***PREFACE***

The present report is the first self-assessment report written for the Department of Electronics and Communications Engineering at the College of Engineering - University of Baghdad over the date. The report represents the first step towards achieving Quality Assurance in accordance with international standards, which is a strategic and important decision for the scientific and educational process of the department. The decision was adopted by the “General Board” of the College of Engineering. The report coincides with a wide and comprehensive campaign carried out by the College of Engineering and University of Baghdad in this area and under a central guidance and support from the Iraqi Ministry of Higher Education and Scientific Research (MOHESR). In writing the report, we have rely mainly on the template of a self-assessment report issued by the UNESCO Iraq Office (Amman), in addition to a number of similar reports of a number of Arab and international universities that have already presented such a report. The report includes in its first and second parts a definitive introduction to the department and its history, scientific disciplines and awarded degrees, the system of study and curriculum, organizational structure, the general features of the policy of the department in the various fields and aspects ... etc. After that, the report reviews the required criteria for the self-assessment and the related appendices according to specifications of SAR. The report also contains a very important article, that is a SWOT analysis for the (Strengths, Weaknesses, Opportunities, and Threats) of the department. SWOT analyses is a very important tool for planning and developing strategies and policies for the office in question, and we have tried in our writing of this paragraph to be very precise in our diagnosis of the strengths and weaknesses, as well as opportunities and threats facing the scientific and educational process of the department. We hope that we have been successful in our writing of this report, and that we achieve the minimum requirements of SAR. We hope that the report receives the attention of the experts involved in the UNESCO Iraq Office and to enrich it with their valuable observations to help us in guiding the department in the right direction towards ensuring quality and reliability of the educational system of ECE program according to international specifications and standards.

Preparedby:

Dr. Husam Abduldaem Mohammed

Quality Assurance and Academic Perfomance Committe memeber

Email: husam.a@coeng.uobaghdad.edu.iq

Dr. Sinan Sabah Mahmood

Department Coordinador

Email:sinan.mahmood@coeng.uobagdad.edu.iq

and

Asst. Prof. Dr Oday A.L.A Ridha

Chairman of the Examination Committee

Email:oday.ridha@coeng.uobaghdad.edu.iq

Reviewed by:

Dr. Buthaina Mosa Omran

Head of ECE Dept.

Tel. +964-790566381

Email: buth\_mosa@yahoo.com

and

Prof. Dr. Jafar Wadi

Professor of ECE Dept.

e-mail: jafar.wadi@yahoo.com

**Table of Contents**

***Article Page No.***

Preface …………………………………………………………………………. 1

 Table of Contents ……………………………………………………………… 3

**1. INTRODUCTION** ………………………………………………………….. 5

1.1 Vision and Mission Statements …………………………………………….. 5

1.1.1 Vision …………………………………………………………………….. 5

1.1.2 Mission ………………………………………………………………….... 5

1.2 Program Educational ………………………………………………………. 5

1.2.1 Consistence of the Program Educational Objectives with the Mission of

the Institution …………………………………………………………………… 6

1.2.2 Process for Establishing Program Educational Objectives ……………….. 6

1.2.3 Achievement of Program Educational Objectives ………………………... 6

1.3 Program Outcomes …………………………………………………………. 7

1.4 Continuous Improvement …………………………………………………... 8

**2. HISTORY AND ORGANIZATIONAL STRUCTURE** ………………….. 9

2.1 Program History ……………………………………………………….......... 9

2.2 Contact Information …………………………………………………….….. 10

2.3 Organizational Structure …………….…………………………………….... 10

2.4 SWOT Analysis for Electronics and communications Engineering Program ……………….…. 12

 2.4.1 SWOT Analysis for the Organizational Structure of the ECE

 Department…………………………………………………………………........ 12

 2.4.2 Strategic Objectives ………………………………………………………. 12

**3. STUDENTS** ……….……………………………………………………….... 14

3.1 Student Admissions ………………………………………………………… 14

3.2 Evaluating Student Performance ……………………………………………. 15

3.2.1 Educational Programs …………………………………………………….. 15

3.2.2 Participants and Graduation Trends ………………………….…………… 15

3.2.3 Monitor the Progress of Students ….………………………………….….. 16

3.3 Advising of Students ……………………………………………………….. 16

3.3.1 Opinion of Students ………………………………………………………. 16

3.4 Transfer Students and Transfer Subjects ……………….………………….. 19

3.5 Graduation Requirements ………………………………………...………… 19

3.5.1 Degree Check …………………………………………………………….. 19

3.5.2 Enrollment and Graduation Trends ………………………………………. 20

3.6 SWOT Analysis ……………………………………………………………. 20

**4. CURRICULUM** …………………………………………………………… 21

 4.1 Overview ……..…………………………………………………………… 21

4.2 Program Curriculum ……………..………………………………………… 22

4.2.1 ECE Program: Curriculum ……………….………………………………... 22

 4.2.2 Credit Hour Distribution ………………………………………………… 24

4.2.3 Requirements for Bachelor of Science in ECE…………………………… 25

4.2.4 Summer Training ………………………….……………………………… 25

4.2.5 How the Curriculum aligns with the Program Educational objectives……. 25

4.2.6 Curriculum Relationship to the Program Outcomes…………………..…… 26

4.3 SWOT Analysis ...……………………………………………………………….. 28

**5. FACULTY** ………………………………………………………………….……. 28

5.1 Faculty Size …………………………………………..…………………………. 28

5.2 Faculty Qualification ……………………………….…………………………... 29

5.3 Authority and Responsibility of Faculty ……………….……………………….. 30

5.4 Faculty Workload ……………………………..………………………………... 31

5.5 Faculty Development ……………………………….…………………………… 32

5.6 SWOT Analysis …………………………………………………………………. 33

**6. FACILITIES** …………………………………………………………………….. 34

6.1 Space ….…..….…………………………………………………………..……… 34

6.1.1 Faculty Offices …………………………………………………..…………….. 34

6.1.2 Classrooms …………………………………………………………….………. 34

6.1.3 Laboratories …………………………………………………………………... 35

6.1.4 Libraries ………………………………….………………………………….... 35

6.2 Resources and Support ………………………………………………………..… 36

6.2.1 Computing Resources …………………………………………………..…...... 36

6.2.2 Laboratory Equipment Planning, Acquisition, and Maintenance …………….. 36

6.3 SWOT Analysis ……………………………..…………………………………... 37

**7. FINANCIAL SUPPORT** ………………..………………………………………. 37

7.1 Program Budget Process ………………………………………………………… 37

7.2 Sources of Financial Support ……………………………………………………. 38

7.3 Inadequacy of Budget …………………………………………………………… 38

7.4 Support of Faculty Professional Development .…………………………..……... 38

7.5 Support of Facilities and Equipment …………………………………………….. 38

7.6 Inadequacy of Support Personnel and Institutional Services …………………….. 38

7.7 SWOT Analysis …………………………….…………………………………….. 39

Appendix A. Department Activities in the Academic Year 2017-2018 …………...…. 40

**1. INTRODUCTION**

The Electronics and Communications Engineering (ECE) Department at the College of Engineering / Baghdad University (BU) offers engineering programs leading to the degree of Bachelor of Science (B.Sc.) and Master of Science (M.Sc.) in the Electronics and Communications Engineering

**1.1 Vision and Mission Statements**

**1.1.1 Vision**

The Department of Electronics and Communications Engineering endeavors to be one of the leading Electronics and Communications Engineering Programs in Iraq and the region.

**1.1.2 Mission**

1. Graduating highly qualified ethical electronics and communications engineers.

2. Building the leadership qualities in its graduates through teaching how to lead, problem solving, team work, quality considerations, and professionalism at work.

3. Raising the spirit and commitment for acquiring knowledge and community servicein graduates.

4. Contributing ideas of projects and carrying out research for the benefit and development of the community.

5. Nurturing and care of outstanding students and encouraging them to use their skills.

6. Student counseling, guidance and strengthening of citizenship spirit.

7. Providing good working environment for students, faculty, and other personnel with emphasis on high academic, professional and ethical standards within the university campus. Freedom of opinions and respect of others opinions and encouragement in exchanging knowledge

**1.2 Program Educational Objectives (PEO)**

Since its establishment, the ECE Department at BU, worked hardly and continuously based on his noble mission in society service to achieve a number of strategically goals and objectives, the most important of them are:

1. Graduate electronics and communications engineers to serve in industry, construction and other sectors of the electronics and communications engineering labour market.

2. Improving the teaching and administrative activities to meet international accreditations standards and the mission of the department.

3. Improving the academic abilities of the faculty and attracting highly skilled personnel.

4. Improve the abilities of management and technical supporting staff and attract the highly skilled for employment.

5. Optimum use of resources and potentials of the department.

6. Cooperation, academic exchange programs, partnerships with other universities and academic centers in developed countries.

7. Establishing viable applied research that generates knowledge for local and foreign markets.

**1.2.1 Consistence of the Program Educational Objectives with the Mission and Activities of the Engineering College of BU**

The Electronics and Communications Engineering Department PEOs are aligned well, closely linked to, and consistent with the department’s mission. The first one of the objectives (PEO-1) provides the first step towards a career of achievement and service. The needed background of knowledge and skills are acquired to achieve this objective. Students acquire quality education through several avenues, including knowledge, skills and values as reflected in PEO 1. The professional and ethical issues are also preserved in (PEO-1). PEOs 2, 3, 4 and 6 ensure the qualities for self-development and professional growth and improvement of the faculty and administrative and technical staff. The Electronics and Communications Engineering Department PEOs are closely linked to, and consistent with, the University of Baghdad and College of Engineering missions. The University and College missions are directly served by the first, fifth and seventh Electronics and Communications EngineeringDepartment PEOs

**1.2.2 Process for Establishing Program Educational Objectives PEO Definition**

The primary function of the ECE program that is compatible with the missions of the College of Engineering of BU is to instill in its graduates a solid foundation of mathematical, scientific, and engineering knowledge in addition to developing the intellectual skills essential for excelling in their careers. The PEOs were discussed with all faculty members in several departmental meetings. ***Objective #1*** provides students with a solid foundation in the Electronics and communicationsEngineering discipline and design methodologies through emphasis on the application of mathematical, scientific, and engineering principles. It provides the students with the knowledge of proper ethical and professional practices relevant to Electronics and Communications Engineering, as well as awareness of the societal impact of electronics and communications engineering technologies. ***Objective #2*** focuses on the improvement, development and qualification of the teaching and administrative activities of the department. ***Objectives #3 & #4*** concentrate on the development and improvement of the faculty, engineering, technical, and administrative staff capabilities. ***Objectives #5*** considers the optimum use of the department facilities and resources, and improvement and qualification of these facilities. ***Objectives #6*** is related to the engagement and cooperation of the department with the highly qualified and developed universities and countries in order to improve and develop the ECE Program of the department. ***Objectives #7*** focuses on the scientific research activities of the department and how it can be directed towards the service of community, government and state.

**PEOs Review**

The process of review and evaluation of the ECE program is done through the following assessment channels:

1. Alumni survey.

2. Employer’s survey.

3. Faculty discussion.

4. Student’s survey.

5. Industry consultations.

**1.2.3 Achievement of Program Educational Objectives**

The assessment process of ECE Program objectives is done continuously and informally whenever possible through many channels, such as employers and Alumni surveys, students’ questioners process, faculty members’ opinions, experts from industry opinions… etc. Since the academic year 2010-2011, a systematic documentation for a number of questionnaires was made. The assessments are analyzed by the faculty to determine if changes are needed. To support the program, the Electronics and Communications Engineering Department has made questioners to (20) different state offices, factories, companies and also private sector companies asking them about their opinions in the department graduates and their suggestions to improve the program. The results of the questioners are shown in Figure (1.1).

**UniversityofBaghdad/CollegeofEngineering**

**Electronic and Communication EngineeringDepartment**

**Work Institutions Opinion Questionnaire about Graduates of Baghdad University Academic Year 2017– 2018**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Score | 1 | 2 | 3 | 4 | 5 |
| No. | Question | **StronglyAgree** | **Agree** | **IDon’tKnow** | **Disagree** | **IDon’tAgreeAtAll** |
| 1 | Has sufficient knowledge and information related to employment issues  | 3 | 12 | 2 | 3 | - |
| 2 | Has sufficient skills related to employment issues  | 3 | 10 | 1 | 6 | - |
| 3 | Possesses the skills of social communication with customers  | 3 | 11 | 2 | 4 | - |
| 4 | Have written communication skills (writing the required reports are properly)  | 5 | 12 | 2 | 1 | - |
| 5 | Possesses the skills of research and analysis in the affairs of the work  | 4 | 10 | 4 | 2 | - |
| 6 | Possess critical thinking skills and the ability to solve problems  | 3 | 13 | 1 | 3 | - |
| 7 | Possesses the skills of teamwork  | 3 | 12 | 3 | 2 | - |
| 8 | Has the skills to work within the team  | 3 | 13 | 3 | 1 | - |
| 9 | Possesses the skills of planning and organization for work  | 4 | 12 | 2 | 2 | - |
| 10 | Has the ability of high productivity at work  | 4 | 10 | 3 | 3 | - |
| 11 | Has the quality of work performance piece  | 7 | 11 | 1 | 1 | - |
| 12 | Has the capacity to creativity, innovation and work development  | 4 | 9 | 4 | 3 | - |
| 13 | Has the ability to comply with the various conditions of the work  | 6 | 10 | 3 | 1 | - |
| 14 | Has the ability to take responsibility  | 8 | 9 | 1 | 2 | - |
| 15 | Possesses the skills of social interaction with colleagues  | 7 | 8 | 4 | 1 | - |
| 16 | Has the ability to accept guidance and ready for implementation  | 6 | 11 | 1 | 2 | - |
| 17 | Has a sense of the importance of work performed by  | 7 | 12 | 1 | - | - |
| 18 | Has the ability to audit and review the work assigned to him  | 6 | 12 | 1 | 1 | - |
| 19 | Has the ability to deal with the problems and difficulties of working with  | 7 | 9 | - | 4 | - |
| 20 | Has the capacity to follow up on any up-dates in the field of work  | 7 | 11 | 1 | 1 | - |

**Figure (1.1): Labor Institutions Opinion Questionnaire about Graduates of ECE-Program**

**1.3 Program Outcomes**

1. The outcomes of ECE Program of the College of Engineering of BU are:
	1. An ability to apply knowledge of mathematics, science, and engineering.
	2. An ability to design and conduct experiments, as well as to analyze and interpret data.
	3. An ability to design a system, component, or process to meet desired needs.
	4. An ability to function on multi-disciplinary teams (*Our interpretation of multidisciplinary teams includes teams of individuals with similar educational backgrounds focusing on different aspects of a project as well as teams of individuals with different educational backgrounds*).
	5. An ability to identify, formulates, and solves engineering problems.
	6. An understanding of professional and ethical responsibility.
	7. An ability to communicate effectively.
	8. The broad education necessary to understand the impact of engineering solutions in a global and societal context.
	9. A recognition of the need for, and an ability to engage in life-long learning (*Our interpretation of this includes teaching students that the underlying theory is important because the technology changes, coupled with enhancing their self-learning ability*).
	10. Knowledge of contemporary issues (*Our interpretation of this includes presenting students with issues such as the impact of globalization, the outsourcing of both engineering and other support jobs as practiced by modern international companies*)
	11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

The program outcomes are closely linked to the program educational objectives. The relationship illustrating the program outcomes serving each objective is mapped in Table (1-1).

**Table(1-1):MappingBetweenProgramOutcomesandProgramEducational Objectives**

|  |  |
| --- | --- |
| **ProgramEducationalObjectives** | **ProgramOutcomes** |
| * Graduate electronics and communications engineers to serve in industry, construction and other sectors of the electronics and communications engineering labour market.
 | a,b,c,d,e, f,g, h,i,j, k |
| * Improving the teaching and administrative activities to meet international accreditations standards and the mission of the department
 | b,c,e,k |
| * Improving the academic abilities of the faculty and attracting highly skilled personnel
 | a,b,c,d,h,j,k |
| * Improve the abilities of management and technical supporting staff and attract the highly skilled for employment.
 | b,k |
| * Optimum use of resources and potentials of the department. .
 | a,b,c,k |
| * Cooperation, academic exchange programs, partnerships with other universities and academic centers in developed countries.
 | d,f,h,i,j |
| * Establishing viable applied research that generates knowledge for local and foreign markets.
 | d,h,i,j |

**1.4 Continuous Improvement**

The most important responsibilities and tasks performed in ECE department for the purpose of continuous improvement of the educational program are:

**A. Organize Information Used for the Program Improvement**

Continuous improvement of the ECE program is a continuous task that is carried out by the ECE Department through the Scientific Committee and the specialized committees branched from it. Curriculum revisions or corrective actions proposed by either of the above committees are presented to all ECED faculty members in General Board meetings for discussion, review, and approval. The ECED faculty actively participates in board discussions leading to a finalized set of curriculum revisions and / or corrective actions.

The last major Cycle of Curriculum Assessment-Correction and development process was made in the academic year (2010-2011). It was carried out after a general and comprehensive review to the old curriculum and in response to the comments / assessment of the Scientific Committee and the specialized committees branched from it and from the faculty members.

**B. Actions to Improve the Program**

Continuous improvement is a focus of our department and is done every day as a natural part of our profession. We strive always to improve processes that are weak and fix processes that are broken. We have not set “degrees of attainment” goals for each of the outcomes. We attempt to work on every deficit we uncover in our efforts to achieve outcomes. We expect every instructor to continuously improve the performance of students in his / her subjects, whether they are currently at low or high level. The following specific actions have either been successfully implemented or are in process.

1. Comprehensive changes in curriculum in the academic year 2010-2011.

2. Continuous improvement of faculty through training programs.

3. Promoting a number of faculty members to higher ranks.

4. Purchasing a number of laboratory equipment and instruments.

5. Purchasing a number of books for the library of the department.

6. Purchasing a number of computers.

7. Establishment of network access facilities provided by the Computer Center of Baghdad University in the form of a Wireless LAN network with 15 terminals available now in the department.

8. Employment a number of faculty, engineering and technical staff.

9. Increase in extra-curricular activities for students such as setting up scientific conferences and seminars.

10. Reconstruction and rehabilitation of classrooms and rooms in the department, as well as services and infrastructure.

11. Estblishment of research Lab which equiped with modren & advance Electronic kits and DSP processor.

**2. HISTORY AND ORGANIZATIONAL STRUCTURE**

**2.1 The Program History**

The Department of ECE at the University of Baghdad wasborn from the mother department that is Electrical engineering department.Thedurationofstudyisfouryears,afterwhichthegraduate obtainsabachelordegreeinElectronic and communication Engineering. Thepostgraduatestudiesinthedepartmentstartedattheacademicyear(2000-2001)toobtaintheM.Sc.degreeinElectronic and communication Engineering intwofields;(Electronic and communication Engineering)and(Computer Engineering).

**2.2 Contact Information**

Dr.Buthaina Mosa Omran

Head of Electronic and Communication Department

CollegeofEngineering

UniversityofBaghdad

Tel:+00964-790566381

Email: buth\_mosa@yahoo.com

**2.3 Organizational Structure**

The scientific, technical and administrative structure of the ECE Department at the College of Engineering – BU 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 works well and achieve the required goals through the integrity of work of these elements. The figure (2.1) shows the organizing structure of the department. Appendix A presents the most important activities of the department during the academic year 2013-2014, which are the results of integration between the elements of this structure.



**Figure(2.1):OrganizationalStructureoftheECEDepartment/CollegeofEngineering**

**2.4 SWOT Analysis for Electronics and communications Engineering Program**

**2.4.1 SWOT Analysis for the Organizational Structure of ECE Department**

In carrying out the SWOT analysis for the ECE Program, a balanced approach has been adopted which views all facilities in each section. The assessment of strengths and weaknesses are facilitated through surveys and information gathering activities of the committees and documentation in the department, and the evidence provided by the faculty and associates. The external look to identify opportunities and threats is considered complimentary to the internal self-study in the SWOT analysis. National and regional influences and concerns are of paramount importance when deciding about the strategies and actions to address the weaknesses. Furthermore, any strategic planning should also address the local and regional threats. Though no formal survey has been conducted to identify the opportunities and threats, group brainstorming, extensive consultations with knowledgeable faculty, review of local, regional and international developments, a thorough review of existing literature on engineering education, lead to the identification of the most relevant opportunities and threats. Figure (2.2) shows the SWOT analysis for the organizational structure of the ECE department.

**2.4.2 Strategic Objectives**

A closer examination of the SWOT analysis reveals that college strategic plan, including ECE Program, should focus on the improvements that are related to students, teaching methods, faculty, and facilities. Therefore, the following strategic objectives have been developed to address the weaknesses and threats related to various aspects of those issues…

1. Recruit, nurture and retain outstanding students.

2.Honoring, caring and retain outstanding faculty and staff.

3. Promote a strong sense of community and collegiality among the students, faculty, staff and alumni.

4. Improve teaching and learning through continuous assessment.

5. Promote research and consultation that address the immediate and long-term needs of the society.

6. Create a strong relationship with society in particular with industry to cooperate in the advancement of the country’s economy.

7. Continue to develop and maintain an adequate infrastructure.

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)**  | **WEAKNESSES (INTERNAL)**  |
| 1. Faculty 1. A very good experience in academic education for the faculty members.
2. A very good number of young and dynamic faculty members.
3. Sufficient number of faculty members.
4. Excellent and versatile academic backgrounds.
5. Great loyalty and affiliation to the department, college and university for most faculty members.
6. Good salaries and wages.

2. Curriculum 1. Designed to meet both local needs and international standards.
2. Strong engineering science components.
3. Availability of a good variety of general education subjects.
4. A well structured laboratory experience.
5. A strong professional component.
6. There is constancy throughout the years of study in the process of “pumping” subjects from the three specialties of the department, so that there is no gap in the four years of study where the student does not take a subject from one of the three specialties.

3. Acceptable equipped laboratory, library and IT Facilities.4. A very well specifically defined responsibilities and authorities for all committees of the department.5. The long and rich history, as well as the good reputation of the department.6. Large and continuous desire for development, and strong motivation for service for most employees of the department.7. Good social relationships between employees of the department.8. Good relationships between employees and students of the department.  | 1. Deficiencies in certain outcomes in graduating students. 1. Communication skills.
2. Design / real world applications.
3. Contemporary technical and economic issues.
4. Impact of engineering solutions in a global and societal context.

2. Quality and quantity of current students. 1. The lack of motivation to excel.
2. The culture of being “spoon-fed”.
3. Inadequate language preparation.
4. Inadequate training in critical or analytical thinking.

3. Inappropriate mode of teaching. 1. Inadequate classroom assessment.
2. Increasing proportion of new faculty with limited teaching experience due to inadequate training programs for development.

4. Large proportion of faculty with limited industrial and research experience. 1. Poor rehabilitation programs for faculty members.
2. Poor relationship with international research centers and academic institutions.

5. Inconsistencies in the quality of supporting staff. 1. Engineers (Teaching Assistants).
2. Technicians.
3. Secretarial and administrative staff.

6. Insufficient space for expansion. 1. Limited extension and expansion of the department, allowing being productive.
2. Limited excellence for scientific research locally and regionally.

7. Complicated decision-making process at the College level. 1. Complicated and restrictive purchasing procedures.
2. Complicated and restrictive hiring procedures.

8. Insufficient funding for; 1. Research.
2. Teaching improvement.
3. Hiring adequate human resources.
4. Maintaining and upgrading facilities.

9. Weak contact and weak alumni relations.  |
| **OPPORTINITIES (EXTERNAL)**  | **THREATS (EXTERNAL)**  |
| 1. Available faculty development opportunities. 1. Institutional support for sabbaticals travels.
2. Availability of international conferences, workshops, seminars etc.
3. Possibility of utilizing local talent for teaching and research.

2. Emerging technologies. * 1. Technologies that does not require extensive industrial infrastructure.
	2. Information based technologies.

3. New trends in multi-disciplinary professional education and new teaching methods. 1. Possibility of re-designing curriculum and by-laws to allow multi-disciplinary teaching and learning.
2. Possibility of utilizing e-learning and distance education.

4. Young and dynamic society. a) A good pool for potential students. b) Readiness to accept changes. 5. Good case for the security of the local community and environment. * 1. High proportion of demand for higher education in Iraq.
	2. High rate of population growth in Iraq.

6. The presence of government financial support for official universities.7. Similar programs and study areas with those in other universities within and outside of Iraq.8. Developing good relationships with alumni.9. Interdisciplinary teaching.  | 1. Competition (local, regional and global). * 1. Emerging local and regional private colleges.
	2. Accessibility of international schools via distance education.
	3. Fast pace of developments in technology (e.g. IT, emerging new fields).
	4. d. Start the establishment of private universities in neighboring countries and the opening of branches in Iraq.
	5. e. Weaknesses in general level of scientific awareness in the community.

2. Declining interest in engineering. * 1. Lack of sufficient number of quality students with strong interest in engineering.
	2. Inadequate public awareness for engineering profession and job opportunities.

3. Quality of incoming students (language, analytical thinking, motivation).4. Instability of the country situation (political, security, economic... etc.)  |

**Figure(2.2):SWOTAnalysisfortheOrganizationalStructureofECEDepartment**

**3. STUDENTS**

**3.1 Students Admissions**

An applicant for admission to an undergraduate program of Electronics and Communications (ECE) at the ECE Dept. 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 ECE 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 ECE Department in the last three years was 40 students but the overall acceptance is 29 students.

4. Also included a plan to accept the top students from Technical Institutes Foundation, and the 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 equivalency certificate from the Iraqi Ministry of Education.

Table 3.1 shows the history of admissions standards of student enrollment trends over the past five years of (ECE) Bachelor’s degree program.

**Table (3.1): History of Admissions Standards for Past Five Years**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Academic Year** | **Composite Score** | **Number of New Students Enrolled** | **Transfer Students** | **Number of Graduates** |
| **Minimum.** | **Average** |
| 2013-2014 | 93.42 | 93.83 | 49 | 4 | 16 |
| 2014-2015 | 94.71 | 95.06 | 29 | 6 | 30 |
| 2015-2016 | 94.42 | 94.82 | 29 | 6 | 32 |
| 2016-2017 | 92.82 | 93.03 | 28 | 10 | 21 |
| 2017-2018 | 85.42 | 92.95 | 29 | 11 | 25 |

Our data from the last five years tells us that approximately 12 %) of our undergraduate students enrolled from institutes. Approximately (5 %) transferred from other major engineering departments. Approximately, (10 %) of the enrolled students were transferred from the department.

**3.2 Evaluating Student Performance**

Student performance in each subject is evaluated by the faculty member, 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.

**3.2.1 Educational Programs / Credit Hour Definition**

The department follows the university wide standard definition of a credit hour. (ECE) program has the annual system of study which is followed for all subjects. Excluding 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 (3.2) shows participants and the percentage of success for each class over the past five years of (ECE) Bachelor’s degree program.

**Table (3.2): History of participants and the percentage of success for each class over the past five years of (ECE) Bachelor’s degree program**

|  |  |
| --- | --- |
| Academic Year | Number of Participants Students/Percentage for Success % |
| 1st year | 2nd year | 3rd year | 4th year | total |
| 2013-2014 | 50/68% | 44/81.8% | 28/96.4% | 20/80% | 142/81.5% |
| 2014-2015 | 47/68 % | 41/70.7% | 37/86.4% | 31/100% | 156/81.2% |
| 2015-2016 | 26/76.9 | 41/70.7% | 33/75.7% | 32/96.8% | 132/79.9% |
| 2016-2017 | 20/60% | 25/84% | 26/96% | 26/80.7% | 97/80% |
| 2017-2018 | 23/57.5% | 8/37.5% | 25/84% | 29/86.2% | 85/66% |

**3.2.3 Monitor the Progress of Students**

A student’s progress is monitored by faculty advisors and the Registration Committee, they turn in 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. 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 assimilated well, he / she must abide by the attendance on a regular basis and not to repeat his absence of classes so as 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 ECE Department advise students. Table 3.3 shows the percentage of faculty members and their qualifications to the (122) number of students during the academic year (2017-2018).

**Table (3.3): Number of Faculty Members / 122 Students for the Academic Year (2017-2018)**

|  |  |  |
| --- | --- | --- |
|  | **Number of Faculty Member**  | Total |
|  | Degree | Scientific Rank |
|  | Ph. D. | M. Sc. | Prof. | Assit. Prof.  | Lect. | Assist. Lect. |
|  | 9 | 13 | 2 | 3 | 10 | 7 | 22 |
| Percentage of 122 students | 7.4% | 10.6% | 1.6% | 2.4% | 8.2% | 5.7% | 18% |

**3.3.1 Opinion of Students**

During the period of the academic year, the student is required to meet with a faculty members and to review his/her progress. The Department of ECE determined that a standardized advising process needed to be developed and posted to make students aware of the correct procedures for being advised, this proposal process is shown in Figures (3.2) and (3.3) for the students opinion about curriculum and faculty, respectively

**University of Baghdad / College of Engineering**

**Electronics and Communications Department**

**Students Opinion Questionnaire about Curriculum**

**Academic Year 2017 - 2018**

***Code No. & Curriculum Name: Year:***

***Faculty Member's Name:***

**Dear Students:** For the development of the educational process at the university, we hope to express your opinion by answering accurately with mark **√** in the place which reflects your opinion taking into consideration the accuracy and objectivity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Score | 1 | 2 | 3 | 4 | 5 |
| No. | Question | **Strongly Agree** | **Agree** | **I Don’t Know** | **Disagree** | **I Don’t Agree At All** |
| **1**  | Overall, this Curriculum subject is good and useful  |  |  |  |  |  |
| **2**  | Lecture time is sufficient to cover the contents of the article  |  |  |  |  |  |
| **3**  | The content of article commensurate with the objective of Curriculum  |  |  |  |  |  |
| **4**  | Subject content is an interdependent information  |  |  |  |  |  |
| **5**  | Textbooks and references are available and meaningful  |  |  |  |  |  |
| **6**  | available of References helpful for stimulate and thinking  |  |  |  |  |  |
| **7**  | The book is free of grammatical errors Printing  |  |  |  |  |  |
| **8**  | Contents of the book are of outdated information  |  |  |  |  |  |
| **9**  | The book contains a variety of examples and exercises  |  |  |  |  |  |
| **10**  | The evaluation of the subject system is appropriate (test method)  |  |  |  |  |  |
| **11**  | Exams reflect the content of the subject  |  |  |  |  |  |
| **12**  | Number of exams be exhaustive of the content subject  |  |  |  |  |  |
| **13**  | Examinations and assignments helped to absorb the subject  |  |  |  |  |  |
| **14**  | Examinations and exercises are in line with the objectives of the subject  |  |  |  |  |  |
| **15**  | Examinations and exercises help to think of more conservation  |  |  |  |  |  |
| **16**  | Number of exams and the their recurrence are appropriate  |  |  |  |  |  |
| **17**  | The case of equipped lecture halls satisfactory  |  |  |  |  |  |
| **18**  | Capabilities and laboratories are appropriate and effective  |  |  |  |  |  |

**Figure (3.2): ECE Questionnaire Process: Curriculum**

**University of Baghdad / College of Engineering**

**Electronics and Communications Department**

**Students Opinion Questionnaire about Faculty Member**

**Academic Year 2017 - 2018**

***Code No. & Curriculum Name: Year:***

***Faculty Member's Name:***

Is the plan of teaching the subject was distributed from the beginning of the year? Yes NoI don’t know

Is the faculty member is committed to the specific office hours of the subject? Yes NoI don’t know

 If the answer is (No) explained that**\_\_\_\_\_\_\_\_\_\_\_**

**Dear Students:** For the development of the educational process at the university we hope to express your opinion by answering accurately with mark **√** in the place which reflects your opinion taking into consideration the accuracy and objectivity.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Score | 1 | 2 | 3 | 4 | 5 |
| No. | Question | **Strongly Agree** | **Agree** | **I Don’t Know** | **Disagree** | **I Don’t Agree At All** |
| **1**  | Has the ability to communicate scientific material in a smooth and easy manner  |  |  |  |  |  |
| **2**  | Keep to use the tools and techniques of modern education  |  |  |  |  |  |
| **3**  | Illustrates the theoretical aspects in the subject with examples from the reality  |  |  |  |  |  |
| **4**  | Gives the scientific material in a manner covering the time of the lecture  |  |  |  |  |  |
| **5**  | Committed to the dates of lectures  |  |  |  |  |  |
| **6**  | Improve in the management ranks and give equal opportunities to students in dialogue and discussion  |  |  |  |  |  |
| **7**  | Motivates students and encourages them to think and research  |  |  |  |  |  |
| **8**  | Respects the different views of the students  |  |  |  |  |  |
| **9**  | Through self-learning encourages students to search for what is new and modern  |  |  |  |  |  |
| **10**  | Accept criticism and suggestions with an open mind  |  |  |  |  |  |
| **11**  | Be objective and fair in his / her evaluation of students  |  |  |  |  |  |
| **12**  | Uses a variety of methods to assess the performance of students (such as reports, research, and quizzes(,  |  |  |  |  |  |
| **13**  | Follow up activities and duties to put the evaluation weights  |  |  |  |  |  |
| **14**  | Has the ability to discuss all issues of the subject  |  |  |  |  |  |
| **15**  | Working to increase the knowledge of the outcome requested  |  |  |  |  |  |

**Figure (3.3): ECE Questionnaire Process: Faculty**

**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 ECE subject numbers and posts them to the student’s ECE transcript. Table (3.4) shows the number of transfer students enrolled in the department over the past three academic years.

**Table (3.4): Transfer Students for Past Four Academic Years**

|  |  |
| --- | --- |
| **Academic Year** | **Number of Transfer Students Enrolled** |
| 2014-2015 | 10 |
| 2015-2016 | 10 |
| 2016-2017 | 12 |
| 2017-2018 | 4 |

**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 (7 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:

* Transcript, updated at the completion of the senior year with 42 Subjects and 160 Units.
* Computer-generated degree audit sheet tailored to the electronics and communications engineering curriculum, which shows subjects completed in required categories and separate sections detailing math and science, humanities, engineering major, and other credits.
* Copies of all correspondence of an academic nature with the student, including letters of admission to the College of Engineering.
* Any exceptions to the rules filed by the student and any action taken on those exceptions.
* Any comments or instructions included by the student’s faculty advisor, department chair, Engineering Records Office, or other pertinent source.

**3.5.1 Degree Check**

The department head meets with some graduating students to evaluate his / her academic record during the study period. Table (3.5) shows the Total Credits Required for Graduation**.** This evaluation also ensures that the ECE program criteria are fulfilled.

**Table (3.5): Total Credits Required for Graduation**

|  |  |  |  |
| --- | --- | --- | --- |
| **Class** | **No. of Subjects** | **No. of Units** | **Number of Hours/ Week** |
| **Total** | **Theory** | **Tutorial** | **LAB** |
| 1st Year | 12 | 40 | 30 | 17 | 6 | 7 |
| 2nd Year | 13 | 39 | 32 | 16 | 8 | 8 |
| 3rd Year | 11 | 37 | 31 | 17 | 9 | 5 |
| 4th Year | 13 | 40 | 32 | 18 | 8 | 6 |
| Total | 49 | 156 | 125 | 68 | 31 | 26 |

**3.5.2 Enrollment and Graduation Trends**

 Table (3.6) and figure (3.2) show enrollment trends for the last five academic years

**Table (3.6): Enrollment Trends for Past Five Academic Years**

|  |  |  |
| --- | --- | --- |
| **Academic Year** | **Full-Time Students** | **No. of Graduates** |
| 2013-2014 | 157 | 16 |
| 2014-2015 | 158 | 30 |
| 2015-2016 | 132 | 32 |
| 2016-2017 | 118 | 21 |
| 2017-2018 | 122 | 25 |

**Figure (3.4): Total Number of Students and Graduates in Five Years**

**3.6 SWOT Analysis**

Figure (3.3) shows the SWOT analysis for the students of the department.

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)**  | **WEAKNESSES (INTERNAL)**  |
| 1. A very good experience in academic education for a good number of the faculty members.2. Many faculty membersjoined scholarship programs abroad for Ph. D. degree studies.3. A very good number of young and dynamic faculty members. 4. Good relationships between employees and students of the department  | 1. Deficiencies in certain outcomes in graduating students. 1. Communication skills.
2. Design / real world applications.
3. Contemporary technical and economic issues.
4. Impact of engineering solutions in a global and societal context.

2. Quality and quantity of current students. 1. The lack of motivation to excel.
2. The culture of being “spoon-fed”.
3. Inadequate language preparation.
4. Inadequate training in critical or analytical thinking.

3. Inappropriate mode of teaching. 1. Inadequate classroom assets and facilities.

4. Large number of students’ admissions compared to the department capacity. |
| **OPPORTINITIES (EXTERNAL)**  | **THREATS (EXTERNAL)**  |
| 1. Emerging technologies. 1. Technologies that does not require extensive industrial infrastructure.
2. Information based technologies.

2. New trends in multi-disciplinary professional education and new teaching methods. 1. Possibility of re-designing curriculum and by-laws to allow multi-disciplinary teaching and learning.
2. Possibility of utilizing e-learning and distance education.

3. The presence of government financial support for official universities  | 1. Competition (local, regional and global). 1. Emerging local and regional private colleges.
2. Accessibility of international schools via distance education.
3. Weaknesses in general level of scientific awareness of society.

3. Quality of incoming students (language, analytical thinking, motivation). 4. Instability of the country situation (political, security, economic... etc.)  |

**Figure (3.5): SWOT Analysis for Students of Electronics and communications Engineering Program**

**4. CURRICULUM**

**4.1 Overview**

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

a. A combination of mathematics and basic sciences general education component (some with experimental experience) appropriate to the discipline.

b. Engineering topics, consisting of engineering sciences and engineering design appropriate to the student’s field of study.

c. A general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives.

**4.2 Program Curriculum**

The Bachelor of Science (B. Sc.) in Electronics and Communications Engineering is a four years program and it is a one branch specialization.

**4.2.1 ECE Program: Curriculum**

The curriculum subjects and weights of the Electronics and Communication Department are shown in Tables (4.1)

**Table (4.1): B.Sc. Degree Curriculum of ECE**

|  |  |
| --- | --- |
| **FIRST YEAR** | **SECOND YEAR** |
| **CODE** | **SUBJECT** | **UNITS** | **CODE** | **SUBJECT** | **UNITS** |
| GS101 | HUMAN RIGHTS | 2 | GS201 | ARABIC LANGUAGE | 1 |
| GS102 | ENGLISH LANGUAGE | 2 | GS202 | ENGLISH LANGUAGE | 2 |
| GS103 | COMPUTER I | 2 | GS203 | COMPUTER II | 2 |
| GS104 | SPORT EDUCATION | SAT. | GS204 | SPORT EDUCATION | SAT. |
| ECE101 | MATHEMATICS I | 6 | ECE201 | MATHEMATICS II | 6 |
| ECE102 | LOGIC CIRCUITS | 4 | ECE202 | COMPUTER PROGRAMMING II | 4 |
| ECE103 | ELECTRONICS I | 6 | ECE203 | ELECTROMAGNETIC FIELDS | 4 |
| ECE104 | COMPUTER PROGRAMMING I | 4 | ECE204 | ELECTRONICS II | 6 |
| ECE105 | ELECTRICAL CIRCUITS I | 6 | ECE205 | COMMUNICATION THEORY I | 4 |
| ECE106 | ENERGY CONVERSION | 3 | ECE206 | ELECTRICAL CIRCUITS II | 2 |
| ECE107 | WORKSHOP OF ELECTRONICS | 2 | ECE207 | COMPUTER ARCHITECTURE | 4 |
| ECE108 | ELECTRICAL MEASUREMENTS LAB. | 3 | ECE208 | ELECTRONICS LAB. | 2 |
| **TOTAL UNITS** | **40** | ECE209 | COMMUNICATION LAB. | 2 |
|  |  |  | **TOTAL UNITS** | **39** |
| **THIRD YEAR** | **FOURTH YEAR** |
| **CODE** | **SUBJECT** | **UNITS** | **CODE** | **SUBJECT** | **UNITS** |
| GS302 | SPORT EDUCATION | SAT. | GS402 | SPORT EDUCATION | SAT. |
| ECE301 | DIGITAL SYSTEM DESIGN | 4 | ECE401 | ENGINEERING PROJECT | 4 |
| ECE302 | ENGINEERING ANALYSIS | 4 | ECE402 | MICROWAVES | 4 |
| ECE303 | PROBABILITY AND STATISTICS | 2 | ECE403 | DIGITAL SIGNAL PROCESSING | 4 |
| ECE304 | ANTENNAS AND PROPAGATION  | 4 | ECE404 | DIGITAL COMMUNICATIONS | 6 |
| ECE305 | COMMUNICATION THEORY II | 6 | ECE405 | COMPUTER NETWORKS | 4 |
| ECE306 | ELECTRONICS III | 6 | ECE406 | COMMUNICATION ELECTRONICS | 4 |
| ECE307 | POWER ELECTRONICS | 2 | ECE407 | OPTICAL FIBER COMMUNICATIONS | 4 |
| ECE308 | CONTROL THEORY | 4 | ECE408 | INFORMATION THEORY AND CODING | 4 |
| ECE309 | ELECTRONICS AND COMMUNICATIONS LAB. | 3 | ECE409 | EMBEDDED SYSTEMS | 2 |
| ECE310 | COMPUTER AIDED DESIGN | 2 | ECE410 | ELECTRONICS AND COMMUNICATIONS LAB. | 2 |
| **TOTAL UNITS** | **37** | ECE411 | MICROWAVES LAB. | 1 |
|  |  |  | ECE412 | COMPUTER NETWORKS LAB. | 1 |
|  |  |  | **TOTAL UNITS** | **40** |

The program’s credit hours and curricular components distribution are summarized in Table (4.2).

**Table (4.2): ECE Curriculum \ Credit Requirements**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type | University Requirement | Basic Science | Specific Specialty | General Specialty |
| Units | 11 | 24 | 89 | 32 |
| Percentage | 7% | 15.38% | 57.69% | 20.5% |

**4.2.2 Credit Hour Distribution**

Figure 4.1 illustrates the general relative distribution of curriculum categories.

**Figure (4.1): General Relative Distributions of Curriculum Categories ECE Engineering**

**4.2.3 Requirements for Bachelor of Science in Electronics and communicationsEngineering**

The curriculum subject in the ECE program can be grouped in the following groups

1-Mathematics

2- Programming

3- Electronics

4- Communications

5- General Electrical

6- Humanities

Figure (4.2) shows the detailed distribution of the subject groups for the electronics and communications program. The Electronics and CommunicationsEngineering program subjects develop the knowledge and skills that will enable students to:

* Apply basic mathematical and scientific concepts for the description and solution of engineering problems,
* Develop initial proficiency in electronics engineering disciplines,
* Develop the ability to conduct experiments, and critically analyze and interpret data,
* Perform electronics and communications engineering integrated design of systems, components, or processes by means of practical experiences (group projects),
* Identify, formulate, and solve electronics and communications engineering problems using modern engineering tools, techniques, and skills,
* Collaborate in group projects,
* Develop their written and oral communication skills through presentations of project results,
* Acquire an appreciation for some of the ethical problems that arise in the exercise of the profession.

**Figure (4.2): Detailed Distribution of Subject Groups of ECE Program**

**4.2.4 Summer Training**

The electronics and communications 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. It is supervised by the Summer Training Committee of the department.

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

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 electronics and communications faculty insures that the students receive all the engineering analysis within the context of engineering program. At our faculty meetings, the curriculum subjects are continuously reviewed and if needed revised to the requirements ns of the electronics and communications industry.

**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. The level of emphasis for an outcome is determined by the weight as follows:

* When the subject outcome weight is < 10%, it will be given a Low rank (L).
* When the subject outcome weight is between 10% and 20% it will be given a Medium rank (M).
* When the subject outcome weight is > 20% it will be given a High rank (H).

The learning outcomes are

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

b. An ability to design and conduct experiments, as well as to analyze and interpret data

c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

d. An ability to function on multidisciplinary teams.

e. An ability to identify, formulates, and solves engineering problems.

f. An understanding of professional and ethical responsibility.

g. An ability to communicate effectively.

h. The broad education necessary to understand the impact of engineering solutions in a global &

societal context.

i. A recognition of the need for, and an ability to engage in life-long learning

j. Knowledge of contemporary issues

k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

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

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Outcome | a | b | c | d | e | f | g | h | i | j | k |
| Subject No. |  |
| 1st Year | GS101 | HUMAN RIGHTS |  |  |  |  |  |  | M |  |  |  |  |
| ECE101 | MATHEMATICS I | H |  |  |  |  |  |  |  |  |  |  |
| ECE102 | LOGIC CIRCUITS |  | L |  |  |  |  |  |  |  |  |  |
| ECE103 | ELECTRONICS I |  |  |  |  | H |  |  |  |  | M |  |
| ECE104 | COMPUTER PROGRAMMING I |  |  |  |  | L |  |  |  | M | L |  |
| ECE105 | ELECTRICAL CIRCUITS I |  |  |  |  | M |  |  |  |  |  |  |
| ECE106 | ENERGY CONVERSION |  |  |  |  |  | M |  |  |  |  |  |
| ECE107 | ENGINEERING DRAWING |  |  |  |  |  |  |  |  | M |  |  |
| ECE108 | WORKSHOP OF ELECTRONICS |  | M |  |  |  |  |  |  |  |  |  |
| ECE109 | ELECTRICAL MEASUREMENTS LAB. |  | H |  | L |  |  |  |  |  |  |  |
| 2nd Year | GS201 | ARABIC LANGUAGE |  |  |  |  |  |  | H |  |  |  |  |
| ECE201 | MATHEMATICS II | H |  |  |  |  |  |  |  |  |  |  |
| ECE202 | COMPUTER PROGRAMMING II |  |  |  |  |  |  |  |  | H | L |  |
| ECE203 | ELECTROMAGNETIC FIELDS | M |  |  |  |  |  |  |  |  | M |  |
| ECE204 | ELECTRONICS II |  |  |  |  | H |  |  |  |  | M |  |
| ECE205 | COMMUNICATION THEORY I |  |  |  |  |  |  |  |  |  | M |  |
| ECE206 | ELECTRICAL CIRCUITS II |  |  |  |  | M |  |  |  |  |  |  |
| ECE207 | COMPUTER ARCHITECTURE |  | L | L |  |  |  |  |  |  |  |  |
| ECE208 | ELECTRONICS LAB. |  | H |  | M |  |  |  |  |  |  |  |
| ECE209 | COMMUNICATION LAB. |  | H |  | M |  |  |  |  |  |  |  |
| 3rd Year | ECE301 | DIGITAL SYSTEM DESIGN |  |  | H |  |  |  |  | M | L |  | H |
| ECE302 | ENGINEERING ANALYSIS | H |  |  |  |  |  |  |  |  |  |  |
| ECE303 | PROBABILITY AND STATISTICS | M |  |  |  |  |  |  |  |  |  |  |
| ECE304 | ANTENNAS AND PROPAGATION  |  |  | M |  | H |  |  |  |  | L |  |
| ECE305 | COMMUNICATION THEORY II |  |  | L |  | M |  |  | L |  | M |  |
| ECE306 | ELECTRONICS III |  |  | H |  | H |  |  |  |  | M |  |
| ECE307 | POWER ELECTRONICS |  |  | M |  | M |  |  |  |  |  |  |
| ECE308 | CONTROL THEORY | M |  |  |  |  | M |  |  |  | L |  |
| ECE309 | ELECTRONICS AND COMMUNICATIONS LAB. |  | H |  | M |  |  |  |  |  |  |  |
| ECE310 | COMPUTER AIDED DESIGN |  | H |  |  |  |  |  |  |  |  | M |
| 4th Year | ECE401 | ENGINEERING PROJECT |  |  | H | H | M |  | H |  |  |  | M |
| ECE402 | MICROWAVES |  |  |  |  | L | M |  |  |  | M |  |
| ECE403 | DIGITAL SIGNAL PROCESSING | L |  |  |  |  |  |  |  |  |  |  |
| ECE404 | DIGITAL COMMUNICATIONS |  |  | M |  | H |  |  | M |  | H |  |
| ECE405 | COMPUTER NETWORKS |  |  |  |  | M |  |  |  |  |  |  |
| ECE406 | COMMUNICATION ELECTRONICS |  |  | H |  | H |  | M | M |  | H |  |
| ECE407 | OPTICAL FIBER COMMUNICATIONS |  |  |  |  | L | M |  |  |  | M | L |
| ECE408 | INFORMATION THEORY AND CODING | M |  |  |  |  |  |  |  |  |  |  |
| ECE409 | EMBEDDED SYSTEMS |  |  | H |  |  |  |  |  | H | M |  |
| ECE410 | ELECTRONICS AND COMMUNICATIONS LAB. |  | H |  | M |  |  |  |  |  |  |  |
| ECE411 | MICROWAVES LAB. |  | H |  | L |  |  |  |  |  |  |  |
| ECE412 | COMPUTER NETWORKS LAB. |  | H |  |  |  |  |  |  |  |  | M |

**4.3 SWOT Analysis**

Figure (4.3) shows the SWOT analysis for the curriculum of the department.

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)**  | **WEAKNESSES (INTERNAL)**  |
| 1. Designed to meet both local needs and international standards. 2. Strong engineering science components. 3. Availability of a good variety of general education subjects. 4. A well structured laboratory experience. 5. A strong professional component.  | 1. Central control of curriculum development by the sectoral committee in the ministry, and the possibility of changes in the curriculum only in a limited rate. 2. Lack of attention to give courses in English, especially in the scientific discussion within the classroom. 3. The style of the given curriculum tends to make the student recipients and not learner. 4. Lack of allocation enough credit hours to acquire good skills in computer programs that needed for the electronics and communications engineer. 5. Lack concentration of curriculum to teach students to work in team.  |
| **OPPORTINITIES (EXTERNAL)**  | **THREATS (EXTERNAL)**  |
|  1. Emerging technologies. a. Technologies that does not require extensive industrial infrastructure. b. Information based technologies. 3. New trends in multi-disciplinary professional education and new teaching methods. a. Possibility of re-designing curriculum and by-laws to allow multi-disciplinary teaching and learning. **b.** Possibility of utilizing e-learning and distance education.  | 1. Quality of incoming students (language, analytical thinking, motivation).  |

**5. FACULTY**

**5.1 Faculty Size**

The number of faculty members in ECE Department for the academic year 2010-2011 is (20).It is a challenge to teach the required courses and also to perform other tasks related to program assessment and continuous improvement in addition to administrative tasks assigned by the department. There are 4 faculty members with Ph. D. degrees and 16 faculty members with M. Sc. Degrees. By gender, there are 14 males and 6 females faculty members. By academic rank there is 1 Full Professor, 3 Assistant Professor, 10 Lecturers and 6 Assistance Lecturer.

In academic year 2017-2018, the faculty members in ECE department has been increased to 22. There are 10 faculty members with Ph. D. degrees and 12 faculty members with M. Sc. Degrees. By gender, there are 15 males and 7 females faculty members. By academic rank there is 2 Full Professor, 3 Assistant Professor, 10 Lecturers and 7 Assistance Lecturer.

**Interactions with Students**

At ECE Department, 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 meetings attendance, advising student leaders, and traveling with students to regional and national conferences and competitions.

**Interactions with Industry and Government**

The department contributed over many years in providing services to several different state offices and the private sector as well. These services have included 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 activities.

**Student Advising**

Freshman advising is handled by the Committee of Student Affairs in the Department of ECE. 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 spendtime 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 ECE faculties and it is offered voluntarily, with no academic release time. Figure (3.3) shows the self-assessment questionnaires for students indicating their opinions in faculty members.

**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).

**Table (5.2): Faculty Research and Areas of Interest**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Faculty Member  | Rank | Degree | Institution from which Highest Degree Earned \ Year  | Teaching, Research and Areas of Interest  |
| 1 | TareqZeyad | Prof. | Ph. D. | Baghdad/  | Communication, Image processing, Digital communications |
| 2 | JafarWadiAbdulsadah | Prof. | Ph. D. | Antonino-Brno - Czechoslovakia/ 1984 | Signal Processing and Communications |
| 3 | Mahdi Abdul Hadi | Assit. Prof. | M. Sc. | Baghdad/ 1989 | Electromagnetic Fields and Antennas |
| 4 | Oday Abdul Latif | Assit. Prof. | Ph. D. | Energy Institute – Russia/2005 | Digital System Design and Microcontrollers |
| 5 | Yamaan Ismael Majeed | Lect. | Ph. D. | Baghdad/ 2007 | Electronics and Communications |
| 6 | ButhainaMosaOmran | Lect. | Ph. D. | Baghdad/ 2007 | Electronics and Communications |
| 7 | Basma Mohammed Sa'eed | Lect. | Ph. D. | Al-Nahrain/ 2007 | Communications |
| 8 | HussamAbdaldaem | Lect. | Ph. D | Upm/ 2018 | Optical Fibers and Communications, Optical sensors, Optical sensor networks |
| 9 | GhassanNihadJawad |  Lect. | Ph. D | Manchester/ 2017 | Microwaves, Electronics and Communications |
| 10 | Bilal RabahNoori | Lect. | Ph. D | Arkensas / 2018 | Nanoelectronics |
| 11 | Sinan Sabah Mahmoud | Lect. | Ph. D | UPM/ 2018 | Telecommunications and Networking Engineering |
| 12 | ZainabNooriGhanim | Lect. | M. Sc. | Baghdad/ 1999 | Electronics and Communications |
| 13 | Malath Salah Al Deen | Lect. | M. Sc. | Baghdad/ 1999 | Microprocessor and Programming |
| 14 | Akeel Abdul Azeez | Lect. | M. Sc. | Baghdad/ 2001 | Control and Communications |
| 15 | Mohammed Kasim M. Al-Haddad | Lect. | M. Sc. | Baghdad/ 1998 | Math., Electronics and Communications |
| 16 | Ashwaq Abbas Abid | Lect. | M. Sc. | Baghdad/ 2000 | Computer Networks and Communications |
| 17 | AqielNe'maZaaian | Lect. | M. Sc. | Al-Nahrain / 2002 | Electronics and Communications |
| 18 | AmmarAbdulmajeedRadhi | Lect. | M. Sc. | Stuttgart-Germany/2012 | Electronics and Communications |
| 19 | Zahraa Ali Jawad | Assit. Lect. | M. Sc. | Baghdad/ 2009 | Programming, Electronics and Communications |
| 20 | Bashar Adil Stefan | Assit. Lect. | M. Sc. | Baghdad/ 2011 | Microwaves, Electronics and Communications |
| 21 | SadiqFouadKadhim | Assit. Lect. | M. Sc. | Baghdad/ | Electronics and Communications |
| 22 | Suha Abdul raheemJhawaja | Assit. Lect. | M. Sc. | Baghdad/ | Electronics and Communications |

**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 for 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’s council meetings. The Head of Department shall 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 number of the ECE department faculty members remained through the last 10 years relatively small compared to the number of students enrolled. That makes the work load for each faculty member much heavier than faculty members in other departments. Still the faculty members of the ECE department accept the challenge and deliver their best effort to fulfill their duties both in academic side and administrative side. The course load is distributed in accordance with faculty rank; that is; 6 credit hours maximum for Professor, 8 credit hours maximum for an Assistance Professor, 10 credit hours maximum for Lecturer, and 12 credit hours maximum for Assistance Lecturer. Any extra course load for each faculty member is compensated for financially. The faculty work load for the fulltime of the academic year 2017-2018 is shown in Table (5.3). The table also shows the distribution of the faculty activity.

**Table (5.3): Faculty Teaching Load Summary (Academic Year 2017-2018)**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Faculty Member Name** | **Classes Taught (Course No. /Credit Hrs.)**  | **Program Activity Distribution%** |
| **Teaching**  | **Research**  | **Administrative** |
| 1 | Tariq ZyadIsmaiel | ECE401(2) ECE107(3) | 40% | 20% | 40% |
| 2 | JafarWadiAbdulsadah | ECE401(2) ECE103(4) ECE205(3) | 40% | 20% | 40% |
| 3 | Mahdi Abdul Hadi | ECE401(2) ECE203(3) ECE304 (3) | 60% | 10% | 30% |
| 4 | Oday Abdul Latif | ECE401(2) ECE301(3) ECE109(2) | 40% | 20% | 40% |
| 5 | Yamaan Ismael Majeed | One year vacation leave | 60% | 10% | 30% |
| 6 | ButhainaMosaOmran | ECE401(2) ECE404(4) ECE105(4) ECE108(3) | 60% | 10% | 30% |
| 7 | Basma Mohammed Sa'eed | ECE401(2) ECE408(2) ECE303(2) ECE309(3) ECE101(4) | 60% | 10% | 30% |
| 8 | HussamAbduldaem Mohammed  | ECE407(3) ECE410(3) | 40% | 40% | 20% |
| 9 | GhassanNihadJawad | ECE401(2) ECE402(2) ECE411(3) ECE106(2) |  |  |  |
| 10 | Bilal RabahNoori | ECE412(2) | 20% | 40% | 60% |
| 11 | Sinan Sabah Mahmoud | ECE208(2) ECE209(2) ECE309(3) | 20% | 40% | 60% |
| 12 | ZainabNooriGhanim | ECE401(2) ECE204(4) ECE306(4) ECE208(2) | 80% | 10% | 10% |
| 13 | Malath Salah Al Deen | ECE401(2) ECE102(2) ECE207(2) | 60% | 10% | 30% |
| 14 | Akeel Abdul Azeez | Study Leave |  | 100% |  |
| 15 | Mohammed Kasim Al-Haddad | ECE401(2) ECE201(4) | 40% | 10% | 50% |
| 16 | Ashwaq Abbas Abid | ECE401(2) ECE209(2) ECE305(4) ECE405(2) | 60% | 10% | 30% |
| 17 | AqielNe'maZaaian | Study Leave |  | 100% |  |
| 18 | AmmarAbdulmajeedRadhi | ECE401(2) ECE403(3) ECE302(3) ECE310(2) | 50% | 20% | 30% |
| 19 | Bashar Adil Stefan | ECE401(2) ECE406(4) ECE411(3) ECE107(3) | 40% | 20% | 40% |
| 20 | Zahraa Ali Jawad | Maternal Leave |  |  |  |
| 21 | SadiqFouadKadhim | ECE401(2) ECE410(3) ECE309(3) ECE206(2) | 60% | 10% | 30% |
| 22 | Suha Abdul raheemJhawaja | ECE401(2) ECE309(3) GS103(1) GS203(1) | 60% | 10% | 30% |

**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 participate through temporary contracts with the same benefits. Many professors have successfully participated in this program and have been successfully retained at the department.

* **Center for Continuing Education**

The center offers professional development courses and training to faculty and to recently admit 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**

Figure (5.1) shows the SWOT analysis for the faculty of the department.

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)**  | **WEAKNESSES (INTERNAL)**  |
| 1. A very good experience in academic education for a good number of the faculty members. 2. A very good number of young and dynamic faculty members. 3. Excellent and versatile academic backgrounds. 4. Great loyalty and affiliation to the department, college and university for most faculty members. 5. Faculty salaries and wages are good compared to other categories of state employees, and to other universities in neighboring countries. 6. A very well specifically defined responsibilities and authorities for all faculty members. 7. Large and continuous desire for development, and strong motivation for service for most faculty members of the department. 8. Good social relationships between faculty members of the department. 9. Good relationships between faculty members and students of the department.  | 1. Insufficient number of faculty members.2. Faculty members overloaded with administrative tasks2. Increasing proportion of new faculty with limited teaching experience due to inadequate training programs for development. 3. Large proportion of faculty with limited industrial and research experience. 4. Poor rehabilitation programs for faculty members. 5. Poor relationship with international research centers and academic institutions. 6. Insufficient funding for faculty development.  |
| **OPPORTINITIES (EXTERNAL)**  | **THREATS (EXTERNAL)**  |
|  1. Available faculty development opportunities. a) Institutional support for study abroad. b) Availability of international conferences, workshops, seminars etc. c) Possibility of utilizing local talent for teaching and research. 2. Emerging technologies. a) Technologies that does not require extensive industrial infrastructure. b) Information based technologies. 3. New trends in multi-disciplinary professional education and new teaching methods. a) Possibility of re-designing curriculum and by-laws to allow multi-disciplinary teaching and learning. b) Possibility of utilizing e-learning and distance education. 4. Good case for the security of the local community and environment. a) High proportion of demand for higher education in Iraq. b) High rate of population growth in Iraq. 5. The presence of government financial support for official universities  | 1. Competition (local, regional and global). a) Emerging local and regional private colleges. b) Start the establishment of private universities in neighboring countries and the opening of branches in Iraq. c) Weaknesses in general level of scientific awareness of society. 2. Declining interest in engineering. c. Lack of sufficient number of quality students with strong interest in engineering. d. Inadequate public awareness for engineering profession and job opportunities. 3. Quality of incoming students (language, analytical thinking, motivation). 5. Instability of the country situation (political, security, economic... etc.). 6. Reduced financial support for professor as a scientific researcher, leading to a reduction in the level of research, where publishing in international scientific journals is the basis for enhancing the reputation of the college and then the university to be in level of international universities.  |

**6. FACILITIES**

**6.1 Space**

The ECE Department faculty and students have barely adequate (with minimum requirements) facilities available for conducting a successful program. The facilities include several classrooms, laboratories, workshop, faculty offices, department library, college and university libraries, university students club, and network access facilities. There is one seminar room equipped with computer integrated projection equipment (LCD and / or Data Show). We also have a break room equipped with sufficient requirements. As for the university library it is located in campus center. 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. In the following sections we provide detailed information regarding the faculty offices, classrooms, laboratories, workshop, faculty offices, department library, and college and university libraries.

**6.1.1 Faculty Offices**

The faculty offices are located in the main building of the department that is shared with other departments. Most of these offices are for two faculty members each. The offices have adequate furniture, but they are not air-conditioned and not equipped with computers or network connection. It should be noted, though, that the faculty offices are small in size such that they are inadequate to hold a discussion between the faculty and more than 2-3 students. The average faculty office space is about 10 square meters.

**6.1.2 Classrooms**

The classrooms include large and small ones. All are equipped with whiteboards, and blackboards, as the main tool for lecture presentation. Table (6.1) provides the classrooms types and sizes and the number of students (or persons) the classroom can accommodate. All classrooms are not equipped with network connected computers or high resolution projectors which can be used to deliver electronic class notes and perform in-class demos and presentations.

Table (6.1): Classrooms Types and Sizes

|  |  |  |
| --- | --- | --- |
| Classroom | Area (m2) | Maximum number of Students |
| Room No. | Type |
| ECE1 | Lectures | 90 | 60 |
| ECE2 | Lectures | 90 | 60 |
| ECE3 | Lectures | 90 | 60 |
| ECE4 | Lectures | 40 | 30 |
| ECE5 | Lectures | 30 | 20 |

**6.1.3 Laboratories**

Electronics and Communications Engineering Department contains many laboratories and a workshopwhich includes many devices and equipment used to conduct the experimental tests by undergraduate students and it is helpful to conduct the engineering projects by the forth class students and post graduates researches. Table (6.2) summarizes the list of available labs and their sizes.

**Table (6.2) Laboratories of the Department**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No.  | Lab Name | Subjects served by the lab. | Lab capacity (no. of students/session) | Area (m2) |
| 1 | Electronics  | ECE208, ECE309, ECE410 | 16-20 | 130 |
| 2 | Communications  | ECE209 | 14-16 | 130 |
| 3 | Workshop | ECE107, ECE207 | 16-20 | 130 |
| 4 | Microwaves  | ECE411 | 10-12 | 100 |
| 5 | Measurements  | ECE108 | 14-16 | 100 |
| 6 | CAD  | ECE310, ECE412 | 10-12 | 40 |
| 7 | Projects  | ECE401 | 6-8 | 40 |
| 8 | Computers Networks | Damage in building moved to CAD Lab | 40 |
| 9 | Microprocessor  | Damage in building moved to Workshop | 40 |
| 10 | Computers | GS103 ECE104 GS203 ECE202 | 90 |

**6.1.4 Libraries**

The students can have access to three libraries in the university campus; these are the libraries of the department, college and the university.

**The Department’s Library**

The department library is a small library intended to provide books that can help the students for extra references other than the texts books provided by the department for every subject of the 4 year of studies. The Library’s books also help researchers whether they are undergraduate students, postgraduate students or faculty members. The library contains about 500 titles with total of about 775 copies.

**The College’s Library**

The Library of Engineering College is one of the oldest scientific libraries in the University of Baghdad. It was established in 1941, and then developed well in the later years to become one of the mother libraries in engineering and contains more than (74901 books) and (1450 periodicals titles). The library offers its services to the students, faculty members, and researchers from inside and outside the college. Lastly, the library 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’s Library**

The Central Library of the 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; such as books, periodicals, thesis and dissertations, films, laser CDs, audio labs, maps, internet services …. etc. The library now has two buildings, one in the Al-Jadiriyah Campus and the other in the Bab Al-Muaatham Campus. The following is a brief 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**

As stated above, 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. There are 3 wireless access points and about 10 LAN terminal points available in the department. 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**

One of the most important and challenging problems encountered in the department is the lack of laboratory equipment and instrumentation in the department laboratories, in spite of considerable progress achieved by the department in this area in the last year. The Electronic and Communications 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. 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 is coming 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 make consolidated recommendations for the allocation of an appropriate budget for the next fiscal year. In this connection, a memo will be 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 thefollowing 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 theECE department sends 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.
* To support faculty research.
* To replace obsolete items.

In the fiscal year 2013 was spent for purchasing new laboratory equipment and maintaining some equipment. The laboratory equipment planning, acquisition, and maintenance processes are adequate with minimum requirements for achieving the program’s outcomes at the ECE department.

**6.3 SWOT Analysis**

Figure (6.1) shows the SWOT analysis for this article.

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)**  | **WEAKNESSES (INTERNAL)**  |
| 1. Acceptable equipped laboratory, library and IT Facilities.  | 1. Complicated decision-making process at the College level. a) Complicated and restrictive purchasing procedures. b) Complicated and restrictive hiring procedures. 2. Insufficient funding for Maintaining and upgrading facilities. 3. Centrality of work which rely mainly on the decisions of the university and the ministry which limits the possibility of development.  |
| **OPPORTINITIES (EXTERNAL)**  | **THREATS (EXTERNAL)**  |
| 1. Emerging technologies. a) Technologies that does not require extensive industrial infrastructure. b) Information based technologies. 2. The presence of government financial support for official universities.  | 1. Administrative and financial corruption.2. Intense competition from new and private colleges of higher financial support compared to the old College of Engineering, which caused the low level of infrastructure compared to the modern college.  |

**Figure (6.1): SWOT Analysis for Facilities of Electronics and communications Engineering Department**

**7. FINANCIAL SUPPORT**

**7.1 Program Budget Process**

The ECE Departmental budget is part of the overall College of Engineering budget. The departmental budget is mainly dominated by the laboratory budget that is submitted separately per the process explained in the previous article. Additional budget items include furniture, rehabilitations of university buildings, books, supplies… etc. In addition to the approved laboratory budgets presented earlier

**7.2 Sources of Financial Support**

University of Baghdad and its colleges and departments are a fully supported government institution, with the entire budget coming from the Iraqi government. Moreover, the university also receives some grants and gifts from some state offices and institutions, as well as from some international organizations and civil society organizations. However, such contributions amount to only a small fraction of the government allocations. 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. All these activities are covered by the Central Cooperation Mechanism Committee of the university, which is working according to the law of cooperation mechanism.

**7.3 Inadequacy of Budget**

As evident from Table (7.1), the ECE Department has great shortage and inadequacy in budget to continue updating and enhancing the labs, to achieve its program’s outcomes, and to support the faculty’s teaching and scholarly activities.

**7.4 Support of Faculty Professional Development**

As stated in the Faculty Development article (5.5), the faculty professional development efforts represent a prime objective of the department, college and university administrations and are manifested in the following two areas:

1. Academic Development, which is administered by the Ministry (R & D Office in the MOHESR), College and University.

2. Research Development, which is administered also by the Ministry (R & D Office in the MOHESR), College and University.

Funding allocated is inadequate for the needs of both lines. Accordingly, both planned activities and allocated funding are inadequate for the faculty professional development.

**7.5 Support of Facilities and Equipment**

The allocation of office space and laboratory facilities is the responsibility of the college and university with suggestions and recommendations from the department. On the other hand, the scheduling of classrooms is the responsibility of the department. Moreover, the college maintenance department is responsible for all maintenance issues related to offices, laboratories. The college maintenance department accepts maintenance requests from the departments through written orders. In general, the support of facilities and equipment is inadequate to achieve program’s outcomes in a perfect manner.

**7.6 Inadequacy of Support Personnel and Institutional Services**

The ECE Department has one highly qualified secretary to assess the department in all administrative aspects, but still this secretary does not have an assistant or a replacement when she is on leave. The department relies on the college Network/Computing services group for support on computing and networking facilities. The department has no specialized engineer or technician to supervise the tasks of running, maintaining, and upgrading the various teaching and research laboratories at the department. Accordingly, the aforementioned personnel resources are inadequate to meet the program’s outcomes. Furthermore, the department and faculty rely heavily on some resources and support facilities provided by the college and university. These include:

1. The Electronic Computer Center of the University.

2. The Purchasing Committees in both college and university.

3. The Maintenance Department in the college.

4. The College Library.

5. The Central Library of the University.

With respect to the college and university libraries, both contain a good collection includes books, periodicals, proceedings, theses, reports, maps, charts, electronic resources, and audiovisual materials. The libraries provide assistance to the faculty and students in their search for information and library materials.

**7.7 SWOT Analysis**

Figure (7.1) shows the SWOT analysis for this article.

|  |  |
| --- | --- |
| **STRENGTHS (INTERNAL)**  | **WEAKNESSES (INTERNAL)**  |
| 1. Good salaries and wages for the staff.  | 1. Complicated decision-making process at the College level. a) Complicated and restrictive purchasing procedures. b) Complicated and restrictive hiring procedures. 2. Insufficient funding for; a) Research. b) Teaching improvement. c) Hiring adequate human resources. d) Maintaining and upgrading facilities. 3. The college frequently rely on some of the department staff to do their own work. |
| **OPPORTINITIES (EXTERNAL)**  | **THREATS (EXTERNAL)**  |
|  1. The presence of government financial support for official universities  | 1. Administrative and financial corruption. 2. Lack of self-care and unfaith, especially from some officials on the decision-making, especially with regard to factors associated with the development of the university, college, and the department.  |

**Figure (7.1): SWOT Analysis for Support of ECE Department**

**Appendix A**

**DEPARTMENT ACTIVITIES IN THE ACADEMIC YEAR 2016 – 2015**

The following are some of the department’s most important activities and accomplishments during the academic year 2010-2011, as a sample for the department’s work and activities:

**1- Management Affairs**

1. The department board, which included the whole teaching staff (15) convened, and the comities were formed and assigned tasks for each committee and their objectives made clear so as to perform ideally.
2. The department's board and its different committees (especially the committee of scientific affairs) held regular meetings in order to manage the department affairs.
3. One technician was employed
4. Updating the department’s inventories for all laboratories, offices, rooms….etc. This is done every year.
5. Issuing about50 graduation documents for the department’s graduates.
6. Upgrading the system of documentation of the grades of the graduates for the years 1986-1995, and the process is continuing for the following years.
7. Checking the names of graduates for a number of documents addressed to government offices.
8. The participation of a number of the department’s staff in training and educational courses inside the university.

**2- Scientific Affairs**

1. Promoting a number of the teaching staff, 1 to the degree of Assistant Professor and 1 to Lecturer.
2. Publication of 12 papers locally and internationally.
3. A number of faculties contributed in evaluating a number of research papers and patents.
4. A number of faculties participated in the discussion and evaluation of a number of M.Sc. theses.
5. The department awarded a paid leave of absence to 6 of faculty members to complete their PhD studies abroad
6. The department awarded a paid leave of absence to one engineer 1 to complete the M. Sc. Study inside the country.
7. Acceptance of about 10 postgraduate students for M. Sc. studies
8. Accomplishing 4 M.Sc. thesis
9. Holding acollege level seminar about communications in Iraq.
10. Performing 12 seminar meetings by the postgraduate students.
11. Maintenance and repairs was performed on a number of laboratories devices and equipment
12. A number of new laboratory equipment was purchased
13. Holding a science fare of students projects

**3- Students and the Educational Process Affairs**

1. For the second time, the department held an honoring ceremony for the outstanding first three students for each class and awarding them with encouraging presents.
2. A number of interviews were made with the undergraduate students for all classes to assess the performance of the faculty and the department in general
3. The department participated in a number of sporting activities held by the college and university, an example of this was the college’s football championship
4. The students participated by scientific projects in the science in the science fair that is held annually be the department.

**4- Rehabilitation and Services Maintenance Affairs**

1. A number of rehabilitation campaigns were made for different part of the department especially as service maintenance for the air conditioning units.
2. A campaign was made for electrical wiring (fans, lighting….)
3. A number of air-conditioners were bought for the classrooms and management rooms.