairman. This office is 17 m<sup>2</sup>, in area.

These three offices, the chairman's and the secretary's, combine to form the administrative office of the Electrical Engineering Department.

3. Faculty offices are allocated in two different levels of the Department's Building. There are 18 faculty offices in the department, each of which is a 17 m<sup>2</sup> in area, each faculty (with a PhD or higher) is assigned a separate office. Every faculty office is furnished and equipped with 1 PC and a link to Internet.
4. Storage rooms: There are a total of three storage rooms in the department. Each of these rooms is of 17 m<sup>2</sup>, 25m<sup>2</sup>, 12m<sup>2</sup> respectively.



- 
5. Meeting room: this room is about 30 m<sup>2</sup>, is mainly used for departmental related meetings at different levels. This room is properly furnished and is equipped with data show.
  6. EXamination Committee Room: it is located at the second floor near the administrative office with 30 m<sup>2</sup>, in area. Here is where students' records are held. It consists of one printing machine, one PC, and one photocopying/scanner machine.

### **Classrooms**

Building section contains the 5 five classrooms are similar. In addition to these halls as noted, the department has the right to use the classrooms of a large college and the 3 rooms. Study halls in the section located in the ground and first floor of the building. Classroom space is 52 square meters which is air-conditioned and equipped with blackboard addition to the special platform for lecturer. The common rooms of the Faculty of Engineering stands at number 3 three rooms and the unit of square 100 m<sup>2</sup>, and air-conditioned and equipped with desk can be used to display aids.

### **Laboratories**

Section contains seven fully equipped laboratories for various disciplines. All of these laboratories on the ground floor of a building section. Total area of these laboratories is around 1425 m<sup>2</sup>. These laboratories are used for the planned experiments for the materials in the laboratory section in addition to the possibility of use by students of the projects. Manages the laboratory engineers and technicians working on the specialized high protection equipment in good



condition. Table 7.5 shows names and areas of the laboratories as well as the laboratory materials connected with it.

**Table (7.5) : Mechanical Engineering Laboratories**

Lab. Name	Area (m <sup>2</sup> )	Associated courses
Control and Measurement	185	ME432
Fluid Mechanics	200	ME235, ME336
Computer	185	ME113, ME227, ME321
Computer Aided Design	220	ME431
Applied Mechanics	200	ME234 , ME333, ME431, ME435
Thermal Mechanics	185	ME332, ME433
Internal Combustion Engine	250	ME232, ME335, ME436

#### **7.1.4 Space of Chemical Engineering Department**

The ChE Department is part of the campus of the college of engineering in Qarmat Ali district, north of Basrah, Basrah, Iraq. The department is a two-story building that incorporates, in it, offices for the faculty members and the supporting staff together with classrooms and laboratories offices:

1. Administrative office: the office of the chairman is located on the second floor of the chemical engineering department building with approximately 28 m<sup>2</sup>, in area.

2. Administrative Supporting Staff; this consists of:

a. One full time secretary whose job is to administratively assist the chairman; this office

is 14 m<sup>2</sup>, in area, and is directly connected to the chairman's office.

b. One head's assistant, who is a full-time faculty member whose job is to administratively assist the chairman. This office is 14 m<sup>2</sup>, in area.



These three offices, the chairman's and the secretary', combine to form the administrative office of the Computer Engineering Department.

3. Faculty offices are allocated in two different levels of the Department's Building. There are 16 faculty offices in the department, each of which is a 14 m<sup>2</sup> in area, each faculty (with a PhD or higher) is assigned a separate office. Every faculty office is furnished and equipped with 1 PC and an **activated** link to Internet.

4. Storage rooms: There are a total of two storage rooms in the department. Each of these rooms is of 110.25 m<sup>2</sup>, each.

5. Meeting room: a room of about 28m<sup>2</sup>, mainly used for department's meetings at different levels. This room is properly furnished and equipped with data show.

6. EXamination Committee Room: it is located at the second floor near the administrative office with 28 m<sup>2</sup>, in area. Here is where students' records are held. It consists of one printing machine, one PC, and one photocopying/scanner machine.

### Classrooms

The chemical engineering department contains 8 halls numbered from 1 to 8. A typical classroom in building is equipped with the following:

- 2X4 m<sup>2</sup> blackboard.
- Classroom space area 7m X 10.5m (73.5 m<sup>2</sup>).
- Split air conditioning units with adjustable temperature.
- Adequate classroom chairs for up to 60 chairs per classroom.





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## **Laboratories**

The department of chemical engineering has seven undergraduate and postgraduate, fully equipped, laboratories, with a total area 1200 m<sup>2</sup>, are located in the ground floor of building of the department. These labs are utilized to perform basic eXperiments needed to help the students understand the engineering concepts covered in the different courses. These Lab facilities could also be utilized used for building the term projects and senior projects as well. The Chemical Engineering Labs, however, were structured to be adaptable and upgradable to accommodate the inevitable changes in the ChE curriculum. There is no enough equipment in these labs. As noted above, there are seven laboratories in the department of chemical engineering, which are fully utilized in chemical engineering courses, term projects and senior design projects as well. All these laboratories are well conditioned to be a comfortable place and to ensure an acceptable working temperature.

These labs are well maintained and properly run by a designated laboratories maintenance committee and the technical supporting team of technicians, which consists of 11 staff members.

A summary of the 7 departmental laboratories is given, below, in Table7.6. The table also shows the courses associated with each lab.





**Table7.6: Laboratories' Names, Space Areas, and Associated Courses**

Lab. Name	Area (m2)	Associated courses
Unit operation lab.	144	ChE 309
Control &fluid lab.	144	ChE 408
Computer Lab.	144	ChE 104, ChE203
Organic &analytical lab.	144	ChE102
Physical chemistry &petroleum refining lab.	144	ChE109, ChE208
Postgraduate lab.	144	ChE305, ChE402
Chemical tasting lab.	144	ChE406

### **Department Library**

The department has its own library which occupies one of the halls of the second floor of a building. Currently, this library is limited to the most important textbooks and assistance books to the curriculum of the department. Usually, each student borrows the books related to his current year curriculums at the beginning of the year; bring these books back in the end of that year.

### **The Store**

The department has a store located at one of the halls of the ground floor and is run by two of the technician staff. This store contains the most important chemical material and equipment which can be needed by students during their projects development. Each student has the right to borrow the elements he need.



### 7.1.5 Space of Computer Engineering Department

The CoE Department is part of the campus of the college of engineering in Qarmat Ali district, north of Basrah, Basrah, Iraq. The department is a two floors building that incorporates, in it, offices for the faculty members and the supporting staff together with classrooms and laboratories offices:

7. Administrative office: the office of the chairman is located on the second floor of the computer engineering department building with approximately 28 m<sup>2</sup>, in area.
8. Administrative Supporting Staff; this consists of:
  - a. One full time secretary whose job is to administratively assist the chairman; this office is 14 m<sup>2</sup>, in area, and is directly connected to the chairman's office.
  - b. One head's assistant, who is a full-time faculty member whose job is to administratively assist the chairman. This office is 14 m<sup>2</sup>, in area.

These three offices, the chairman's and the secretary's, combine to form the administrative office of the Computer Engineering Department.

9. Faculty offices are allocated in two different levels of the Department's Building. There are 16 faculty offices in the department, each of which is a 14 m<sup>2</sup> in area, each faculty (with a PhD) is assigned a separate office. Every faculty office is furnished and equipped with 1 PC and a link to Internet.
10. Storage rooms: There are a total of two storage rooms in the department. Each of these rooms is of 110.25 m<sup>2</sup>, each.
11. Meeting room: this room is about 28 m<sup>2</sup>, is mainly used for departmental related meetings at different levels. This room is properly furnished and is equipped with data show.



- 
12. EXamination Committee Room: it is located at the second floor near the administrative office with 28 m<sup>2</sup>, in area. Here is where students' records are held. It consists of one printing machine, one PC, and one photocopying/scanner machine.
  13. Undergraduate coordinator
  14. Postgraduate coordinator: Doing all responsibilities related to postgraduate (MSc. and PhD) students.

### **Classrooms**

The computer engineering department contains 7 halls (6 for undergraduate and 1 for postgraduate students) numbered from 1 to 7. A typical classroom in building is equipped with the following:

- 2X4 m<sup>2</sup> Whiteboard (two classrooms are equipped with smart boards).
- Classroom space area 7m X 10.5m (73.5 m<sup>2</sup>).
- Split air conditioning units with adjustable temperature.
- Adequate classroom chairs for up to 60 chairs per classroom.

### **Laboratories**

The department of computer engineering has six undergraduate, fully equipped, laboratories, with a total area about 660 m<sup>2</sup>, all of which are located in the building of the department. These labs are utilized to perform basic experiments needed to help the students understand the engineering concepts covered in the different courses. These Lab facilities could also be utilized used for building the term projects and senior projects as well. The Computer Engineering Labs, however, were structured to be adaptable and upgradable to accommodate the inevitable



changes in the CoE curriculum. Enough efforts are eXerted sure in order to make sure that lab equipments are kept in good operating conditions. A summary of the 5 departmental laboratories is given, below, in **Table7.7**. The table also shows the courses associated with each lab.

**Table7.7: Laboratories' Names, Space Areas, and Associated Courses**

Laboratory' Name	Area in m2	Associated Courses
Networks Lab.	110.25	CoE437, CoE337, CoE432
Real Time lab.	110.25	CoE334, CoE437, CoE234
Programming Lab.	110.25	CoE133, CoE135, CoE337, CoE235
Operating Systems Lab.	110.25	CoE335, CoE437
Electrical Circuits lab.	110.25	CoE134, CoE237, CoE231, CoE337, CoE132
Control Lab.	110.25	CoE437, CoE132

The computer engineering students' utilization of the lab space and equipment's could be measured in terms of an index representing ratio between the number of students registered in a certain lab and the lab space area, at a given time slot. This is shown in **Table7.8**.

**Table7.8: Student Utilizing Space Area Ratio to Instructional laboratories Space Area**

Lab's Name	Sunday	Monday	Tuesday	Wednesday	Thursday
Networks Lab.	1 <sup>st</sup> Semester				
	Open all day (34.47%)	Open all day (36.28%)	-	-	Open all day (36.28%)
	2 <sup>nd</sup> Semester				
	Open all day (34.47%)	Open all day (36.28%)	-	Open all day (36.28%)	-
Real Time lab.	1 <sup>st</sup> Semester				
	Open all day (34.47%)	Open all day (36.28%)	-	Open all day (38.1%)	-
	2 <sup>nd</sup> Semester				
	Open all day (34.47%)	Open all day (36.28%)	-	Open all day (38.1%)	-



Lab's Name	Sunday	Monday	Tuesday	Wednesday	Thursday
Programming Lab.	1 <sup>st</sup> Semester				
	-	Open all day (58.96%)	Open all day (34.47%)	Open all day (38.1%)	Open all day (58.96%)
	2 <sup>nd</sup> Semester				
	-	Open all day (58.96%)	-	Open all day (38.1%)	Open all day (58.96%)
Operating Systems Lab.	1 <sup>st</sup> Semester				
	-	-	Open all day (34.47%)	Open all day (36.28%)	Open all day (36.28%)
	2 <sup>nd</sup> Semester				
	-	-	Open all day (34.47%)	-	-
Electrical Circuits lab.	1 <sup>st</sup> Semester				
	-	Open all day (58.96%)	-	Open all day (38.1%)	Open all day (58.96%)
	2 <sup>nd</sup> Semester				
	-	Open all day (58.96%)	Open all day (34.47%)	Open all day (38.1%)	Open all day (58.96%)
Control Lab.	1 <sup>st</sup> Semester				
	Open all day (34.47%)	-	-	-	Open all day (58.96%)
	2 <sup>nd</sup> Semester				
	Open all day (34.47%)	-	-	-	Open all day (58.96%)

### 7.1.6 Space of Materials Engineering Department

The ME Department is part of the campus of the college of engineering in Qarmat Ali district, north of Basrah, Basrah, Iraq. The department occupies the second floor in the Mechanical engineering building, where the offices of the faculty members and the supporting staff as well as many of the classrooms and drawing offices. However, the main laboratories are situated on the ground floor of the same building. These offices comprise the following:

1. The administrative offices: these include the office of the Head with approximately 15 m<sup>2</sup>, in area.
2. Administrative Supporting Staff offices; these consists of:





- 
- b. One full time secretary office, whose job is to administratively assist the department head; this office is 15 m<sup>2</sup>, in area, and is directly situated neXt to the Head's office.
  - c. The coordinator's office that is situated neXt to the secretary's office. The coordinator is a full-time faculty member who also, acts as the deputy head during the head's absence. This office is  $\approx 14$  m<sup>2</sup>, in area.

These three offices, the Head's and the secretary' combined, form the administrative offices of the Materials Engineering Department.

1. On the same level, the second floor of the mechanical engineering building, there are eight faculty members' rooms, each one of an area of  $\approx 14$  m<sup>2</sup>. Usually, each senior member of the staff occupies a separate room, is space is available. All faculty offices are well furnished and equipped with 1 PC and an activated link to Internet, as well as good air-conditioning system.
2. Storage rooms: There is a storage room of an area of (10 m<sup>2</sup>) in the department
3. Meeting room: this room is about 25 m<sup>2</sup>, is mainly used for the departmental related meetings at different levels including discussions and eXaminations. This room is properly furnished and is equipped with a data show and, one PC.

### Classrooms

The computer offices include 3 typical classrooms in the building that are equipped with the following items:

- 2X4 m<sup>2</sup> Whiteboard



- 
- Two classroom space areas of 3m X 10.5m (31.5 m<sup>2</sup>), and one other classroom space of an area  $\approx$  15m X 20 m (300 m<sup>2</sup>),
  - Split air conditioning units with an adjustable temperature.
  - Two adequate classroom sets of chairs for up to 50 chairs per classroom, and other 200 chairs

### **Laboratories**

The department of materials engineering laboratory consists of one main large space covered room that is fully equipped, with a total area 300 m<sup>2</sup>, and is located on the ground floor of the mechanical engineering building, to the right-hand side of the main entrance. This room house a number of labs, where the basic eXperiments are performed to help the students understand the engineering concepts covered in their different courses. The Lab facilities could also be used for building the term projects and senior projects as well. The Materials Engineering Labs, however, are structured to be adaptable and upgradable to accommodate the inevitable changes in the ME curriculum. Sufficient efforts are eXerted in order to make sure that the Lab equipment is kept in good operating conditions. A summary of the five departmental laboratories is given, below, in **Table 7.9**. In addition, it shows the courses associated with each laboratory.



**Table 7.9: Laboratories' Names and Associated Courses**

Laboratory' Name	Associated Courses
Metals Lab.	ME436, ME432, ME133
Nonmetals lab	ME236,
Chemical Metallurgy Lab	ME233,
Computers Lab.	ME435, ME434, ME337
Heat treatments Lab	ME336

The materials engineering students' utilization of the lab space and equipment could be assessed in terms of an index representing a ratio between the number of students registered in a certain lab and the lab space area, at a given time slot. This is shown in **Table 7.10**.

**Table 7.10: Student Utilizing Space Area Ratio to Instructional laboratories Space Area**

Lab's Name	Sunday	Monday	Tuesday	Wednesday	Thursday
Metallurgy Lab.	1 <sup>st</sup> Semester				
	Open all day (9.26%)	Open all day (9.26%)	Open all day (9.26%)	Open all day (9.26%)	Open all day (9.26%)
	2 <sup>nd</sup> Semester				
	Open all day (9.26%)	Open all day (9.26%)	Open all day (9.26%)	Open all day (9.26%)	Open all day (9.26%)
Nonmetals Lab.	1 <sup>st</sup> Semester				
	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)
	2 <sup>nd</sup> Semester				
	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)
Chemical metallurgy Lab.	1 <sup>st</sup> Semester				
	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)
	2 <sup>nd</sup> Semester				
	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)	Open all day (6.29%)



Computers Lab.	1 <sup>st</sup> Semester				
	Open all day (8.57%)	Open all day (8.57%)	Open all day (8.57%)	Open all day (8.57%)	Open all day (8.57%)
	2 <sup>nd</sup> Semester				
	Open all day (8.57%)	Open all day (8.57%)	Open all day (8.57%)	Open all day (8.57%)	Open all day (8.57%)
Heat treatments lab.	1 <sup>st</sup> Semester				
	Open all day (4.34%)	Open all day (4.34%)	Open all day (4.34%)	Open all day (4.34%)	Open all day (4.34%)
	2 <sup>nd</sup> Semester				
	Open all day (4.34%)	Open all day (4.34%)	Open all day (4.34%)	Open all day (4.34%)	Open all day (4.34%)

### Department Library

The department does not have its own library; rather its students use the main library of the college; the department only provides the gratis textbooks to students, where the student to book ratio  $\approx 12:1$ .

### Laboratories

As mentioned before, there are five main labs, in the department of materials engineering, which are fully utilized in the materials engineering courses, term projects and senior design projects as well. All the laboratories are air conditioned and the room temperatures are regularly monitored and controlled in order to ensure an acceptable working climate, in the normally hot climate of the Basra region.

The ME labs are well maintained and properly run by a designated laboratories maintenance committee and a technical supporting team of technicians.



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### 7.1.7 Space of Architectural Engineering Department

ARE Department is part of the campus of the college of engineering in Qarmat Ali district, north of Basrah, Iraq. The department is a two story building that incorporates, in it, offices for the faculty members and the supporting staff together with classrooms and atelier offices:

1. Administrative office: the office of the chairman is located on the Ground floor of the Architectural engineering department building with approximately 35 m<sup>2</sup>, in area.
2. Administrative Supporting Staff; this consists of full time secretary whose job is to administratively assist the chairman; this office is 15 m<sup>2</sup>, in area, and is directly connected to the chairman's office.

These two offices, the chairman's and the secretary's, combine to form the administrative office of the Architectural Engineering Department.

3. Faculty offices are allocated in two different levels of the Department's Building. There are 17 faculty offices in the department, each of which is a 15 m<sup>2</sup> in area, each faculty (with a PhD) is assigned a separate office. Every faculty office is furnished and equipped with 1 PC and an activated link to Internet.
4. Storage rooms: There are a total of three storage rooms in the department. Each of these rooms is of 100 m<sup>2</sup>, each.
5. Meeting room: this room is about 34 m<sup>2</sup>, is mainly used for departmental related meetings at different levels. This room is properly furnished and is equipped with data show.
6. EXamination Committee Room: it is located at the ground floor near the administrative office with 40 m<sup>2</sup>, in area. Here is where students' records are





held. It consists of one printing machine, one PC, and one photocopying/scanner machine.

7. Library: it is located at the ground floor within a short walking distance from most classrooms it is allowing users free access to its resources. Reading . To encourage maXimum utilization, the Library operates with a minimum of regulations and restrictions. The current collection of books and bound periodicals totals over 20000 volumes, 32% in Science, 21% in Engineering, 24% in Humanities, and 23% in Social Sciences.

### **Classrooms**

The Architectural engineering department contains 5 halls numbered from 1 to 5. A typical classroom in building is equipped with the following:

- 2X4 m<sup>2</sup> Whiteboard.
- Classroom space area 7m X 10m (70m<sup>2</sup>).
- Split air conditioning units with adjustable temperature.
- Adequate classroom chairs for up to 50 chairs per classroom.

### **Ateliers**

The department of Architectural engineering has five undergraduate, fully equipped, Ateliers, with a total area 1000 m<sup>2</sup>, all of which are located in the building of the department. These classes are utilized to perform basic eXperiments needed to help the students understand the engineering concepts covered in the different courses. These classes Lab facilities could also be utilized used for building the term projects and senior projects as well. The Architectural Engineering Ateliers, however, were structured to be adaptable and upgradable to accommodate the inevitable changes in the ARE curriculum. Enough efforts are



exerted sure in order to make sure that drawing equipments are kept in good operating conditions. A summary of the 5 departmental Ateliers is given, below, in **Table7.11**. Also, it shows the courses associated with each Drawing classes.

**Table7.11: Ateliers classes ' Names, Space Areas, and Associated Courses**

Ateliers classes ' Name	Area in m <sup>2</sup>	Associated Courses
Atelier1	200	ARE131, ARE 133, ARE132
Atelier 2	200	ARE231, ARE 232, ARE 233, ARE 234
Atelier 3	200	ARE 331, ARE 332, ARE 333
Atelier 4	200	ARE 431, ARE 432, ARE 433, ARE 434
Atelier 5	200	ARE 531, ARE532

The Architectural engineering students' utilization of the Ateliers space and equipments could be measured in terms of an index representing ratio between the number of students registered in a certain Ateliers and the lab space area, at a given time slot. This is shown in **Table7.12**

**Table 7.12: Student Utilizing Space Area Ratio to Instructional Ateliers classes Space Area**

Lab's Name	Sunday	Monday	Tuesday	Wednesday	Thursday
Atelier 1	1 <sup>st</sup> Semester				
	Open all day (34.47%)	Open all day (36.28%)	-	Open all day (36.28%)	Open all day (36.28%)
	2 <sup>nd</sup> Semester				
	Open all day (34.47%)	Open all day (36.28%)	-	Open all day (36.28%)	-
Atelier 2	1 <sup>st</sup> Semester				
	Open all day (34.47%)	Open all day (36.28%)	-	Open all day (38.1%)	-
	2 <sup>nd</sup> Semester				
	Open all day (34.47%)	Open all day (36.28%)	-	Open all day (38.1%)	-
Atelier3	1 <sup>st</sup> Semester				
	-	Open all day (58.96%)	Open all day (34.47%)	Open all day (38.1%)	Open all day (58.96%)



Lab's Name	Sunday	Monday	Tuesday	Wednesday	Thursday
Atelier 4	2 <sup>nd</sup> Semester				
	-	Open all day (58.96%)	-	Open all day (38.1%)	Open all day (58.96%)
	1 <sup>st</sup> Semester				
	-	Open all day (34.47%)	Open all day (34.47%)	Open all day (36.28%)	-
Atelier 5	2 <sup>nd</sup> Semester				
	-	Open all day (34.47%)	Open all day (34.47%)	Open all day (36.28%)	-
	1 <sup>st</sup> Semester				
	- Open all day (34.47%)	Open all day (58.96%)	-	Open all day (38.1%)	Open all day (58.96%)
	2 <sup>nd</sup> Semester				
	Open all day (34.47%)	Open all day (58.96%)	-	Open all day (38.1%)	Open all day (58.96%)

## 7.2 Resources and support

### 7.2.1 College Library

The Engineering College has a library occupies one of the college buildings with total area of 822 square meters. Space for reading in the library is 200 square meters, the number of seats in the library is 34 seats, space per student is 1 square meter. The library supplies the following :

2 Computers for office work.

1 Database information (Computer Information).

33 CD contains soft copy books.

25 DVD contains scientific films.

Internet services



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Photocopier/ scanner machines

19896 hard copy books.

Number of books added to the college library during academic year 2010-2011 is 1070 book.

Number of journals in the college library is 34,241 journals.

Number of journals added to the library during the academic year 2010-2011 is 8 journals.

Rate of hours that the library opens 30 hours/week

Average number of books borrowed per day internally (8) externally (80)

### 7.2.2 College store

The college of Engineering has two warehouses run by two members of the college technical staff. These stores contains the most important materials needed for both administrative and educational works, such as stationery, maintenance materials, libratory materials, tools, computers, printers etc.



## 7.3 SWOT ANALYSIS

		Helpful (to achieving the objective)	Harmful (to achieving the objective)
Internal origin (attributes of the department)	<b>Strengths</b>	<ul style="list-style-type: none"> <li>- The departments buildings area is adequate. Also, the number of classrooms/laboratories and their area are adequate.</li> <li>- All the departments have an Internet connection</li> <li>- All the classrooms, laboratories, and offices are air-conditioned.</li> <li>- All the class rooms have data show devices.</li> </ul>	<b>Weaknesses</b> <ul style="list-style-type: none"> <li>- Limited laboratories space that affects the performance and production of these laboratories for both students and community services.</li> <li>- Very small space of Petroleum engineering department</li> </ul>
	<b>Opportunities</b>	<ul style="list-style-type: none"> <li>- The department laboratories may be supplied with a new instruments and machines from collage annual budget.</li> </ul>	<b>Threats</b>
EXternal origin (attributes of the environment)			





## Appendix A

### A.1 Advising and Guidance System Proposed Form

University of Basrah						
College of Engineering / Department of _____						
<u>Student Information Form</u>						
<u>Personal Information</u>						
Student's Full Name:					<u>Image</u>	
Study Level:						
Gender:						
Address:						
Mobile Phone Number:						
E-mail:						
<u>Family Status</u>						
Total Number of Family Members:			Brothers:		Sisters:	
Is your father alive?			Yes <input type="checkbox"/>		No <input type="checkbox"/>	
Is your mother alive?			Yes <input type="checkbox"/>		No <input type="checkbox"/>	
Indicate the highest level of education completed by your father or male guardian and your mother or female guardian:						
	Less than High School	High School	Diploma	Bachelor	Master	Doctorate
Father						
Mother						



With whom do you live?	<input type="checkbox"/> Parents <input type="checkbox"/> Father <input type="checkbox"/> Mother <input type="checkbox"/> Others: _____	
Marital Status:	<input type="checkbox"/> Single <input type="checkbox"/> Married <input type="checkbox"/> Widowe(d r) <input type="checkbox"/> Divorced	
Family Financial Status:	<input type="checkbox"/> High <input type="checkbox"/> Average <input type="checkbox"/> Low	
Living House Property:	<input type="checkbox"/> Rented <input type="checkbox"/> Owned	
Does the student live at dorms?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<u>Medical Status</u>		
Does the student have problems in: <input type="checkbox"/> Vision <input type="checkbox"/> Hearing <input type="checkbox"/> Speaking		
Other chronic diseases: <input type="checkbox"/> Asthma <input type="checkbox"/> Diabetes <input type="checkbox"/> Heart <input type="checkbox"/> Epilepsy <input type="checkbox"/> Blood Pressure <input type="checkbox"/> Other		
Advisor Name:	Signature:	1
Academic Title:	Date:	

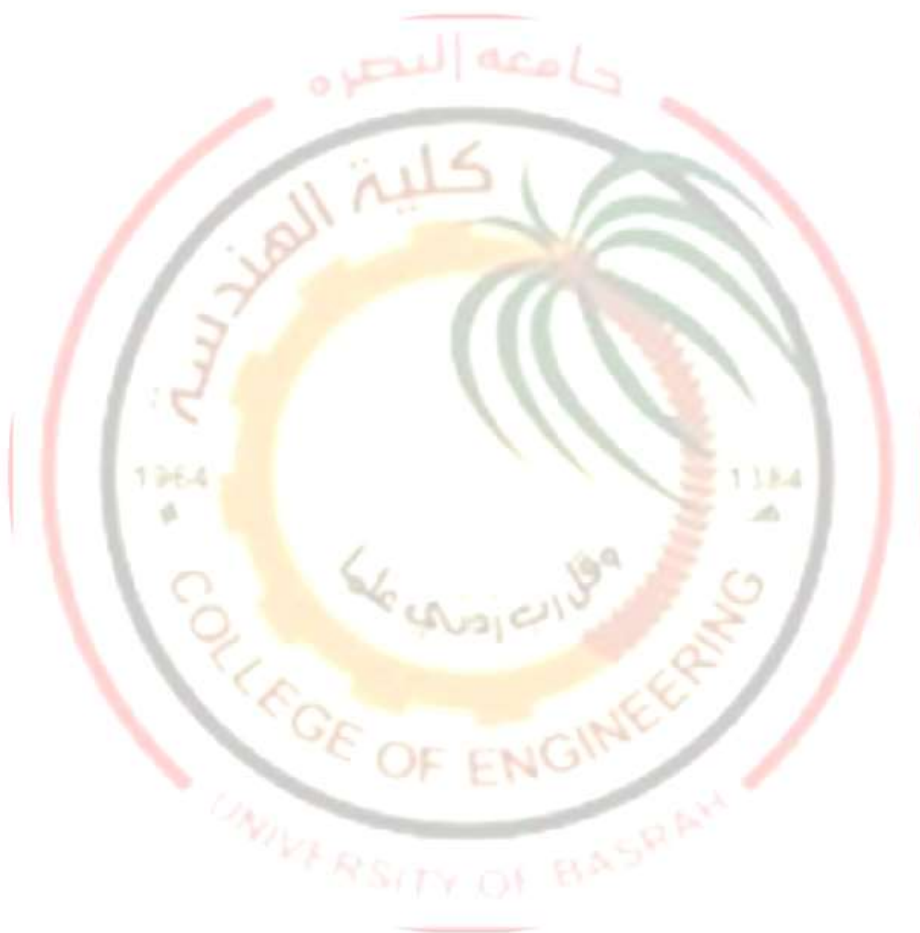


Student's Activities inside the department and the College				
	Degree			
	Always 10/10	Sometimes 6/10	Rarely 3/10	Never 0/10
1. Is the student committed to wear uniform?				
2. Does s/he bring books and required study materials with her/him?				
3. Is he committed to the duties assigned to her/him?				
4. Does s/he have artistic / athletic activities?				
5. Is s/he good looking and doesn't affect by clothes and haircuts styles?				
6. Does s/he keep him/herself away from cheating in eXams?				
7. Does s/he participate in the department/college activities?				
8. Does s/he persevere to attend lectures on time?				
9. Does s/he obey college systems and menus?				
10. Does s/he have positive relation with colleagues that s/he can affect them?				
11. Does s/he have ability to make decisions solve problems?				
12. Does s/he have good relationship with faculty members?				
13. Does s/he preserve department / college and equipments?				
14. Does s/he maintain her/his academic level and keep developing it?				



15. Is s/he skilled in most curriculums?				
Total				

<b>Advisor Name:</b>  <b>Academic Title:</b>	<b>Signature:</b>  <b>Date:</b>	<div style="border: 1px solid black; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">2</div>
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Student's Personnel, Behavioral, Social, and Psychological Properties

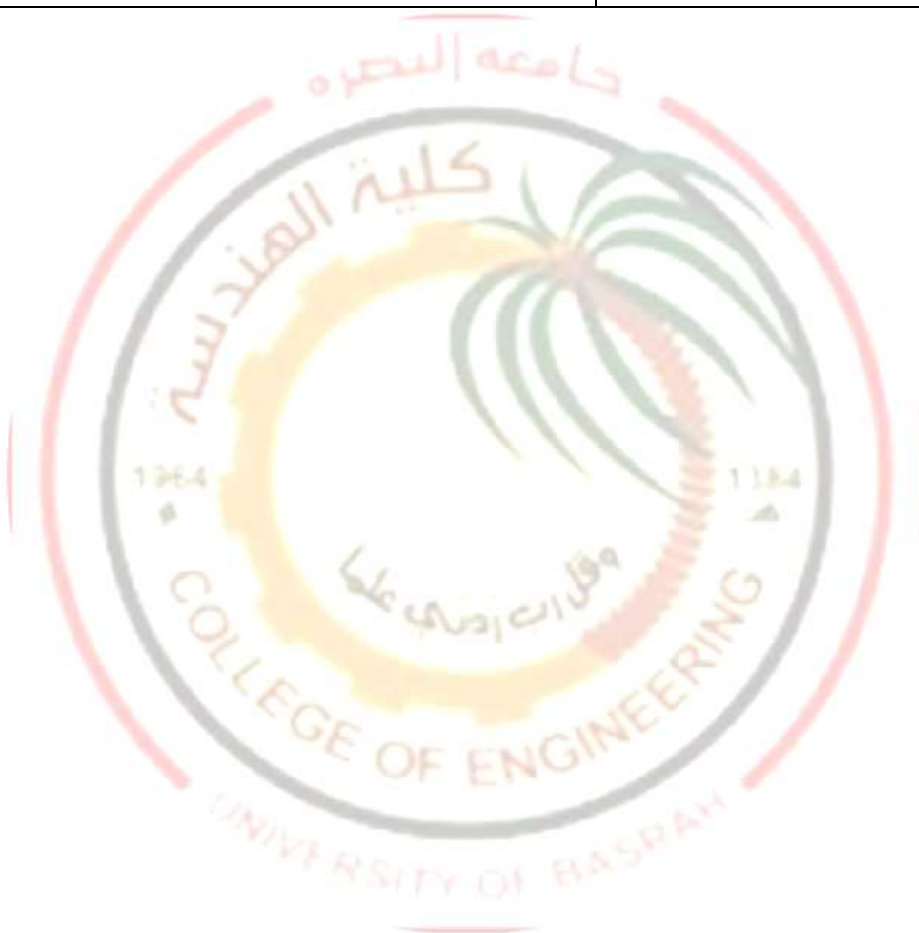
	Degree			
	Always 10/10	Sometimes 6/10	Rarely 3/10	Never 0/10
1. Is the student cooperative with his/her colleagues?				
2. Does s/he show aggressive behavior?				
3. Does he show worry and anXxiety?				
4. Is s/he social?				
5. Is s/he an introvert?				
6. Does s/he have troubles with others inside or outside the college?				
7. Does s/he have smoking trouble?				
8. Is s/he always late from first lecture?				
9. Does s/he have troubles in concentration?				
10. Does s/he have inability to study?				
11. Does s/he have inconsistency in doing assignments?				
12. Does s/he sleep during lectures?				
13. Does s/he have eXam phobia?				
14. Does s/he usually prefer to say alone?				
15. Is s/he confused when s/he talks with others?				
16. Is s/he confused when s/he talks with faculty members?				





17. Does s/he get angry when s/he doesn't like the subject?				
Total				

Advisor Name:	Signature:	3
Academic Title:	Date:	





Advisor Final Report

Advisor Name:

Academic Title:

Signature:

Date:

4



Personal Capabilities					
Relationship with others	Perfect	Good	Sometimes	With troubles	Rarely
Ability to make decisions	EXcellent	Above average	Usually make correct decision	Sometimes make correct decision	Always make wrong decisions
Ability to learn	Fast	Easy	Normal average	Slowly	Very slowly
Work accomplishment	Always accomplishing with enthusiasm	Accomplishing with seriousness	Usually accomplishing with seriousness	Sometimes accomplishing with seriousness	Never accomplishing with seriousness
Possibility of depending on him/her	Great	Above average	Usually	Sometimes	Never
Duties accomplishing quality	EXcellent	Very good	Good	Fair	Failed
Attendance	Regular			Irregular	
Time handling accuracy	Accurate			Inaccurate	
Advisor Name:			Signature:		
Academic Title:			Date:		

5



Academic Abilities

Ability	Degree				
	EXcellent	Very good	Good	Fair	Failed
Ability to apply knowledge of mathematics, science, and engineering fundamentals.					
Ability to outline and conduct eXperiments as well as analyze and interpret data.					
Ability to function on multi-disciplinary teams to analyze and solve problems.					
Ability to identify, evaluate and solve engineering problems.					
Understanding of the responsibility of engineers to practice in a professional and ethical manner at all times.					
Ability to communicate effectively using oral, written, and graphic forms.					
Knowledge of contemporary issues related to engineering.					

If the advisor has any other / further information, please write them here:

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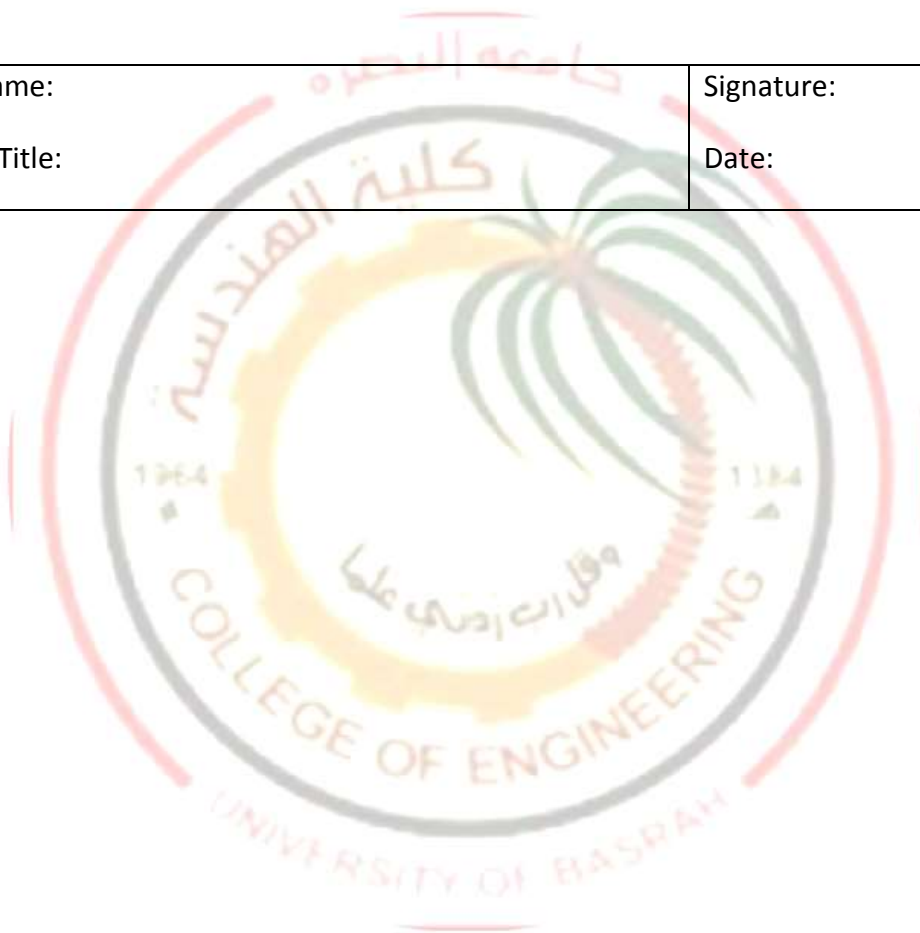
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Advisor Name:	Signature:
Academic Title:	Date:

6







Student's Marks Card

Department of \_\_\_\_\_

Student's Full Name \_\_\_\_\_

Study Level \_\_\_\_\_

Sequence	Curricular Title	Mark (Number)	Mark (written)	Grade / Attempt
1				
2				
3				
4				
5				
6				
7				
8				
9				

EXamination Committee Chairman

Department Chairman

Name:

Name:

Signature:

Signature:

Date:

Date:

Advisor Name:

Signature:



Academic Title:	Date:
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## Appendix B: Instructor Class Evaluation Form

UNIVERSITY OF BASRAH  
COLLEGE OF ENGINEERING  
ACCREDITATION AND ASSURANCE OFFICE  
Instructor Class Evaluation Form

Course Number and Title:

Instructor:

Semester:

Number of times that you taught this course at Basrah University:

No.	EVALUATION METHOD	GRADING SYSTEM
1		
2		
3		
4		
5		
6		
7		
Total		100%



	GRADE DISTRIBUTION											
	100 - 95	94 - 90	89 - 85	84 - 80	79 - 75	74 - 70	69 - 65	64 - 60	59 - 55	54 - 50	Less than 50	SUM
Weight (W)	5	4.6	4.2	3.8	3.4	3.0	2.6	2.2	1.8	1.4	0.0	-----
No. of Students (N)												Σ N
N*W												Σ (W* N)

$$\text{CLASS GPA} = \frac{\sum (W * N)}{\sum N} =$$



Program Outcomes	Relevance				Performance					Explanation Activities and Practices	Interpretation and Evidence
	Not Relevant	Somewhat Relevant	Moderately Relevant	High Relevant	Very weak	Weak	Satisfactory	Very good	EXcellent		
a. Apply mathematics, science, and engineering.											
b. Design and conduct eXperiments and analyze and interpret data.											
c. Design a system, a component or process.											
d. Function as an effective team member.											
e. Identify, formulate,											



Program Outcomes	Relevance				Performance					EXplanation Activities and Practices	Interpretation and Evidence
	Not Relevant	Somewhat Relevant	Moderately Relevant	High Relevant	Very weak	Weak	Satisfactory	Very good	EXcellent		
and solve engineering problems.											
f. Understand professional and ethical responsibilities.											
g. Communicate effectively.											
h. Understand the impact of engineering solutions.											
i. Recognize the need for long-life learning.											
j. know the contemporar											





Program Outcomes	Relevance				Performance					EXplanation Activities and Practices	Interpretation and Evidence
	Not Relevant	Somewhat Relevant	Moderately Relevant	High Relevant	Very weak	Weak	Satisfactory	Very good	EXcellent		
y issues.											
k. Use the techniques, skills, and modern engineering tools for engineering practice.											

Remarks and Suggestions:

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## Appendix C: Instructions for Courses Assessment

**UNIVERSITY OF BASRAH**  
**COLLEGE OF ENGINEERING**  
**ACCREDITATION AND ASSURANCE OFFICE**

**Instructions for the Course Assessment**

### Introduction

All instructors at the college should carry out course assessment and submit a course assessment file to the departmental assessment coordinators at the end of the term. In the following some guidelines on how to prepare an assessment file are given:

### Objectives of Course Assessment

- To obtain direct measurements of student performance
- To assure that students are acquiring the required outcomes
- To assure that learning eXperiences are consistent with the outcomes
- To establish the required feedback loops

### The items to be included in the course assessment file:

- A hardcopy of completed instructor class evaluation form (ICEF) submitted to the department.
- A copy of the list of final grades
- Course syllabus including the following information as a minimum
- Instructor contact details and office hours
- TeXtbook and references
- Tentative course outline
- Dates of mid-term and final eXams
- Grading policy
- A list of course outcomes and their relationship with the college or program outcomes (Course description and classification)
- A copy of final eXam and major term project(s)



- Summary data and analysis from various assessment tools (e.g., oral and written report evaluation, teamwork, self evaluations)
- Samples of student works supporting the ICEF (e.g., key assignments, homework, eXams, project reports, essays etc)
- Any other supporting material demonstrating student achievement (e.g., sample class portfolios, video recordings, etc.)

### Instructor Class Evaluation Form

The main assessment tool used for the course assessment is the Instructor Class Evaluation Form. This form reports the grade distribution as well as the assessment of Program outcomes served by the course. First, the instructors are asked to indicate the level of importance of each outcome as it relates to the course. Normally, this rating should have been already assigned by the Teaching Area Group using the following guidelines:

- H** (highly relevant): Demonstrating this outcome is critical for the students to perform successfully; or the students may benefit significantly from this course toward the outcome (formal instruction, practice, assessment).
- M** (Moderately relevant): Demonstrating this outcome has considerable impact on the overall performance of the student, or the students may benefit moderately from this course toward the outcome (informal instruction, practice, and assessment).
- L** (Somewhat relevant): Demonstrating this outcome has only minor impact on the overall performance of the student. However, there are opportunities to observe this outcome (practice and assessment).

The instructors then evaluate student performance relative to what is normally expected from them at their level according to the following scale:

- Students' performance was very weak.
- Students' performance was weak.
- Students' performance was satisfactory.
- Students' performance very good.
- Students' performance eXcellent.



The best method of evaluation of the student achievement is to assess individual students relative to the outcomes. Then, an average rating can be obtained for the whole class. The rating should be justified by referring to specific student works or assessment results.

The instructors are also asked to provide feedback on the course content and outcomes, instructional and assessment methods. They also comment on the achievement of program outcomes and indicate any deficiencies observed.

### Assessment Methods

The assessment methods include but not limited to the following:

- Performance Appraisals (e.g., written and oral presentations, teamwork, lab eXperiments, artwork etc)
- Surveys (Online tools, or custom designed forms seeking student perception of learning gains, or their opinions on certain aspects)
- Traditional assessment methods (EXams, homework, project, etc)

### Assessment tools

The following is a list of available assessment instruments to be used in course assessment. Instructors are encouraged to use standard tools as much as possible to facilitate analysis. However, these tools can be modified to suit a specific course, or additional tools can be adopted.

- Written reports
- Oral presentations
- Lab reports
- Teamwork
- Term Project
- Final EXam

The instructors encouraged to submit summary statistical data in addition to the copies of the completed forms.



## Appendix D: Employer Survey Form

**UNIVERSITY OF BASRAH**  
**COLLEGE OF ENGINEERING**  
**ACCREDITATION AND ASSURANCE OFFICE**  
**Employer Survey Form**

The Computer Engineering Department at the University of Basrah is constantly striving for improvement of its program. Your input about the quality of our graduates will be of tremendous help in this regard. The information provided by you will significantly help us in developing the future direction of our COE program.

Thank you for your cooperation; if you do not have graduates from University of Basrah in your organization, please ignore this survey.

\*Please fill one survey sheet for each employee that has graduated with a B.Sc. degree from the Computer Engineering program at the University of Basrah and has been working under your supervision.

### Personal Data

Name:	
Position:	
Organization:	
Office Phone / Mobile:	
E-Mail:	
Name or Reference number of the person evaluated:	





Date he/she joined the company:

Please select the appropriate answer:

PEO Statement 1: Graduates will be engaged in computer engineering related careers that could serve the needs of both industry and academia, in private and public sectors, as well. They will adapt to the rapidly changing work environment and attain leadership positions in their business, profession, and community.

Is the graduate employed in a Computer Engineering profession? ☐ Yes ☐ No

Is the graduate employed in a private sector? ☐ Yes ☐ No

Is the graduate employed in a public sector? ☐ Yes ☐ No

PEO Statement 2: Graduates must have the pursuit of knowledge and active, continuous and lifelong professional development through the continuous reading of up to date scientific researches, the engagement in the further/continual education courses, and admission to graduate studies.

Has the graduate participated in technical conference(s) or seminar(s) ☐ Yes ☐ No?

Has the graduate participated in technical short course / workshop(s) or training program(s)? ☐ Yes ☐ No

Was it an easy task for the graduate to respond to the arising challenges in her/his work environment? (for example to learn new software, codes of practice, to learn about new systems and regulation etc.) ☐ Yes ☐ No



PEO Statement 3: Graduates will contribute to the welfare of society and the development of their profession, through responsible practice of engineering.

Has he/she been promoted since first employed? ☐es ☐o

Has the graduate held a leading position such as team leader in ☐es ☐o  
multidisciplinary group, project leader, head of a department etc.?

### Comments

Any further comments to be added and your overall evolution of the quality of the graduate and the extent to which his education prepared him to become a practicing engineer in a few years after graduation.

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