SELF-ASSESSMENT REPORT

Computer Engineering Department

College of Engineering – Baghdad University

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**Chapter 1**

**INTRODUCTION**

1. As a result of the significant progress in the field of computer and information technology, was established Department of Computer Engineering in 1987 at the Faculty of Engineering / University of Baghdad, and this section gives the Bachelor of Science degree in Computer Engineering, department includes faculty members. They enjoy the expertise of a variety of works on preparing the student section to they are the technology leaders in this area, including students who have followed their studies abroad and successfully.
   1. **Vision**

The vision of the Department of Computer Engineering graduation generation is able to accomplish what cost him, and interactive with the scientific updates and laboratory instruments in force in all countries of the world, it is the responsibility section preparation programs and participate in the preparation capable of development and innovation and use of advanced methods of education and the expansion of scientific research and application of scientific cadres overall quality standards**.**

**1.2 Mission**

The task can COE administration summarized as follows

1. reflected an important part in the graduation of engineers have the skills necessary to qualify them deal with the latest developments in the field of Computer Engineering.
2. Provide scientific personnel in the disciplines of Computer Engineering.
3. Carry out scientific research and linking them to the needs of production and domestic sectors and that are consistent with the mission of the university and its prestigious scientific
4. encourage outstanding students to use their skills to achieve excellence and innovation.

**1.3 The objectives of the educational program (PEO)**

Since its inception in 1988, COE administration has worked to lay the foundations of basic teaching in Computer Engineering,

1. Graduate engineers have the necessary skills and knowledge that qualifies them to deal with developments in the field of Computer Engineering.
2. Provide scientific personnel majoring in Computer Engineering to raise the efficiency of each of the process of teaching and scientific research.
3. Encouraging scientific studies and research in line with the mission of the university and scientific prestige that contribute to addressing the engineering problems.
4. Develop the skills of talented students to achieve excellence and innovation.
5. Achieve the goals of education as a sector active in the community.
6. Meet the educational and developmental needs of the community through the implementation of quality standards in the rehabilitation of scientifically and intellectually and professionally students.
7. Provide the community cadres qualified scientifically and practically.
8. Provide the community cadres qualified scientifically and practically.
9. Share in scientific advancement and enrich scientific knowledge and documentation of relevant scientific cooperation between the university and local and international scientific institutions.

**1.4 Program Outcomes**

* 1. An ability to apply knowledge of mathematics, science, and engineering

1. An ability to design and conduct experiments, as well as to analyze and interpret data.
2. An ability to design a system, a component, or a process to meet desired goals.
3. An ability to function on multi-disciplinary teams.
4. An ability to identify, formulate, and solve engineering problems.
5. An understanding of professional and ethical responsibility. g. An ability to communicate effectively.
6. The broad education necessary to understand the impact of engineering solutions in a global and societal context.
7. Recognition and the need for, and an ability to engage in lifelong learning.
8. Knowledge of contemporary issues.
9. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
10. Table 1.1. Mapping between program outcomes and program educational objectives

|  |  |
| --- | --- |
| **Program Outcomes** | **Program Educational Objectives** |
| a,b,c,d,e,f,g,h,I,j,k | To graduate computer engineers to serve both in industry and academia, as well as other sectors of the computer engineering applications and premises. |
| a,b,c,d,e,h,j,k | To improve the faculty and administrative abilities to meet international accreditation standards, and to attract highly skilled personnel |
| b,k | To improve the abilities of the management and technical staff |
| a,b,c,k | To optimize the use of resources and potentials of the department. |
| d,h,I,j | To establish and maintain viable applied research that endorses and contributes to knowledge in computer engineering nationally and internationally. |

**Measures taken to improve the COE program)) 1.5**

1. The use of modern methods of teaching and congruent with the electronic revolution and follow all the developments, and expansion to serve the academic building.
2. sweeping changes in the curriculum.
3. Provide tools and computers needed by the department.
4. Provide books in the library section.
5. recruitment and training of a number of engineering, administrative and technical staffs.
6. increase in the activities of conferences and seminars within the jurisdiction.
7. Establish network access provided by the Computer Center of the facilities that BU.
8. increase in extra-curricular activities such as student science fairs and seminars.

**Chapter 2**

**2. HISTORY AND ORGANIZATIONAL STRUCTURE**

**2.1. The Program History**

Founded Department of Computer Engineering in 1987 to meet the needs of the community specialized in the field of computer and information technology personnel to serve the different state institutions, it has been accepted the first batch of students in 1988 and supports the section on accredited to cover the plan subjects annual system where the academic year consists of two semesters, each lasting 15 weeks, the department aims to graduate engineers in the computer so as to qualify them for the labor market in the various disciplines of computer Engineering.

**2.2. Organizational Structure**

The Scientific, technical and administrative structure of the Computer Engineering Department at the College of Engineering, University of Baghdad, includes a set of integrated elements. Each one of these elements of the structure has authorities, duties and responsibilities which are specified accurately so that the department can work well and achieve the required goals through the integrity of work of these elements. Figure (2.1) shows the organizing structure of the department. Accordingly, activities, duties, and responsibilities are the results of integration among the elements of this structure.

Figure (2.1): Organizational Structure of the COE Department / College of Engineering

**2.3. Faculty's SWOT Analysis and Strategic Planning for COE Dept.**

The following is a general SWOT analysis for the Faculty of Computer Engineering. This analysis takes into consideration the strategic planning for the faculty:

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)** | **WEAKNESSES (INTERNAL)** |
| 1. Incoming students are among the best that have graduated from high school.  2. Good and young academic staff with plenty of potential.  3. Some teaching equipment is available.  4. Free textbooks are distributed to students in addition to the College and Departmental libraries.  5. Free education | 1. Insufficient number of faculty members. Hence, many duties per lecturer.  2. Predominance of teacher-centered learning that emphasizes content rather than learning outcomes.  3. The department building is of very poor infrastructure and badly needs maintenance.  4. Lack of emphasis on the practical, design and problem solving aspects in teaching.  5. Rote and memory education inherited from school continues into university with the inevitable result of lack of critical thinking and self-confidence amongst students.  6. Lack of emphasis on the development of English language capabilities including scientific writing amongst students.  7. Mediocre to poor level of English language amongst the academic staff.  8. Lack of some essential equipment in the department.  9. Lack of equipment for research.  10. Lack of emphasis on work values.  11. Lack of training for the staff.  12. Sanitation and cleanliness questionable together with dusty laboratories and some staff rooms.  13. Gardens and green areas not well developed.  14. No possibility for sabbatical leave abroad to do research.  15. No possibility for recruiting foreign staff. |
| **OPPORTUNITIES (EXTERNAL)** | **THREATS (EXTERNAL)** |
| 1. Scholarships for students abroad will strengthen the academic staff.  2. Possibilities for short academic visits abroad provided by Ministry of Higher Education (MOHE).  3. Possibilities for Post Doctorate and visiting Researcher for PhD holders (hope to be activated).  4. Equipment will be supplied especially that which is necessary for teaching purposes.  5. The Iraq virtual library is | 1. Continuation of the old ways of teacher-centered learning.  2. The continuation of the weak level of English language and scientific writing amongst the students and some of the academic staff.  3. Slackness in transforming students from their school days methods of rote and memory education to critical thinking and independent thought, together with design and problem solving capabilities. |

In view of the above SWOT analysis the strategic plan for the faculty of Computer Engineering for the next five years deals with three major areas of activities:

**A. Students’ Teaching and Learning**

1. raise the educational level of the teaching.
2. unify the tutorial and counseling for students.
3. Curriculum Development in the department.
4. Development of infrastructure in terms of the provision of educational equipment and software.
5. raise the educational and research laboratory level.
6. build and develop the abilities of the staff, engineers and technicians body.
7. unify the tutorial and counseling for students.
8. we develop educational and e-learning aspects.
9. expansion of graduate studies at the master's and doctoral degrees.
10. expansion of green spaces, and commends the new buildings.
11. **B. Research**
12. Consolidation of the faculty’s Research Center by more facilities and logistics.
13. Convening research teams according to the changing demands.
14. Emphasis on research of applied nature which tackles local problems and issues.
15. Emphasis on quality of research work and publication in international journals.
16. Granting the faculty to do research.
17. Provision of an environment for fruitful collaboration with researchers from partner universities in the first world countries.
18. Holding local and international conferences in the faculty’s fields of specialties. 8. Explorative research and development.**C.**

**Interaction with society**

1. Expanding the services of the Engineering Consulting Bureau of the faculty.

2. Continuous education for engineers, planners and applied scientists in the private and public sectors.

3. Following up alumni contacts to understand the professional developments and gauge the job market place.

**Chapter 3**

**3. STUDENTS**

**3.1. Students' Admission**

An applicant for admission to an undergraduate program in Computer Engineering (COE) must satisfy the following minimum requirements:

1. He / She should have an Iraqi secondary school certificate, or its equivalent, and majored in natural or technological sciences.

2. Acceptance is centrally controlled by the Ministry of Higher Education and Scientific Research.

3. Distribution of students to the 12 engineering departments of the college of engineering, including the COE Department, is made according to the capacity plan of the departments and the rating average of the applicants and their desires. The capacity plan of the COE Department in the last three years was 35 students.

4. Also included is a plan to accept top students from technical institutes, and outstanding employees from state institutions and ministries.

5. The applicant must submit the required documents within a specified period.

6. An applicant who has graduated from a high school system outside Iraq must have completed twelve years of combined elementary and high school studies from a recognized school. He is also required to provide an equivalence certificate from the Iraqi Ministry of Education.

**3.2. Evaluating Students' Performance**

Student performance in each subject is evaluated by a member of faculty , culminating with the assignment of a grade for that subject. The number and types of graded assignments vary according to what is most appropriate for the subject in question. These assignments are generally a combination of examinations, quizzes, homework, and/or laboratory reports. Projects and/or oral presentations are required for some subjects. Certain assignments are graded by a group of the faculty or instructors. For example, at the end of the senior year, the student presents a final written graduation project report. The student also gives an oral presentation of his / her project work, and answer questions on it. Moreover, some practical laboratories have a mini project assignment during the year of stud

**3.2.1. Educational Programs / Credit Hour Definition**

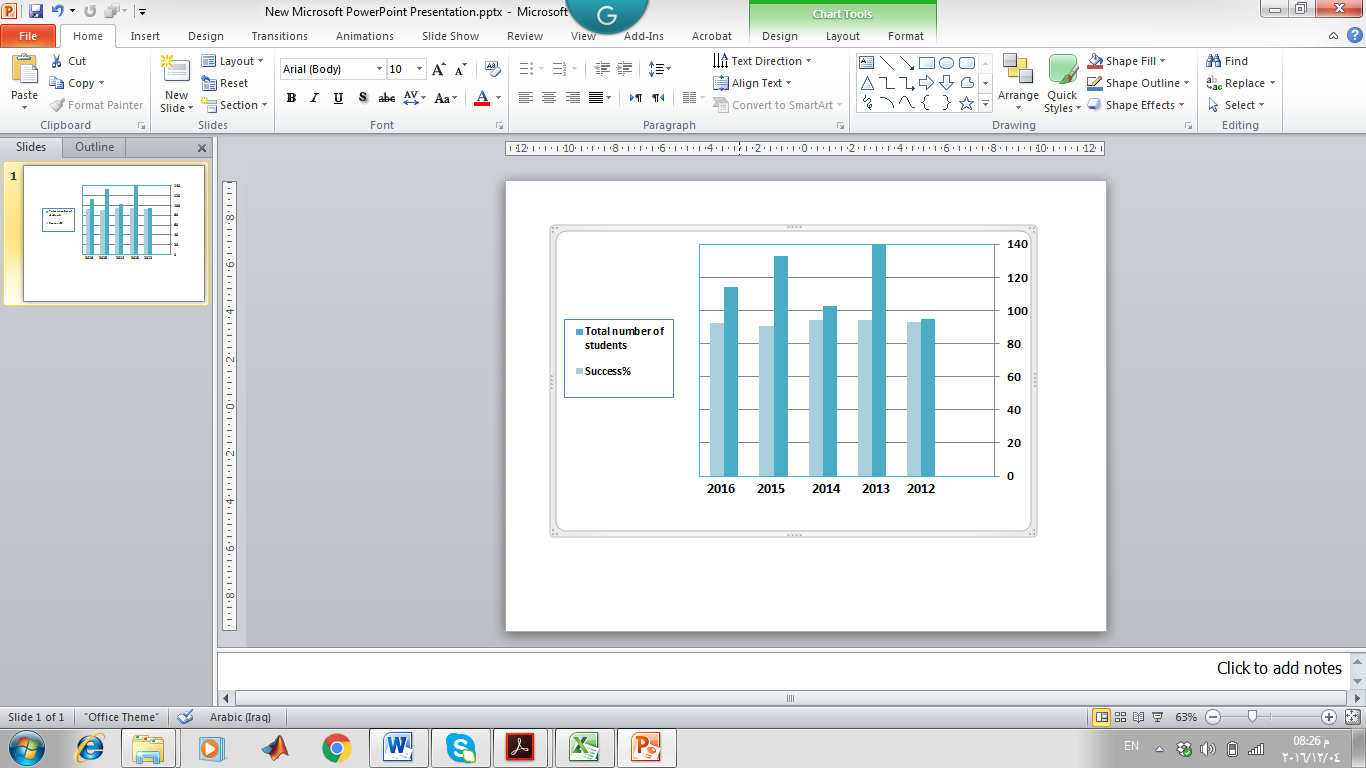
The department follows the university wide standard definition of a credit hour. The COE program has the annual system of study, which is followed in all subjects. Excepting the final examination week, one semester credit hour represents one class hour per week with a stipulated duration of 50 minutes. Based on the definition of a 30-week per year, a typical three-credit hour class consists of 90 hours of contact hours.

**3.2.2. Participants and Graduation Trends**

Table (3.1) and Figure (3.1) show participants and the percentage of success for each class over the past five years of (COE) Bachelor’s degree program

**Table (3.1): Participants and Graduation Trends**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Academic Year** | **Number of Participants Students/Percentage for Success%** | | | | | |
| **1st Year** | **2nd Year** | **3rd Year** | **4th Year** | **Total number of**  **Students** | **Success%** |
| **2017-2018** | 25  40 | 19  47 | 13  62 | 21  71 | 78 | 54 |
| **2016-2017** | 18 66 | 19 40 | 24 82 | 21 100 | 82 | 72 |
| **2016-2015** | 13 100 | 24 83 | 20 95 | 38 95 | 95 | 93.25 |
| **2015-2014** | 57 94.44 | 24 82.60 | 37 100 | 24 100 | 142 | 94.2600 |
| **2014-2013** | 18 88.88 | 24 87.50 | 37 100 | 24 100 | 103 | 94.095 |
| **2013-2012** | 49 77.55 | 27 85.18 | 30 100 | 27 100 | 133 | 90.6825 |
| **2012-2011** | 33 81.8 | 28 100 | 29 93.1 | 24 95.83 | 114 | 92.6825 |



**Figure (3.1): The Overall Success Rate for COE Students in Five Years**

**3.2.3. Monitoring the Progress of Students**

A student’s progress is monitored by faculty advisors and the Registration Committee. They turn in the final grades at the end of the academic year to the Examining Committee, and each student’s transcript is checked to ensure that he / she remains in good academic standing. If the cumulative average is below 50%, the student is suspended. Grades are also forwarded to advisors, to assist them in monitoring student progress.

To enable the student to follow the curriculum and study vocabulary and assimilate well, he / she must abide by attendance on a regular basis and not repeat absence of classes in order not to exceed the percentage specified (15% of the total number of hours during the year).

**3.3. Advising of Students**

Full-time faculty members in the COE Department advise students. Table 3.2 shows the percentage of faculty members to the number of students during the academic year (2017-2016).

**Table (3.2): Number of Faculty Members / Students for the Academic Year (2017-2016)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Certificate** | | **Rank** | | | | **Gender** | | **Total** | |
| **phD** | **Msc** | **Prof.** | **Asst.Prof** | **Lec.** | **Asst.Lec.** | **Male** | **Female** |  | |
| **Number of faculty**  **Members** | **9** | **7** | **-** | **6** | **4** | **6** | **11** | **5** | | **16** |
| **Percentages of 95 students** | **11.25%** | **8.75%** | **-** | **7.5%** | **5%** | **7.5%** | **13.75%** | **6.25%** | | **20%** |

**3.3.1. Opinion of Students**

During the period of the academic year, the student is required to meet with a faculty member and to review his/her progress. The Department of COE is determined that a standardized advising process needs to be developed and posted to make students aware of the correct procedures for being advised.

**3.4. Transfer Students and Transfer Subjects**

Admission of transfer students is done centrally by the college through a committee chaired by the Assistant Dean for Student Affairs and worked according to laws and legislations made by the Ministry of Higher Education and Scientific Research MOHESR. The transfer students are subjected to a scientific cut-off for the subjects taken at their institutions or universities. The Scientific Committee of the Department converts the subjects from the other institutions to actual ME subject numbers and posts them to the student’s COE transcript.

**3.5. Graduation Requirements**

To become eligible for a Bachelor of Science degree in an engineering program, a student must fulfill the academic status which includes the following requirements:

1. Passing the four academic years successfully within the maximum allowed period of study (6 years).

2. Passing the summer training successfully.

The College Records Office, Graduation Records and Examination Committees of the department maintain a complete file on the academic program and progress of each student. This file contains all academic records and related correspondence and documents for the student, including the following:

3. Transcript, updated at the completion of the senior year with Subjects and Units.

4. Computer-generated degree audit sheet tailored to the computer engineering curriculum, which shows subjects completed in required Categories and separate sections detailing math and science, humanities, engineering major, and other credits.

5. Copies of all correspondence of an academic nature with the student, including letters of admission to the College of Engineering.

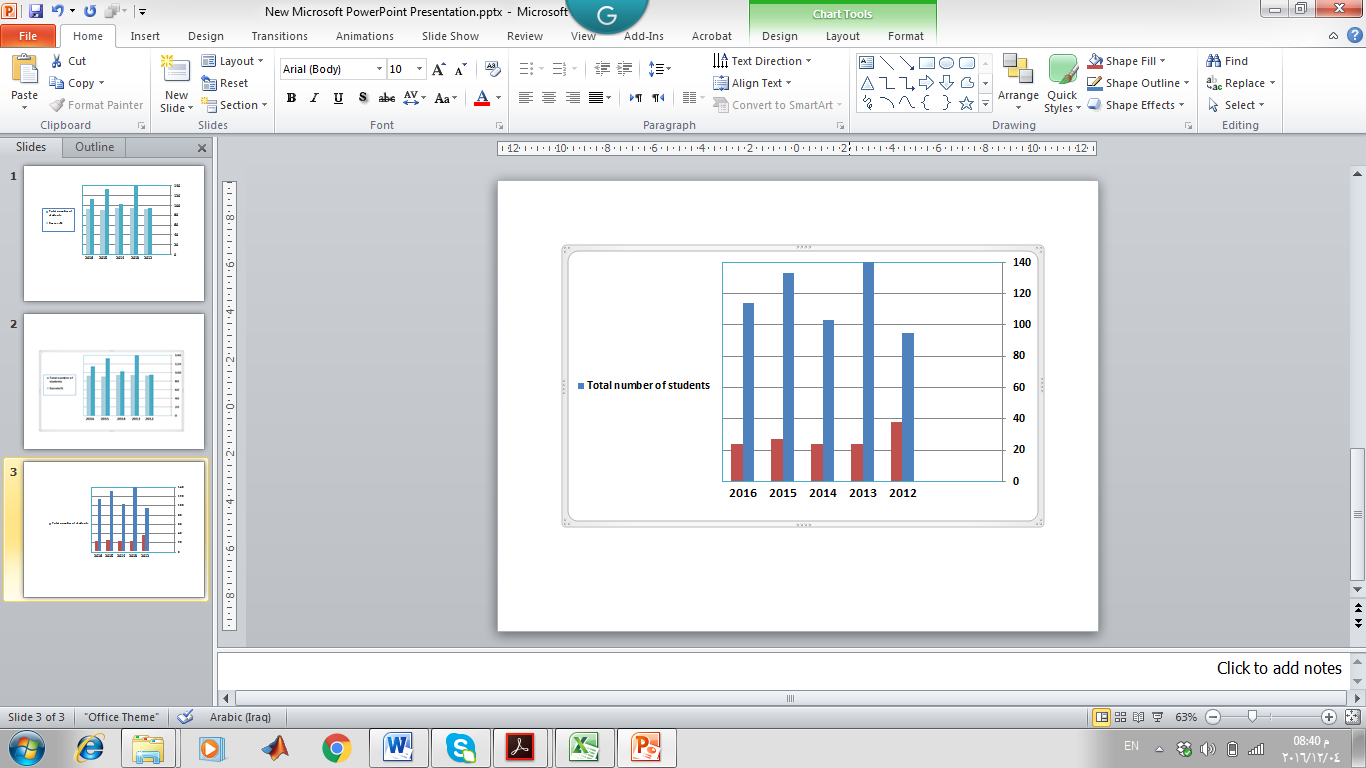
6. Any exceptions to the rules filed by the student and any action taken on those exceptions.

7. Any comments or instructions included by the student’s faculty advisor, department chair, Engineering Records Office, or other pertinent source.

8. The department head meets with some graduating students to evaluate his / her academic record during the study period. This evaluation also ensures that the COE program criteria are fulfilled.

**3.5.1. Enrollment and Graduation Trends**

Figure (3.4) shows enrollment trends for the last five academic years.



**Figure (3.2): Total Number of Students and Graduates in Five Years**

**3.6. SWOT Analysis**

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)** | **WEAKNESSES (INTERNAL)** |
| 1. A considerable number of faculty members enjoy a sound experience in academic education.  2. Sufficient number of young faculty members.  3. A good relationship between staff and students. | 1. The culture of being spoon-fed.  2. Inadequate training in analytical thinking.  3. Contemporary technical and economic issues. |
| **OPPORTUNITIES (EXTERNAL)** | **THREATS (EXTERNAL)** |
| 1. The use of emerging technology that does not require extensive industrial infrastructure.  2. The possibility of redesigning curricula to allow multidisciplinary teaching and learning.  3. Good opportunities for investment in Iraq. | 1. Competition with emerging private colleges.  2. Fast pace of development in technology.  3. Inadequate public awareness of the engineering profession and consequently a declining interest of students in engineering. |

**Chapter 4**

**4. CURRICULUM**

**4.1. Overview**

The curriculum requirements specify subject areas appropriate to engineering but do not prescribe specific subjects. The professional components must include:

Basic science: a combination of mathematics and basic sciences, constitute basic sciences that are a general educational component appropriate to the discipline.

General specialty: a general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives such as Electronic I, II and III, Electrical Circuits I, Communications.

Specific (Accurate) specialty: engineering topics, consisting of engineering sciences and engineering design appropriate to the student’s field of study such as Fundamentals of Digital Systems , Digital Systems Design, Computer Science & Programming Methodology, Computer Workshop, Microprocessor & Microcomputer I & II, Computer Architecture I &II, Internet Technology, Computer Networks, Interfacing I/O Devices.

**4.2. Program Curriculum**

The Bachelor of Science (B.Sc.) in Computer Engineering approved by the Department of Computer Engineering includes the annual system of study that is followed in the department for the undergraduate study. The study period is four years with 152 units distributed over the four years of study. There are seven elective subjects. True specialization of Computer Engineering is made in the third and fourth years in specialized subjects.

**4.2.1. COE Program: Curriculum**

**1- Undergraduate Curricula**

Typical degree program is shown in Tables (4.1) for Computer Engineering:

Table (4.1): B.Sc. Degree Curriculum\ Computer Engineering

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **First Year** | | | **1st Semester**  **Hours/week** | | | **2nd Semester**  **Hours/week** | | |
| **Code** | **Subject** | **units** | **Theo.** | **Tuto.** | **Lab.** | **Theo.** | **Tuto.** | **Lab.** |
| GS 101 | Human Rights | 2 | 1 | 1 | - | 1 | 1 | - |
| GE 102 | Mathematics | 6 | 3 | 1 | - | 3 | 1 | - |
| COE 103 | Electronics I | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 104 | Electrical Circuits | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 105 | Fundamentals of Digital Systems | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 106 | Computer Programming  Methodology | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 107 | Fundamentals of Computer System | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| GS 108 | English Language | 2 | 1 | 1 | - | 1 | 1 | - |
|  | **Total** | 40 | 15 | 8 | 10 | 15 | 8 | 10 |
|  | **Total hours per week** |  | 33 |  |  | 33 |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Second Year** | | | **1st Semester**  **Hours/week** | | | **2nd Semester**  **Hours/week** | | |
| **Code** | **Subject** | **units** | **Theo.** | **Tuto.** | **Lab.** | **Theo.** | **Tuto.** | **Lab.** |
| GS 201 | Arabic | 2 | 1 | 1 | - | 1 | 1 | - |
| COE 202 | Engineering Mathematics | 6 | 3 | 1 | - | 3 | 1 | - |
| COE 203 | Electronic II | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 204 | Microprocessor & Microcomputer I | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 205 | Digital System Design | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 206 | Data Structures & Algorithms | 6 | 2 | - | 2 | 2 | 1 | 2 |
| COE 207 | Communications | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| GS 208 | English Language | 2 | 1 | 1 | - | 1 | 1 | - |
|  | **Total** | 40 | 15 | 7 | 10 | 15 | 7 | 10 |
|  | **Total hours per week** |  | 32 |  |  | 32 |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Third Year** | | | **1st Semester**  **Hours/week** | | | **2nd Semester**  **Hours/week** | | |
| **Code** | **Subject** | **units** | **Theo.** | **Tuto.** | **Lab.** | **Theo.** | **Tuto.** | **Lab.** |
| COE 301 | Computer Architecture I | 6 | 3 | - | - | 3 | - | - |
| COE 302 | Digital Control Systems | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 303 | Microprocessor & Microcomputer II | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 304 | Operating Systems | 6 | 3 | - | - | 3 | - | - |
| COE 305 | Computer Networks | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 306 | Digital Signal Processing | 4 | 2 | - | - | 2 | - | - |
| COE 307 | Database Systems | 4 | 1 | 1 | 2 | 1 | 1 | 2 |
| GS 308 | English Language | 2 | 1 | 1 | - | 1 | 1 | - |
|  | **Total** | 40 | 16 | 5 | 8 | 16 | 5 | 8 |
|  | **Total hours per week** |  | 29 |  |  | 29 |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Fourth Year** | | | **1st Semester**  **Hours/week** | | | **2nd Semester**  **Hours/week** | | |
| **Code** | **Subject** | **units** | **Theo.** | **Tuto.** | **Lab.** | **Theo.** | **Tuto.** | **Lab.** |
| COE 401 | Internet Technology | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 402 | Computer Architecture II | 6 | 3 | - | - | 3 | - | - |
| COE 403 | Embedded Systems | 6 | 2 | 1 | 2 | 2 | 1 | 2 |
| COE 404 | Computer Security | 6 | 3 | - | - | 3 | - | - |
| COE 405 | Robotics & Artificial Intelligence | 4 | 2 | 1 | - | 2 | 1 | - |
| COE 406 | Computer Vision & Pattern Recognition | 4 | 2 | 1 | - | 2 | 1 | - |
| COE 407 | Engineering Project | 4 | 1 | 1 | 2 | 1 | 1 | 2 |
| GS 408 | English Language | 2 | 1 | 1 | - | 1 | 1 | - |
|  | **Total** | 38 | 16 | 6 | 6 | 16 | 6 | 6 |
|  | **Total hours per week** |  | 28 |  |  | 28 |  |  |

|  |
| --- |
| **Elective Subjects for The Undergraduate Study** |
| Digital Signal Processing (Elective 1) |
| Database Systems (Elective 1) |
| Software Engineering (Elective 1) |
| Java Programming (Elective 1) |
| Real Time Systems (Elective 2) |
| Robotics & Artificial Intelligence (Elective 2) |
| Wireless Networks (Elective 2) |
| Computer Vision & Pattern Recognition (Elective 2) |
| Interfacing I/O Devices (Elective 2) |
| Parallel Processing (Elective 2) |
| Microcontrollers (Elective 2) |
| Distributed Systems (Elective 2) |

The program’s credit hours and curricular components distribution are summarized below:

**• 4 - Years Program (Full - Time Study)**

**• 116 subject credit hours for the Computer Engineering Curriculum** Component

Basic science**:** 11 hrs**.**

• General Specialty: 29 hrs.

• Specific (Accurate) specialty: 64 hrs.

• Elective Subjects: 8 hrs

• Arabic, English Language & Human Rights 4 hrs.

**2- Postgraduate Curriculum (Master of Science)**

**Postgraduate Study**

The semester’s system of study is followed in the department for the postgraduate study. The minimum period of study is two years for the M. Sc. degree. The first year is for courses with two semesters, whereas the second year is for thesis work. Table (1) shows the number of units, subjects and the weekly hours of study for the M.Sc. degree.

|  |  |
| --- | --- |
| Total Number of Units | 32 |
| Thesis Units | **6** |
| First Year Units | **26** |
| Weekly Hours | **14** |
| Number of Subjects | **14** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Code** | **Subject** | **Hours** | **Units** |
| **1st Semester** | COE 501 | Advanced **Computer** Architecture | 2 | 2 |
| COE 502 | Advanced Digital Control Systems: | 2 | 2 |
| COE 503 | Digital Signal Processing | 2 | 2 |
| COE 504 | Image Processing | 2 | 2 |
| COE 505 | Advanced Mathematics | 2 | 2 |
| COE 506 | Computer Vision | 2 | 2 |
| GE 507 | English language | 2 | 1 |
|  |  | Total | 14 | 13 |
|  | **Code** | **Subject** | **Hours** | **Units** |
| **2nd Semester** | COE 508 | Robotics systems | 2 | 2 |
| COE 509 | **Computer and Network Security** | 2 | 2 |
| COE 510 | **Internet Protocols and Services** | 2 | 2 |
| COE 511 | Soft Computing | 2 | 2 |
| COE 512 | **Cloud Computing** | 2 | 2 |
| COE 513 | **VLSI System Design** | 2 | 2 |
| GE 507 | English language | 2 | 1 |
|  |  | Total | 14 | 13 |

|  |
| --- |
| **Elective Subjects for The Postgraduate Study** |
| Advanced Digital Systems Design |
| Wireless Ad-Hoc Networks |
| Artificial Intelligence |
| Mobile Networks |
| Internet of Things |

**4.2.2. Credit Hour Distribution**

Figure 4.1 illustrates the general relative distribution of curriculum categories

Fig. 4.1 General Relative Distributions of Curriculum Categories in Computer Engineering

**4.2.3. Requirements for Bachelor of Science in Computer Engineering**

The following subsections describe the program areas that are required for Bachelor of Science inComputer Engineering:

Basic science: a combination of mathematics and basic sciences, general education component appropriate to the discipline.

General specialty: a general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives such as Electronic I, II, Electrical Circuits I & Communications.

Specific (Accurate) specialty: engineering topics, consisting of engineering sciences and engineering design appropriate to the student’s field of study such as Fundamentals of Digital Systems, Digital Systems Design, Computer Science & Programming Methodology, Computer workshop, Microprocessor & Microcomputer I & II , Computer Architecture I & II, Internet Technology, Computer Networks, Interfacing I/O Devices.

The computer engineering program subjects develop the knowledge and skills that will enable students to:

1. apply basic mathematical and scientific concepts for the description and solution of engineering problems,

2. develop initial proficiency in computer engineering disciplines, in computer maintenance, network, and digital system design,

3. develop the ability to conduct experiments, and critically analyze and interpret data using different program languages,

4. perform electric, electronic and communications integrated design of systems, components, or processes by means of practical experiences (group projects),

5. identify, formulate, and solve computer engineering problems using modern engineering tools, techniques, and skills, through different program languages,

6. collaborate in group projects,

7. develop their written and oral communication skills through presentations of project results,

8. acquire an appreciation for some of the ethical problems that arise in the exercise of the profession.

Figure (4.2) shows the detailed distributions of Subject Group

Figure (4.2): Detailed Distributions of Subject Groups for Computer

Engineering

**4.2.4. Summer Training**

The Computer Engineering curriculum requires students to complete thirty days of summer training at private industries or governmental firms. This training is a compulsory component of graduation requirements. The Summer Training Committee of the department supervises the summer training.

**4.2.5. How the Curriculum Aligns with the Program Educational Objectives**

Since its establishment in 1987, the department staff have been working to achieve main objectives among which is the graduation of computer engineers capable of working in the increasing number of computer engineering establishments and companies, and of authoring research papers on applied computer engineering systems and related engineering sciences.

The faculty has complete authority to define, revise, implement, and achieve program educational objectives. Input is required from the students, alumni, and the employers of our alumni in the implementation of program objectives. The major role of the faculty is to create, revise, and evaluate subjects for the program as well as define and revise program educational objectives and ensure achievement of student outcomes. Therefore, the above process ensures alignment of the curriculum with Program Educational Objectives as shown in various tables. The Computer Engineering faculty insures that the students receive all the engineering analysis within the context of engineering program. The Computer Engineering Department is striving to become a leading institution in providing quality education, innovative research and community services. In order to attain this goal, computer engineering must pursue extremely strict procedures to achieve its strategic goals.

**4.2.6. Curriculum Relationship to the Program Outcomes**

The learning outcomes of the curriculum are mapped to the Program Outcomes with a level of emphasis being Low (L), Medium (M), or High (H). The level of emphasis of a program outcome is determined by the weight used for assessing the outcome in each subject as follows:

* When the subject outcome weight is < 20%, it will be given a Low rank (L).
* When the subject outcome weight is between 20% and 50%, it will be given a Medium rank (M).
* When the subject outcome weight is > 50%, it will be given a High rank (H).

Mapping the program learning outcomes to the curriculum courses of computer engineering is shown in table (4.2).

Table (4.2): Required Subjects and their Emphasis on Program Outcomes

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Outcome | | A | b | c | d | e | f | g | h | i | j | k |
| Subjects  No. | Subjects Name |  |  |  |  |  |  |  |  |  |  |  |
| GS 101 | Human Rights | H | H | H | M | H | H | H | M | M | H | M |
| GE 102 | Mathematics | H | H | H | M | M | H | H | H | M | M | M |
| COE 103 | Electronics I | H | H | H | M | H | H | M | H | H | M | H |
| COE 104 | Electrical Circuits | H | H | H | H | H | M | M | H | H | H | H |
| COE 105 | Fundamentals of Digital Systems | H | H | H | M | H | M | H | H | M | M | H |
| COE 106 | Computer Programming  Methodology | M | H | H | H | M | M | H | H | M | M | H |
| COE 107 | Fundamentals of Computer System | H | H | H | M | H | H | H | M | M | H | M |
| GS 108 | English Language | M | M | H | L | H | M | M | M | M | M | H |
| GS 201 | Arabic | L | H | M | H | H | H | H | M | H | H | H |
| COE 202 | Engineering Mathematics | H | M | H | M | M | M | H | L | L | M | H |
| COE 203 | Electronic II | H | H | H | H | H | M | H | H | M | H | H |
| COE 204 | Microprocessor & Microcomputer I | H | H | H | L | H | M | M | H | H | H | H |
| COE 205 | Digital System Design | H | H | H | L | H | M | M | H | H | H | H |
| COE 206 | Data Structures & Algorithms | M | M | H | L | H | M | M | M | M | M | H |
| COE 207 | Communications | H | H | H | H | H | M | H | H | M | H | H |
| COE 301 | Computer Architecture I | H | H | H | H | H | H | H | H | H | H | H |
| COE 302 | Digital Control Systems | H | H | H | M | M | M | M | H | M | M | H |
| COE 303 | Microprocessor & Microcomputer II | H | M | H | H | H | H | H | H | H | H | H |
| COE 304 | Operating Systems | M | H | H | H | M | H | H | M | H | M | M |
| COE 305 | Computer Networks | H | H | H | H | H | H | H | H | H | H | H |
| COE 306 | Digital Signal Processing | M | H | H | H | M | H | H | H | H | H | H |
| COE 307 | Database Systems | H | H | H | H | H | H | M | H | H | M | H |
| COE 401 | Internet Technology | H | H | H | H | H | H | H | H | H | H | H |
| COE 402 | Computer Architecture II | H | H | H | H | H | H | H | H | H | H | H |
| COE 403 | Embedded Systems | H | H | M | H | M | M | M | M | M | H | H |
| COE 404 | Computer Security | H | M | H | H | H | H | M | L | H | H | H |
| COE 405 | Robotics & Artificial Intelligence | H | H | H | H | H | H | H | H | H | H | H |
| COE 406 | Computer Vision & Pattern Recognition | H | H | M | H | M | M | M | M | M | H | H |
| COE 407 | Engineering Project | H | H | H | H | H | H | H | H | H | H | H |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

**4.3. SWOT Analysis**

The following is a SWOT Analysis for the Curriculum of Computer Engineering Program

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)** | **WEAKNESSES (INTERNAL)** |
| Trained and dedicated staff  Adequate resources (computers, software, supplies, tutorial lab, etc.)  Effective instructional programs (Summer bridge, study skills seminars, tutoring)  Counseling and advising services  Student leadership development  Access to community resources  Located in centralized area; easily accessible to other student service departments | Lack of space for tutorial and counseling services  Lack of college funding to support existing tutorial programs and other retention services  Lack of consistency as it pertains to maintaining qualified tutors in high risk courses (i.e., math, sciences) |
| **OPPORTUNITIES (EXTERNAL)** | **THREATS (EXTERNAL)** |
| Develop and implement plans to foster better advising relationships.  Develop a writing lab to help students research based writing skills.  Increase the availability of full-time and part-time faculty to meet student demands  Workshops throughout the year  Cultural activities  Computer Aided Instruction  College/University Visitation  Laptop Loan Program  Book/Video Loan Program  Tutoring  Professional development | May not have adequate faculty to meet increasing demands of early college  Lack of instructional technology in classrooms  Finding qualified adjunct faculty  Successful matriculation of student in developmental math courses  Quality of incoming students (language, analytical thinking, motivation). |

**Chapter 5**

**5. FACULTY**

**5.1. Faculty Size**

The number of faculty members in the Computer Engineering Department for the academic year 2016-2017 is (16). It is adequate to teach the required courses and also to perform other tasks related to program assessment and continuous improvement. The faculty is

composed of 9 Ph.D. and 7 M.Sc. holders. By gender, the faculty is 68.7% male and 31.251 % female. By academic rank, 25% Assistant Professor, 25% Lecturer, and 37.5% Assistant Lecturer.

The faculty is organized around several technical areas in Computer Engineering Department classified in three main specialties; Computer Engineering, Electrical engineering, and Electronic &Communication Engineering. The number of faculty members in each area allows the

department to offer all required core Computer Engineering Department classes during a year. Table (5.1) shows a list of the faculty members’ size. *We should mention here that* ***9*** *of the faculty members are now joining Ph.D. programs to obtain the Ph.D. degree, outside the country.* The Computer Engineering Department has a strong culture of teaching and a strong commitment to undergraduate education. We are in the process of filling two faculty vacant positions and another two positions mortgaged against a next retirement and resignation. The Computer Engineering student to full-time faculty ratio is approximately 3.3:1 (for Ph.D. Carriers staff), 19:1 (for M.Sc. Carriers Full-Time staff), and 4:1 (for Full-Time total staff) which is close to the average in the College of Engineering. Consequently, we are able to provide a sufficient interaction program with students.

Table (5.1):**Computer EngineeringDepartmentFaculty Size**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Specialization | Certificate | | Rank | | | | Gender | | Total |
| PhD | Msc | Prof | Asst. Prof | Lec. | Asst.  Lec. | Male | Famle |  |
| Computer & Electrical Engineering | 8 | 3 |  | 4 | 4 | 4 | 11 | 5 | 10 |
| Electronic & Communication | 1 |  |  |  |  |  |  |  | 1 |
| Computer science |  | 4 |  | 2 |  | 2 |  |  | 4 |
| Total | 9 | 7 |  | 6 | 4 | 6 | 11 | 5 | 16 |

**Interactions with Students:**

quality teaching and student interactions are emphasized. All faculty members maintain regular posted office hours, and most have an open-door policy, supervise senior design project teams, requiring regular weekly meetings with the students, and many serve as advisors to undergraduate research projects. Faculty members also serve as advisors for professional societies requiring attendance at chapter meetings, advising student leaders, and traveling with students to regional and national conferences and competitions.

**Interactions with Industry and Government:**

the department has activities contributed over many years in providing services to several different state offices and the private sector as well. These services cover a variety of activities including engineering consultancy, to conduct preliminary and final designs, check designs, supervision of project implementation, organizing courses and developmental courses of continuing education, research and evaluation of patents, contract research for postgraduate students with state offices, and other

**Student Advising**

Freshman advising is handled by the Committee of Student Affairs in the Department of Computer Engineering. The Committee consisting of some members of the faculty is responsible for advising students. The faculty advises, motivates, and helps students with their professional development. There are occasions in which faculty members spend time with students outside the classroom on special projects and in undergraduate research activities. Students’ advising is provided by all faculty members based on expertise and guidance as preferred by the student. This service is provided by all computer faculties and it is offered voluntarily, with no academic release time.

**5.2. Faculty Qualifications**

This article describes the qualifications of the faculty and how they are adequate to cover all the curricular areas of the program and also meet any applicable program criteria. The faculty research and areas of interest are explained in Table (5.2).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Faculty Member | Rank | Highest Degree | Institution from which Highest Degree Earned   |  | | --- | | Institution | | FT or PT | Research and  Areas of Interest |
| |  | | --- | | Hamid Mohammed Ali | | |  |  | | --- | --- | |  |  |   Assis.Prof | |  | | --- | |  |   M.Sc. | Universirty of Manchester, England | **FT** | Operating Systems & computer Network |
| |  | | --- | | Omar W. Abdul-Wahab | | Assis.Prof | Ph.D | |  | | --- | | University of Baghdad | | **FT** | |  | | --- | | Soft computing (Fuzzy Logic and Neural Network), Design of Microcontroller-Based systems. | |
| Nadia Adnan Shiltaght | Assis.Prof | Ph.D | University of technology | **FT** | Robotics & computer ,control &Artificial, intelligent systems |
| Mohammed EssamYounis | Assis.Prof | Ph.D. | UniversitiSains Malaysia / Malaysia | **FT** | • Distributed Systems  • Engineering Education |
| Alaa Mohmmed Abdul-Hadi | Assis.Prof | Ph.D. | National Aerospace  University |  | Computer Networks & IT Security |
| ManalFadel  Younis | Assis  Prof | M.Sc. | University of Baghdad | **FT** | Computer Science |
| AhalmHanoonShnain | Lect. | M.Sc. | University of Baghdad | **FT** | DSP |
| AsmaTaha Saadoon | Assis. Lect. | M.Sc**.** | University of Baghdad | **FT** | |  | | --- | | Electronic, Communication | |
| Hayder Saadi Radeaf | Assis. Lect. | M.Sc. | Nahrain University | **FT** | Control and Monitor applications/ Smart Phones applications |
| Wameedh Nazar Flayih | Lect. | Ph.D | Universiti Putra Malaysia | **FT** | Comp. Arch,VLSI Design |
| Mohammad Abd AL-Sahib | Assis. Lect. | M.Sc. | University of Baghdad | **FT** | Computer Engineering |
| Mohammad Jafer Ali | .Lect | Ph.D  . | University of Baghdad | **FT** | Computer Engineering |
| Mohammad Sadoon Hthail | Lect. | Ph.D | UniversitiSains Malaysia / Malaysia | **FT** | Computer Engineering  Software Engieering |
| Rasha Talab | Assis. Lect. | M.Sc. | University of Baghdad | **FT** | Image Processing |
| Mustafa Esmaeel Salman | Lect. | Ph.D | Universiti Putra Malaysia | **FT** | |  | | --- | | Comp.Wirless &  Communications | |
| Maad Issa | Assis. Lect. | M.Sc. | University of  Franch-comp, | **FT** | Wireless Sensor  Network Eng. |
| Ziayad Tariq | Lect. | Ph.D | University of Basrah | **FT** | Computer Engineering  Control and system Engineering |

**5.3. Authority and Responsibility of Faculty**

The head of the department is appointed by the President of the University based on the recommendation of the Dean of the Faculty of Engineering. The authority of the department’s head spans in general four conductive years. At the end of four years, the authority can be extended or another faculty member is appointed to take his place. The department’s head assigns the members and coordinators of the department and various committees. He distributes the administrative tasks and academic affairs to the designated department Committee. The department’s head leads the department council meetings and represents the department at the College of Engineering Council meetings. He is supposed to exercise scientific, administrative and financial authorities by which he can perform his job. Our full-time faculty responsibility includes teaching, research, institutional and committee services, and professional society services. Most of the department academic and the general program issues are taken care of by the relevant committees. Usually, course modification and evaluation is the main task of the scientific committee. However, a faculty member can initiate the creation of a new course. Major curriculum renovation is usually presented by the Scientific Committee at the department’s General Board meeting where each faculty member has the chance to interfere in the creation or modification process. The curriculum modification proposal is presented to the College of Engineering curriculum committee for final approval.

**5.4. Faculty Workload**

The Computer Engineering Department has among its staff 5 members with Ph.D. degrees from highly reputable international universities. The number of faculty staff has changed through the last ten years while the number of enrolled students is fluctuating. The course load is distributed in accordance with faculty rank; that is, a maximum of 6 credit hours for Professor, 8 credit hours for Assistant Professor, 10 credit hours for Lecturer, and 12 credit hours for Assistant Lecturer. Any extra course load for each faculty member is compensated for financially. The faculty work load for the fulltime of the academic year 2016-2017 is shown inTable (5.3). The table also shows the distribution of the full time faculty activity.

Table (5.3):Faculty Teaching Load Summary

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Program Activity Distribution% | | | Classes Taught (Course No./Credit Hrs.) Fulltime Academic Year | FT or PT | Faculty Member (Name) | |  | | --- | | No. | |
| other | Research | Teaching |
| 30 | 40 | 30 | COE307  COE510 | FT | |  | | --- | | Hamid Mohammed Ali | | 1 |
| - | 80 | 20 | COE 102 | FT | Omar W. Abdul Wahab | 2 |
| 20 | 30 | 50 | COE405 | FT | Nadia Adnan Shiltagh | 3 |
| 10 | 30 | 60 | COE301  COE105 | FT | Mohammed EssamYounis | 4 |
| 10 | 20 | 70 | COE307 | FT | ManalFadelYounis | 5 |
| 20 | 20 | 60 | COE305  COE401 | FT | Alaa Mohammed Abdul –Hadi | 6 |
| 40 | 10 | 50 | COE104  COE105 | FT | Ahalm Hanoon Shnain | 7 |
| 20 | 20 | 60 | COE306  COE408 | FT | Hayder Saadi  Radeaf | 8 |
| 20 | 30 | 50 | COE301 | FT | Mohammad Abd Al-Sahib | 9 |
| 10 | 30 | 60 | COE303 | FT | Wameedh Nazar Flayih | 10 |
| 10 | 30 | 60 | COE107  COE407 | FT | Mohammad Sadoon Hthail | 11 |
| 10 | 40 | 50 | COE403 | FT | Mustafa Esmaeel Salman | 12 |
| 20 | 20 | 60 | COE404  COE206 | FT | Maad Issa | 13 |
| 20 | 20 | 60 | COE 405  COE 408 | FT | Ziayad Tariq | 14 |
| 20 | 20 | 60 | COE 106 | FT | Mohammad Jafer Ali | 15 |

**5.5. Faculty Development**

Faculty professional development activities include: attending seminars and lectures, participation in training workshops, attending professional conferences, professional writing activities, review activities, conducting new and original research, training programs inside and outside Iraq.

**Leave of Absence (Study Abroad):**

An institutional program allows faculty who have not completed a Ph.D. degree and are in a tenure or tenure-track position to obtain an opportunity to study abroad. The ministry provides tuition, travel, and a monthly stipend. Those who are not in tenure-track positions also An institutional program allows faculty who have not completed a Ph.D. degree and are in a tenure or tenure-track position to obtain an opportunity to study abroad. The ministry provides tuition, travel, and a monthly stipend. Those who are not in tenure-track positions also

**Center for Continuing Education:**

The center offers professional development courses and training to faculty and to recently admitted graduate teaching assistants. All new faculty and graduate teaching assistants are required to take at least one year of training in their first year of work.

**Sabbatical Leave:**

The University supports a faculty professional leave (sabbatical) activity after five years of service. Some members of the faculty take advantage of this opportunity.

**5.6. SWOT Analysis**

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)** | **WEAKNESSES (INTERNAL)** |
| 1. Strong administrative and financial support  2. New and evolving faculty  3. A variety of specialized programs.  4. Strong commitment to provide specialized and practical education.  5. Selection of committed and highly experienced faculty/staff.  6. English language is mandated for instructions.  7. Highly qualified and experienced faculty.  8. Establish partnership with local and regional governmental and private sectors.  9. Strong financial incentives for faculty and staff to join our college.  10. Very promising opportunities for investment in our local progressive community. | 1. Computer Eng. Faculty has no dedicated building.  2. Inadequate spaces for classrooms, laboratories and offices.  3. Deficient classroom equipment’s.  4. Limited funds for research.  5. Lack of graduate programs. |
| **OPPORTUNITIES (EXTERNAL)** | **THREATS (EXTERNAL)** |
| 1. Serving the growing needs of the country for higher education in such rural areas.  2. Computer Faculty has the likely to launch new graduate programs.  3. Seeking local and international accreditations is useful opportunities for academic and operational progresses. | 1. Shortage of spaces thus necessitating the construction of computer engineering faculty buildings.  2. Lack of recruitment of enough female faculty members.  3. Lack to provide competitive salary will encumber recruitment quality academic staff or faculty, as well as retaining current staff.  4. Competing with local and higher rank universities, make it hard to recruit outstanding student intake. |

**Chapter 6**

**FACILITIES**

**6.1 Space**

The facilities include several classrooms, laboratories, and faculty Offices, department library, college and university libraries, university students club, and network access facilities are provided in the form of a Wireless LAN network available in all university buildings**,** a break room equipped with sufficient requirements. As for the university library it is located in campus center. In the following sections, more detailed information regarding the faculty offices, classrooms, laboratories, department library, and college and university libraries will be presented.

**6.1.1. Faculty Offices**

the faculty offices are for two faculty members and some are for three members. The offices supplied with furniture, but they are not air-conditioned and not equipped with computers or network connection., though, the faculty offices are small in size that they are inadequate to hold a discussion between the faculty and more than 2-3 students. The average faculty office space is between 15 and 20 square meters.

**6.1.2. Classrooms**

There are large and small classrooms in the building. All are equipped with blackboards, whiteboards, and data show as the main tool for lecture presentation. Table (6.1) provides the classrooms’ types and sizes and the number of students the classroom can accommodate.

Table (6.1) Classrooms Types and Size

|  |  |  |  |
| --- | --- | --- | --- |
| Classroom | | Area(m2) | Maximum no. of student |
| Room no./name | Type |
| R1 | Lectures | 82.5 | 60 |
| R2 | Lectures | 76.5 | 50 |
| R3 | Lectures | 54 | 40 |
| R4 | Lectures | 57 | 40 |
| R5 | Lectures | 54 | 30 |

**6.1.3. Laboratories**

Table (6.2) Laboratories of the Department

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Lab. Name | Building No. | Subjects Serve by Lab. | Lab. Capacity No. of students/session | Lab. Space (m2) |
| 1 | Network Lab. | 1 | COE-402, COE-403, COE-406. | 50 | 102 |
| 2 | Measurement Lab. | 1 | COE-103, COE-104, COE-203, COE-207. | 50 | 105.3 |
| 3 | Logic Lab. | 1 | COE-105. | 20 | 49.3 |
| 4 | Wireless Lab. | 1 | COE-106, COE-205, COE-206, COE-308, COE-204. | 50 | 105.3 |
| 5 | Workshop Lab. | 1 | COE-107. | 30 | 73.08 |
| 6 | Microprocessor Lab. | 1 | COE-306. | 40 | 87 |
| 7 | Microcontroller Lab. | 1 | COE-403 | 20 | 54 |

**6.1.4. Libraries**

**The Department’s Library**

The library of the department offers services to the students, faculty members, engineering and technical staff of the department. Besides, the library is also accessible to students and researchers from other departments in the college and from other colleges inside and outside the university. In brief, the library has the following facilities:

Area of the library (**53.01** m2 )

690 Books

24 P.G. Theses and Dissertations

200 B.Sc. Graduation Projects

75 CDs

**The College's Library**

The Library of the College of Engineering was established in 1941, and then developed well in the later years to become one of the mother libraries in engineering. It contains more than 74901 books and 1450 periodical titles. The library offers its services to the students, faculty members, and researchers from inside and outside the college. Lastly, the library has finished the documentation of all books, periodicals, theses and dissertations in a complete data base to facilitate the accessing process for students and researchers. The library continuously organizes and / or participates in book fairs.

**The University Library**

The Central Library of Baghdad University is one of the main oldest libraries in Iraq. It was established in 1959. The library offers services to users through many sources of information; books, periodicals, theses and dissertations, films, laser CDs, audio labs, maps, internet services, etc. It consists of two buildings, one in Al-Jadiriya Campus and the other in Bab Al-Muaatham Campus. The following is a brief summary of the library facilities and activities:

Area of the library ( 20549 m2 )

319142 Books

20784 Periodicals

4 Reading Halls, ( 549 m2 ) each

210 Reading Seats

3 m2 / Person for Reading

62 Computers for Office Work

544 CDs & 35 Flash Ram

791 Scientific Film

35 Internet Service Terminals

35 Hours / Week Access

356 Books / Day Circulating

Continuous Organization of Book Fairs

Continuous Learning Courses

Installing WIN-ISIS Electronic Systems for Offices Work

Number of Employees ( 131 )

**6.2. Resources and Support**

**6.2.1. Computing Resources**

The network access facilities are provided by the Computer Center of Baghdad University in the form of a Wireless LAN network available in all university buildings. Both faculty and students can access the network. Networking facilities at Baghdad University have seen exponential growth over the last few years.

**6.2.2. Laboratory Equipment Planning, Acquisition, and Maintenance**

The Computer Engineering Department continuously addresses any upgrades/additions for the labs by estimating the yearly budget needed for the labs and submitting it to the college and university councils. The full process used to determine the department lab budget is divided into two levels: (1) the college and university level, and (2) the department level. The two levels are described next.

At the college and university level, as every fiscal year comes to an end, the Planning Committee at the college and university level is required to review the needs of major equipment and PCs of all academic colleges and departments, and make consolidated recommendations for the allocation of an appropriate budget for the next fiscal year. In this connection, a memo is sent to all the academic colleges / departments by the chairman of the university planning committee before the end of every fiscal year requesting them to prepare their lists of major equipment and PCs for labs to be procured during the following fiscal year. A standard form is provided to all the departments to fill their lists of major equipment and PCs for labs.

At the department level, the head of the Labs Committee in the CED is supposed to send a memo to all the faculty and lab supervisors asking them to prepare the list of major equipment for all the labs to be procured during the present or following fiscal year. The lists of items required for all the labs are to be prepared on the prescribed form providing appropriate information (*Item description, quantity, estimated unit cost, Total amount, Priority, justification...etc).* These form the basis for future lab budget allocations and justifications.

The objective is to consider the upgrade/enhancement of lab facilities (in terms of addition of new equipment and PCs as well as replacing old ones) to:

 Support lab experiments, students senior design projects, course projects, and PG thesis and dissertation work.

 Support the conduct of newly proposed lab experiments.

 Support setting up of new labs proposed in the emerging areas.

 Support faculty research.

The current laboratory equipment planning, acquisition, and maintenance processes are adequate with minimum requirements for achieving the program’s outcomes at the COE department.

**6.3. SWOT Analysis**

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)** | **WEAKNESSES (INTERNAL)** |
| 1. Acceptable equipped laboratory, library and IT facilities. | 1. Complicated and restricted purchasing procedures on the part of the college decision makers.  2. Insufficient funding for maintenance and upgrading.  3. The common use of unlicensed (reverse- engineered) software packages including operating systems, office application programs and technical computing software. |
| **OPPORTUNITIES (EXTERNAL)** | **THREATS (EXTERNAL)** |
| 1. Information-based technologies.  2. Technologies that do not require extensive industrial infrastructure | 1. Administrative and financial corruption.  2. Intense competition from new and private colleges. |

**Chapter 7**

**FINANCIAL SUPPORT**

**7.1. Program Budget Process**

The University of Baghdad is a fully supported government institution, with the entire budget coming from the Iraqi government. Thus, the main source of departmental financial support is from government allocations. Additional sources of departmental financial support come indirectly from faculty funded research grants, experimental tests made in some laboratories for various state organizations, and industry consultations.

**7.2. Inadequacy of Budget**

As a result of austerity the financial support is not sufficient to update and support the laboratories and exhibition and conferences or any other scientific and researches activities in a cautiously manner. And also not sufficient to maintain any needs for the building.

**7.3. Support of** **Faculty Professional Development**

The allocated funding is inadequate for the needs of Faculty Professional Development in terms of academic developments or research developments.

**7.4. Support of Facilities and Equipment**

The college maintenance department accepts maintenance requests from the departments through written orders. In general, the support of facilities and equipment is done late.

**7.5. Inadequacy of Support of Personnel and Institutional Services**

Department depend on some resources and support facilities provided by the college and university. These include: the college and university libraries, both contain good collection of books, the libraries provide assistance to the faculty and students in their search. The department has few engineers or technicians to supervise the tasks of running, maintaining, and upgrading the various teaching and research laboratories at the department. . Furthermore, the department and faculty rely heavily on some resources and support facilities provided by the college and university. These include:

1. 1. The Electronic Computer Center of the University.
2. The Maintenance Department in the college.
3. The Purchasing Committees in both college and university.

7.6. SWOT Analysis

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)** | **WEAKNESSES (INTERNAL)** |
| 1-Good salaries and wages for the staff.  2-good new graduated students  3- The continuous development of syllabus and methods of presentation | 1. Complicated decision process at the college level as regards purchasing and hiring procedures.  2. Insufficient funding for research and for maintenance and upgrading facilities |
| **OPPORTUNITIES (EXTERNAL)** | **THREATS (EXTERNAL)** |
| The presence of governmental financial support for official universities. | Administrative and financial corruption. |