Self-Assessment Report

Chemical Engineering Department
College of Engineering,
University of Basrah,
Basrah, Iraq

2017-2016

Table of Contents

9.2 Weaknesses
9.3 Opportunities
9.4 Threats

Contact Information:

Dr. Alaa Abdulrazaq Jasim
Chairman of the Chemical Engineering Department
Alaahade88@yahoo.com

Dr.Abduluahid Al-Hajjaj
Quality Assurance Committee Member
Faculty Member – Chemical Engineering Department
aahajjaj@yahoo.com

College of Engineering, University of Basrah
Basrah, 61004, Iraq

Chapter1:Introduction and Context of the Department

The chemical engineering department was established in 1980-1981 to meet the emerging need of governmental and private sector agencies and companies for skilled chemical engineers and to keep abreast of the scientific and technical progress in the world.
Since its inauguration, ChE department adopted a well academic program equal to the chemical engineering departments worldwide by focusing on both theoretical and practical integrated aspects of the chemical engineering field of study. The practical side of the program equals one third the total teaching process and the curriculum are kept updated.
The undergraduate study at the department is four years in length; from the moment of receiving the freshman year students whose average grades qualify them to join it up till to the graduation of the senior year students where they get their Bachelor of Science degree in chemical engineering.

The department has established a postgraduate studies section where admissible graduates have to complete two years of study to get their Master of Science degree in chemical engineering.

We have in the ChE Department a clear massage for our strategy aims to graduate people with B.Sc. in chemical Engineering goad in research and development and also in chemical industries. In order to reach the above aims , we have to applied the college strategy in view of number of undergraduate student admitted each year and also the number of postgraduate according to the following equation:

No. of academic staff needed = $[(X + Y - Z)/ (10\ X)](N)$

Where X =No. of undergraduate + postgraduate hours (theoretical + practical)
Y= No. of hours thought by the department staff out side the department
Z= No. of hours thought by lecturer from outside the department
N= No. of department student (undergraduate + postgraduate)

1.1 The factors which have contributed to the successes of the Department:

1- The department graduated a chemical engineering able to carry on with chemical and petrochemical industries and also with the academic study.
2- Trying to teach the student how to use the internet to develop there knowledge in there specialization .
3- Especially for postgraduate student we trying to make a link of research with the supervisor from overseas universities in order to increase the general technical information important for chemical industries.

4- Our student specially in the third and fourth years, have a program to visit the factories to gate enough knowledge about the theories and its application and also our third students have to go through program of summer training for one month which is one of the important subject before graduation.
5- Yearly , we have a committee in the department whose followed the development which has to be made by the Lecturer through the internet.
6- The department tried always to participate a supervisor and examiner specially for postgraduate student to discuss there thesis and some time to discuss the fourth year engineering project.
7- The department also trying to increase the student activity of the student in the field of Sport, Art and Scientific research.
8- Inhibition the un expectable idea for the society, and increasing the confidences between the student and the member of stuff by a number of social conferences and meting.
9- Increasing the social meting between the student and their supervisor and we divided the student among the supervisor (fifteenth student for one member of stuff).
10- The department will graduate a chemical engineering .qualified for ways serving the society in different ways.
11- The department has a testing laboratories for chemical and petrochemical test serving the society and also participate in engineering bureau.

From its launch, the chemical engineering department has put its own strategies,

1- Annual students' admission plan.
2- Curricula.
3- Staff and faculty recruitment.
4- Annual academic scientific plan.
5- Faculty promotion plan.

in coherence with these of the college, university, and ministry (any department as well as any college and university in Iraq must obey the Iraqi centralized regulations and rules set by the ministry of the higher education and scientific research).

1.2 The factors which have inhibited or are likely to inhibited the success of the department:

1- The department applied the ministry strategy in stead of the department and the college.
2- The unfortunately the college programs always starting with the unimportant think such as the furnisher or new building or new department with out laboratories and equipment.
3- The positive college program for the department has not enough money to be applied.
4- The chemical engineering department in short of stuff since ten years back till know.

5- The department has not got a clear overall plain dulling with number of admitted a student in the first years for at least five years in front.
6- The short of equipment in our laboratories which have sever effect on the student experience.

1.3 Commenting on the adequacy of the departments risk analysis processes and risk management:

1- The people in charge in the college tried their best to supplied the department laboratories with the urgent scientific equipment and measurable equipment which are better no think.
2- The college trying its best to overcome our problem in undergraduate and postgraduate laboratories with respect to chemical and accessories.
3- Synthesis or making a special committee for engineering consulting, and chemical testing , in charge them to participate in training courses.
4- Butting a plain for technical participation between the department and the industry.
5- Sitting a program for coordinate with other universities in the field of research and development.
6- Maintaining the developed level of the student and graduating a very qualified chemical engineering for solving industrial problem.

Monitoring the implementation of the institutional strategies and policies prompts :

The department plain to admit fifty student as under graduate per year and about five student as postgraduate. The department has a very short number of academic staff with respect to over all number of student which is not more than twenty lecturer only, five of them holding Ph.D. degree and thirteen holding an M.Sc. in chemical engineering.

1.4 The management of the department consist of :

1- Chairman (head)of the department The chairman of the chemical engineering department is the most pivotal of all positions concerned with the instructional development. The policies of the college and university delegate the prime responsibility of the department daily operation to the chairman. The chairman is thus, assigned the task of running and managing the department. As the executive officer, the chairman is responsible to both the dean of the college of engineering and the department. It is the chairman who maintains daily contacts with the administration, with faculty and with students. It is in this last context where the chairman has to ensure that the department's mission and educational objectives are met.
2- The reporter of the department developing and accomplishing departmental missions and objectives within those of the university; establishing departmental policies; conducting departmental meetings; involving faculty members and students in departmental decision making and activities so, who has a strait link with the head of the department .
3- The academic staff establishing departmental degree programs and curricula; evaluating, updating and improving program curricula, and the enforcing the quality of instruction.

4- The academic assist that consist of
   a- The security
   b- The research assistant
   c- The cleaners
   d- The gardeners

   administering departmental facilities; hiring, supervising, evaluating staff personnel (secretaries, laboratory assistants); establishing file and record systems (faculty, students, courses, academic data, correspondence); maintaining equipment and other department properties; requisitioning supplies; ordering textbooks.

1.5 The strategy for teaching and learning and research

The evidence do you have the department strategies policies and processes are in harmony with university strategies for teaching and learning research, we think they are complementary as they represented by the head of the chemical engineering department, the academic staff and the develop content of the courses(syllabus).

The department tried to introduce the new teaching categories such as the data show and in reaching the department laboratories with some of the latest, printed books or references for different subject.

Trying to encouragement the student to attendance the lectures and the laboratories and the ratio between the student and academic staff reach to twenty tow student for each lecturer. the average number of research yearly reach to twenty research including research submitted by the academic staff and another research submitted by postgraduate student and the most of these research are applicable in industry.

Questions and Answers:

1. What is the department's used strategy in teaching and scientific research?

In teaching, the process starts when the chairman assigns each faculty member specific curriculum(s) to teach and gives her/his the syllabus and the textbook of the curriculum, which s/he should use in teaching, but s/he has the ability to use other references.
From this moment, s/he will be fully responsible of teaching the curriculum to students, but s/he must still under the supervision of the department's who warns her/him if any dereliction occurs. During the year, s/he must afford the examination committee with:

- 1st semester examination's questions and marks.
- 2nd semester examination's questions and marks.
- Final examination set questions and marks.

In doing researches, each faculty member is working alone on his own research and at the beginning of each academic year, the faculty members have to fill out a research accomplishment form that includes:

- Number of the recent published research papers and where they were published.
- Number of papers that are currently under completion and the percentage of their accomplishment.
- Number of future suggested papers.

Sometimes, the department does a research with governmental or private sector agencies. Here, a team is formed and a contract is made between the department and the agency.

2. What are the factors that affect positively/negatively the success of the department?

Three factors affect the success of the department:

- The chairman of the department and his active wise administration.
- The curricula that are taught to students.
- The employed faculty members, technicians, and other staff members.

3. What evidence do you have that department strategies, policies and processes are in harmony with college strategies, policies and guidelines?

All of the strategies of any department as well as any college and university in Iraq must obey the rules of the ministry of the higher education and scientific research since the Iraqi regulations impose a centralized control.

Chapter2: ORGANISATION AND MANAGEMENT:

The department has a scientific plan each year written in the beginning of the year its include several scientific , activities , research , student activities ,educational supervision moreover the teaching of undergraduate and postgraduate student i.e. subject distribution among the staff of department in uniform stat . In the field of postgraduate study in fact the department started 2000 and till now as courses and research and in the research part we are tackling so many industrial problem specially the petroleum industry . the management of department has distributed all the student department (they are 250) distributed them between the staff member for educational supervision . It comes about 15 student for each member of staff. A number of meeting between these groups and their supervisor through the year, discussing so many a student problem including the resident, book available , social life, etc. . And writing a report after each meeting to the head of the department. Also there is industrial visiting to third and fourth

years student to see the theoretical subject on the field specially the petroleum refinery plant and so many petrochemical industries like filterizer , PVC, pulp industries and also Iron factories . In each visiting to these plant one or tow of department staff goes with student and asking them to write a report after each visit including the flow chart of the plant , the individual sections and the capacity , raw material , and product , etc. .

From the academic point of view the department flow a number of scientific and professional department inside and outside Iraq. And after taking the permission ministry of higher education with respect to other Iraqi university putting the subject for undergraduate and postgraduate The department panel includes all of the faculty members in it. this entity is responsible for issuing and making crucial decisions in the department that need counseling and sharing experiences. The department also has his own engineers, technicians, and administrators whose primary work is to be responsible for laboratories, their maintenance, warehouse keeping, gratis books duties, and service. The faculty members and the staff in the department have been assigned into different committees to manage and handle several different duties, see **Table2.1**.

Table2.1: Department's Committees

Committee Name	Responsibilities
Scientific and Graduate Affairs Committee	- Make decisions and statements. - Issue graduation transcripts. - Develop the curricula.
Examination Committee	- Manage the examination process in each semester as well as the final exams. - Document the students' records, marks, and grades.
Importation Committee	- Determine what the department needs at the beginning of each academic year.
Inventory Committee	- Count and calculate prices of every thing in the department and where everything has been moved to/from.
Gratis Books Committee	- Giving the students as well as faculty

	members the needed textbooks at the beginning of each academic year.
Summer Industrial Training Committee	- Assigning students to their designated summer training governmental companies.
Laboratories Maintenance Committee	- Maintain the healthy environment of laboratories.
Quality Assurance Committee	- Responsible for preparing reports, communicating the quality assurance requirements to the department.

and the fallowing point include the main department activities for 2011-2012 :

2.1 Student section :

a- Undergraduate student : the department plan excepted around fifty student per year + five student as pioneer industry and five student as a pioneer from institutes.

b- Postgraduate student : due to the shortage of the academic staff in chemical engineering department as explained above in chapter one through the academic staff recorded equation . the department plan to admit postgraduate student around five student per year for M.Sc. degree only.

c- The social activity : the department has a number of social activity such as staff social meeting , football team between the staff and student moreover that the social trip.

d- Engineering project : the department management seeking a number of problem for postgraduate research either form the academic staff, the student themselves and industry . also the fourth year engineering project for B.Sc. they have been selected to match the exist industry in the region in order to get the data required by student directly form the plant.

ε– Facilitating a constructive environment to consolidate the program teaching and learning process.

f- Curricular and career advising of students.

g- Responding to student grievances and complaints.

h- Certifying students for graduation.

2.2 Staff section :

establishing departmental degree programs and curricula; evaluating, updating and improving program curricula, and the enforcing the quality of instruction.

establishing departmental degree programs and curricula; evaluating, updating and improving program curricula, and the enforcing the quality of instruction.

The staff development , the department very interested in developing the staff by :

1- participate the staff in a number of scientific conferences inside or outside Iraq.
2- Participate the academic staff in developing meeting to develop their ability in teaching and in psychology.
3- Using the facilities between the university and industry inside Iraq from the point of engineering consultation and research to solve their problems.

2.2.1 The academic staff research , the department submit in beginning of the academic year a scientific plan which include several think specially the research part which divided as the fallowing:

1- The published research or have been accepted by the published.
2- Research which already sent to the publisher.
3- Going on research
4- Suggested research .

2.2.2 The output scientific thesis , the department has graduate a number of postgraduate student and we have their thesis in the department library moreover we have six postgraduate student in the first year doing courses.

2.3 The engineering and employer section :

administering departmental facilities; hiring, supervising, evaluating staff personnel (secretaries, laboratory assistants); establishing file and record systems (faculty, students, courses, academic data, correspondence); maintaining equipment and other department properties; requisitioning supplies; ordering textbooks.

1- The engineering staff and development :
   The department management very interested in developing the engineering through participate them in different scientific cycle for example in computer and different subject engineering , also the department tried to encourage them for manufacturing a simple laboratories equipment, moreover that the department interested in maintains and structural and operated of the equipment.
2- The management staff :
   The department has a number of management staff, for example secretary, librarian and cleaning people ,these people also shire a developing courses to develop their ability in their job.

2.4 OTHER ACTIVITY :

Program affairs:

1– Arranging meetings with faculty to decide on further steps to improve the program.

2– Managing the essential funds for laboratory equipment, day-to-day functioning, other department social activities, etc.

3– Executing the ChE Program, alteration, and improvement proposed by program constituencies.

4-SEMINAR : the department got a time table for a number of seminar giving by the staff member and the postgraduate student every week at lest one hour each Monday which is a good meeting for shirring. The staff idea with their postgraduate student , the seminar also listed in scientific plan which submitted by department in the beginning of the year.

5- SCIENTIFIC VISITING : department management controlled a scientific trip for third and fourth undergraduate student to visit the nearest industrial plant to join the theoretical with practical on a pallet plan scale such as petroleum refinery and other petrochemical industry.

6- EDUCATIONAL ADVISOR : the department interested in this field in order to stand on the most student problem and also making a sheet of a questioners once a year distributed to the student to estimate the member of staff moreover trying the list their problem and the department to solve them.

2.5 Department Budget Allocation Process:

The Iraqi Ministry of Finance allocates the annual budget of all Iraqi ministries including the Ministry of higher Education and Scientific Research. The Ministry of Finance exerts all efforts possible in framing and application of the righteous financial policies to improve and develop the available resources for all ministries. The Ministry of Higher Education and Scientific Research, in turn, allocates the planned annual budget to the University of Basrah that gives the college of engineering its share of the budget. Then, each department gets its own financial part from the college and uses it in fulfilling:

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

Table2.2 and **Fig.2.2** summarizes all previous points.

Table2.2: College of Engineering Budget Allocated by the University of Basrah over the Five Past Years

Allocations (ID)	Academic Year				
	2011-2012	**2012-2013**	**2013-2014**	**2014-2015**	**2015-2016**
Employees' Expenditures	1820250000	2377500000	3254470000	3203500000	3210250000
Services Requirements	20450000	56450000	26800000	177900000	46124380
Commodities Requirements	109300000	204009750	1394000000	343600000	183487850
Equipments' Maintenance	42000000	104000000	71500000	215400400	70284200
Funding Costs	203200000	256000000	254750000	1023000000	509848500
Other Expenses	153750000	273750000	164750000	126000000	125288250
Total	**2348950000**	**3271709750**	**5166270000**	**5089400400**	**4145283180**

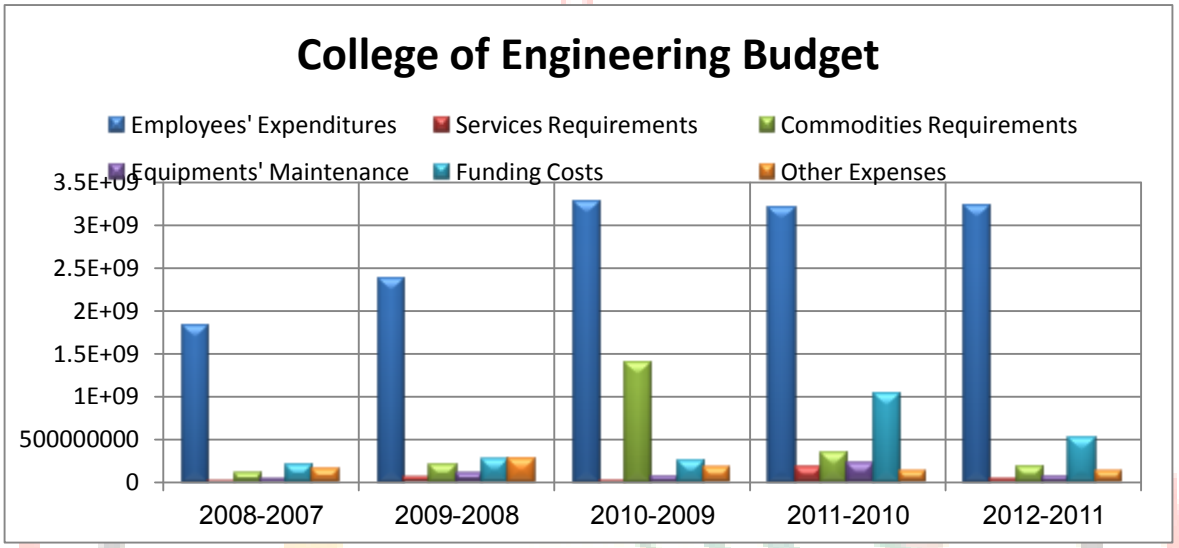


Fig.2.2: College of Engineering Budget Allocated by the University of Basrah over the Five Past Years In the department, faculty members are assigned their workload according to **Table2.3**.

Table2.3: Workload Measurement and Assignment

Academic Title	Actual Workload (Hours/Week)
Professor	6
Assistant Professor	8
Lecturer	10
Assistant Lecturer	12
Engineers, technicians, and employees	20

The department has good relations with other departments in the college of engineering where its assistant professors are supervisors of other departments' master and doctorate studies students. The ChE department participates through the engineering consultation office in the college in giving consultation services in all fields for governmental and private sector agencies inside and outside Basrah. Also, it participates through the continuous learning unit in the college in giving several developing courses for the governmental sector employees, see **Table2.4**.

Table2.4: ChE Department Participation in the Continuous Learning Courses in 2016-2017

Course Title	Period and Date	Number of Participants	Instructor
Environmental pollution and Industrial Safety Training	1 Weeks / 26-04-2016	8	Rusal
Chemical Safety in Laboratories	1 Weeks / 19-10-2016	4	Rusal

Questions and Answers:

Are the communication mechanisms effective ? what evidence is there ? can they be improved?

Yes, there are a communication between the department in the college and it's effective in participating the use of instrument and sometime the staff as well in undergraduate and post graduate studies and supervise different thesis. They also can be improved in a way like shirring the budget of number close of department for example chemical, mechanical, material, and petroleum to bay such a big instrument useful for all and construct a universal testing laboratory to be used by the above different departments.

Could the organization of the college be improved ? Are synergies realized?

Yes, the organization can be improve may be by fallowing up the teaching processes of all subject and the percentage of development for each subject as well moreover that fallowing up the undergraduate and postgraduate laboratories , and the management of the department must be specific in choosing the research topic both for postgraduate and the staff member which solving or serving the exist industrial problem specially the petroleum industry.

Are key staff roles and office function clearly understood?

The employment and employer they have a serious of roles in have to be followed to caver their job and they are in categories that each one complete the other. They also in same places may followed the program (in few places) as a computer program which the department problem represent the input to that program include the names and marks of the student in fourth stage and the out

put will be the result in uniform table and a solution of some department problem such as the lode of the staff and the yearly plan of the department.etc.

How is the administrative-work organized in the department?

- The chairman of the department assigns the duties and jobs of every member in the department:

- If the member is a faculty, then s/he will be fully responsible of her/his assigned curriculum, laboratories, involved committee(s), and the community services.

- If the member is an administrative staff, s/he does what her/his work needs and gets back to the chairman with any questions and consultation.

- Any crucial decisions at the department must be made by the "department board" that includes all of the faculty members.
- Students' daily issues are the responsibility of the chairman assistant who communicates their issues to the chairman.

What are the means of interaction/contacting in the department? What are the evidences? Can these means be improved?

There are two ways to contact the department: either via coming personally to the department or via using the mail. This can be improved if the department puts a website with official emails for its employees rather than their personal ones.

Are the roles of all of the department's staff and their main jobs understood clearly?

Yes, there is a description of each job made by the ministry; the chairman, his assistant, secretaries, faculty, committees, and board all know exactly what to do.

How do workloads in the college compare with those say, in other countries e.g. UK, Europe, USA?

In the US and European academic engineering departments, a more authority is given to the chairman of the department such that s/he can proceed in a more active smooth way.

Could the organization of the department be improved? Are synergies realized?

Yes, it can by dividing the job of the chairman's assistant into two new jobs: one for administrating the students affairs and the other for administrating the faculty affairs. .

Chapter3: STAFF AND FACILITES :

3.1 Authority and Responsibility of Faculty :

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

1. Teaching: proposing new curriculum courses, modifying and updating existing courses; course evaluation through conducting exams, quizzes, assignments, projects, etc. In order to provide consistency in the department, faculty members in the Chemical Engineering Department are recommended to:

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

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

3. Service to the college and university: some faculty members in the department are assigned different tasks at the university level. This is realized, among other duties, through; reviewing of academic publications, editorial board members, organizing International conferences, and other academic associations and consultancy assignments

3.2 Faculty

The chemical engineering department has 16 full time faculty members, including the chairman of department. In terms of rank distribution, they are broken down as follows:

- Three assist professor
- Tow lecturers

- Eleven assist lecturer

Among our faculty, the number of years of teaching experience ranges from 2 to 33 years, In the process of assessing the faculty activities in the ChE department it was realized that, on the average, the department is more tilted towards teaching rather than research and other scholarly activities. Detailed information regarding the credentials, experience, workload, and committees' involvement of the faculty member in the ChE department is included in Tables3.1

The chemical engineering department constitutes of:

1- The **chairman** of the department who manages the departments academic and administrative affairs, **the chairman administrative support staff** (chairman's reservist, assistant, and secretary).

2- The **department panel** which includes all of the faculty members of the department whose names are listed in table3.1.

Table3.1:ChE Department Faculty Members

Rank	Full Name	Age
Professor	Ala'a Abdulrazzaq jasim	46
Assist. Professor	Salah Abdulwahab Neama	58
Assist. Professor	Abdulwahed abdulhassan	57
Lecturer	Sa'ib Abdullah Yousif	57
Assist. Professor	Hyder Hadi Jasim	45
Lecturer	Ali Naser Kalaf	51
Assist. Lecturer	Shrooq Shbber Ghallib	43
Assist. Lecturer	Shymm'a Mahdi Shayeb	43
Assist. Lecturer	Raed abdulhussein	47
Lecturer	Anwar Abdulhassan	44
Lecturer	Hyff'a Lattef Swady	43
Lecturer	Russel Naseer Mohammed	32
Assist. Lecturer	Ghadder Jasim Mohammed	32
Assist. Lecturer	Wed Khaled Ghanem	35
Lecturer	Mohammed Naser Fares	45
Assist. Lecturer	Hyder Hammed	45
Assist. Lecturer	Ahmed Showky	32
Assist. Lecturer	Ahlam Abdulreza	43

3-

4- The department also has engineers, technicians, and administrators employees with their names mentioned in **Table3.2**.

Table3.2: Engineers, Technicians, and administrators in CoE department

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

5- The department also has several committees, see **Table3.3**.

Table3.3: Departmental Committees

Committee Name
Scientific and Graduate Affairs Committee
Examination Committee
Importation Committee
Inventory Committee
Gratis Books Committee
Summer Industrial Training Committee
Laboratories Maintenance Committee
Quality Assurance Committee

In this way, the overall department structure is shown in **Fig.3.1**

Table3.4: Faculty Involvement in Regular Committees at the Department

No.	Committe	Member
1	**Scientific Advisory and Graduate Affairs Committee**	Ala'a Abdulrazzaq jasim Abdulwahed abdulhassan Sa'ib Abdullah Yousif
2	**Examination Committee**	Amen Nassar Sa'ib Abdullah Yousif Salah Abdulwahab Neama Hyff'a Lattef Swady Ahmed Showky
3	**Importation Committee**	Ala'a Abdulrazzaq jasim Anwar Abdulhassan Ali Naser Kalaf
4	**Summer Industrial Training Committee**	Abdulwahed abdulhassan Mohammed Naser Fares
5	**Gratis Book Committee**	Ala'a Abdulrazzaq jasim
6	**Laboratory Maintenance Committee**	Ala'a Abdulrazzaq jasim
7	**Quality Assurance Committee**	Anwar Abdulhassan
8	**Inventory Committee**	Anwar Abdulhassan Ahlam Abdulreza

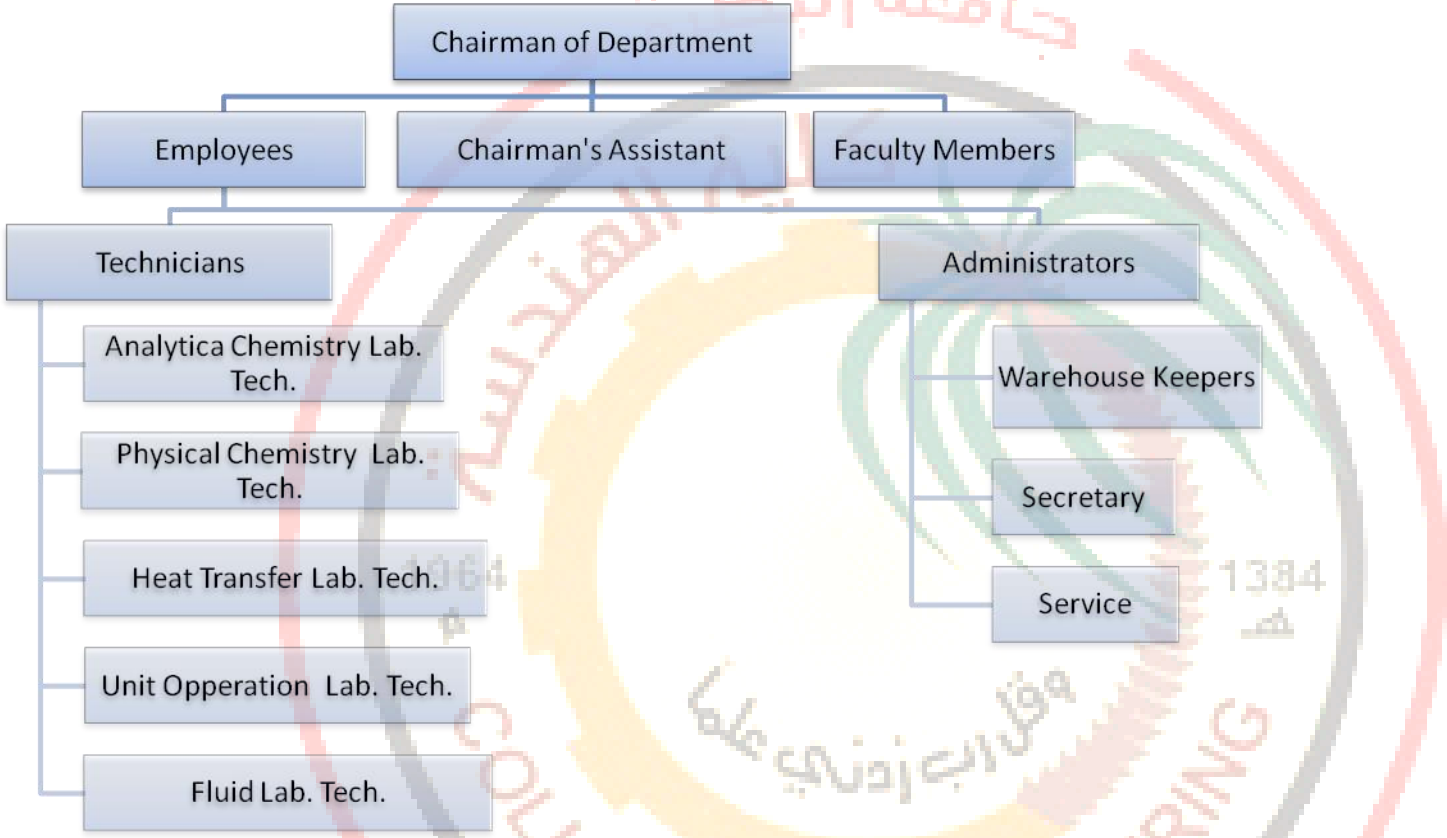


Fig.3.1: Department Structure

3.3 Faculty Competencies

The department is offering a wide spectrum of courses in diverse areas of chemical engineering courses that includes, though not limited to; chemical design, chemical control, chemical processing , chemical operating systems,. **Table3.5** gives the names of faculty, area of interest, and current program curricular areas taught by them.

Table3.5: Faculty's Specialization and the Program Curricular Areas

Faculty	Area of Interest		Curricular Areas
	General	Specific	
Dr. Ala'a Abdulrazzaq jasim	Chemical Engineering	Information Technology	Chemical Design Processing
Dr. Ala'a Abdulrazzaq jasim	Chemical Engineering	Reactor Design	Reactor Design

3.4 Faculty Size

The total number of students in the department is 400, and the number of the ChE faculty members is 18 . This data clearly indicate that, in terms of numbers, there has been the management of department has distributed all the student department (they are 400) distributed them between the staff member for educational supervision . It comes about 15 student for each member of staff., (asses.lecture, lecturer and asses.prof.), is two courses, while it is three courses for others. During 2015-2016, the department . Every faculty members in the department is requested to allocate a certain number of office hours, depending on his teaching load, per week. These office hours are mainly assigned for helping the students. S/He has the responsibility of making the students aware of the scheduling of these hours. This interaction is much more manifested in; student advising, supervising senior projects, attending senior project exhibitions, professional society advising, and coordinating industrial training.

3.5 Faculty and Staff Development

Depending on the individual motive, each faculty member follow her/his own way in developing her/his ideas and techniques. There is also a workshop at the university called "teaching methods" which is one of the needed requirements for promoting any faculty member in her/his academic title. For the new faculty members, there are no training activities or induction chances. That's why, it is crucial for the success of the faculty to have some induction, orientation groups where faculty-members would be involved. As for the non-academic staff, there is a periodic program at the college called continuous learning courses where the technicians and staff can attend to develop their own skills and further their experience.

3.6 Space

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

1. Administrative office: the office of the chairman is located on the second floor of the chemical engineering department building with approximately 28 m2, in area.

2. Administrative Supporting Staff; this consists of:

a. One full time secretary whose job is to administratively assist the chairman; this office is 14 m2, in area, and is directly connected to the chairman's office.

b. One head's assistant, who is a full-time faculty member whose job is to administratively assist the chairman. This office is 14 m2, in area.

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

3. Faculty offices are allocated in two different levels of the Department's Building. There are 16 faculty offices in the department, each of which is a 14 m2 in area, each faculty (with a PhD or higher) is assigned a separate office. Every faculty office is furnished and equipped with 1 PC and an **inactivated** link to Internet.

4. Storage rooms: There are a total of two storage rooms in the department. Each of these rooms is of 110.25 m2, each.

5. Meeting room**:** a room of about 28m2, mainly used for department's meetings at different levels. This room is properly furnished and equipped with data show.

6. Examination Committee Room: it is located at the second floor near the administrative office with 28 m2, in area. Here is where students' records are held. It consists of one printing machine, one PC, and one photocopying/scanner machine.

3.6.1 Classrooms

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

- 2X4 m2 blackboard.
- Classroom space area 7m X 10.5m (73.5 m_2).
- Split air conditioning units with adjustable temperature.
- Adequate classroom chairs for up to 60 chairs per classroom.

3.6.2 Laboratories

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

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

A summary of the 7 departmental laboratories is given, below, in Table3.6. The table also shows the courses associated with each lab.

Table3.6: Laboratories' Names, Space Areas, and Associated Courses

Lab. Name	Area ($m^{2)}$	Associated courses
Unit operation lab.	144	ChE 309
Control &fluid lab.	144	ChE 408
Computer Lab.	144	ChE 104, ChE203
Organic &analytical lab.	144	ChE102
Physical chemistry &petroleum refining lab.	144	ChE109, ChE208

Postgraduate lab.	144	ChE305, ChE402
Chemical tasting lab.	144	ChE406

3.6.3 Department Library

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

3.6.4 The store

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

3.7 The aim of this section would include:

Evaluating the adequacy of current resources:

The part of the money resources it's un sufficient specially to furniture the department laboratory such as the unit operation laboratory where the equipment of this laboratory are very coastally and the part of academic staff the department is in short of this part (academic staff) because there no employment in spite of there are a number of postgraduate student they finished there degree and with out job. As we reported in chapter one according to academic equation :

$$\text{No. of academic staff needed} = [(X + Y - Z)/(10\,X)](N)$$

Where X =No. of undergraduate + postgraduate hours (theoretical + practical)
Y= No. of hours thought by the department staff out side the department
Z= No. of hours thought by lecturer from outside the department

N= No. of department student (undergraduate + postgraduate)

There is a short of about nine academic staff.

Reviewing the effectiveness of the college's use of available resources

In fact there is a big lode on each member of staff in the department such as some of the academic staff have three theoretical subject in addition to laboratory hours and the engineering project, beside that we have a postgraduate study in the department which represent un excess lode in the staff member.

Exploring the ways in which the college promotes staff development

The department tried to develop the staff by anguish them with a different educational scientific meeting hour cycles moreover that we have a number of seminar every term in the year which have been given by the departmental staff and postgraduate student concerning there research and the department management invite all the staff number and the postgraduate student to shire they activities.

Questions and Answers:

How do staff keep abreast of the latest thinking in their subject, educational technology and pedagogy? Does this rely on individual motivation and interest or is there a college plan or strategy?

The staff in the department responsible of aiding minimum of ten per sent of new technology up tend form the net dealing with their subject to develop the chemical processes, and also to match the pedagogy of education. Which represent apart of college plan strategy in all engineering department. There is also a workshop at the university called "teaching methods" which is one of the needed requirements for promoting any faculty member in her/his academic title.

What induction is offered to new staff?

There are different types of induction which afford to the staff member such as participate or shirring a number of educational conferences and seminar moreover that we have a postgraduate research student who are through them the staff can develop their interest in solving industrial problem. so; There is a periodic program at the college called continuous learning courses where the technicians and staff can attend to develop their own skills and further their experience.

What professional development activities are offered to non-academic staff?

The professional development activities are offered to non academic staff are :

a- Developing their ability in computer application in chemical engineering design and other subject.
b- Taking the tutorial hour of many subject dealing with chemical engineering.

c- Shirring a different chemical committee or cycle in chemical safety , human defensive ,etc..
d- Seminars.

Are the learning resources for the programs poor/adequate/good? How are they managed to ensure that they remain or move towards being good or excellent?

Adequate, The department control a meeting twice a year in the beginning of the first semester and in the beginning of the second semester with the non academic staff and stand on the academic ability of these people and suggested any courses for them to inter and also insisting on present to all the department seminar moreover that giving them a general courses dealing with laboratories experiment and equipment by the academic staff.

To what extent is teaching , learning and research constrained by the availability of resources and support provided at institutional level?

In fact about teaching resources is available some how as books, references from the internet this is including the research the research program as well, while our resources in supporting the laboratories of undergraduate and postgraduate is very poor and that why our equipment in the laboratories very old and most of them are causing a lot of error during the experiment. i.e. for teaching, the minimum thing that must be available in order to practice is classrooms and boards. On the other hand, learning and researches are more constrained by the availability of good enough facilities. Students need these developed instruments and tools to conduct their experiments and work.

Are the physical facilities sufficient to support the college's research , teaching and learning activities?

It was sufficient in the beginning until the petroleum engineering department got a part of the place including complete flour and few lecturing room (13 room) out of seven room, moreover that we have as average more than sixty student in each lecturing room which are very crude .a number of student chairs are broken which making the sitting on them is impossible.

Chapter4: TEACHING, LEARNING AND ASSESSMENT :

4.1 Teaching and Learning Sought Assessment Process

To measure the level of success in achieving the program teaching, learning, and research, the **college of engineering** has put six assessment methods. A program will be a success, if a program outcome meets the criteria in five assessment tools out of six assessment tools, and no correcting measure would be taken. Corrective measures will be taken if any of the outcomes failed to meet its metric goal in two or more assessment tools. **Table4.1** summarizes the used assessment tools.

Table4.1: Assessment Tools, Indexes, and Assessment Benchmark

Assessment Method	Indexes	Assessment Benchmark
Senior Exit Survey (POs)	Scale of 1 to 5	A score of 3.5
Faculty Assessment (POs)	Scale of 1 to 5	A score of 3.5
Alumni Survey (PEOs)	Scale of 1 to 5	A score of 3.5
Employer Survey (PEOs)	Scale of 1 to 5	A score of 3.5
Evaluation of Senior Project by faculty (POs)	Scale of 1 to 5	A score of 3.5
Evaluation of Senior project by Industry expert (POs)	Scale of 1 to 5	A score of 3.5
Evaluation of Students' Industrial Training by Industry Supervisor (POs)	Scale of 1 to 5	A score of 3.5

It is worth noting that the alumni and employer surveys are only used in improving the **P**rogram **E**ducation **O**bjectives while the other mentioned tools are used in the continuous improvement of the **P**rogram **O**utcomes. **Table4.2** shows the consistency between POs and assessment tools.

Tabe4.2: Mapping of POs to Assessment Tools

Program Outcomes	Assessment Tools					
	Direct Assessment by Faculty	Senior Exit Survey	Alumni Survey	Evaluation of Senior Project by Industry Expert	Faculty Assessment of Senior Project	Industrial Training Assessment
PO-a	X	X	X	X	X	
PO-b	X	X	X	X	X	
PO-c	X	X	X	X	X	
PO-d	X	X	X	X	X	
PO-e	X	X	X	X	X	X
PO-f	X	X	X	X	X	X
PO-g	X	X	X			X
PO-h	X	X	X		X	X
PO-i	X	X	X	X	X	X
PO-j	X	X	X	X	X	X
PO-k	X	X	X	X	X	X

Key constituencies are sought to participate in reviewing the program teaching and outcomes:

- Faculty.
- Alumni.
- Employers.
- Senior Exit Students.

The following steps summarize the input to be obtained from these key constituencies. The Accreditation and Quality Assurance office schedules the process as in **Table4.3**.

Table4.3: Assessment Process and Timeline

Constituency	Assessment Tools	Timeline
Faculty	Faculty Survey Class Evaluation	every year every semester
Alumni	Alumni Survey	every year
Employers	Employer Survey	every year
Students	Senior Exit Survey	every year

Faculty Survey

The survey form contains three parts covering different aspects that the College of Engineering consider important for faculty members to assess**:**

PART I

It has four sections that seek the faculty members' evaluation of students regarding the Program Outcomes, Program Educational Objectives, their opinions about the three most important skills that need more emphasis, and finally an open ended question about what should be done to improve engineering education at Basrah University.

PART II

Also, it has four parts; the first three sections assess the level of satisfaction and the quality of services, facilities, and work environment/benefits at the department, college, and university Levels. The fourth section assesses the time management of activities of the faculty members. **PART III**

It is about the assessment of overall institutional quality.

Class Evaluation Survey

All instructors at the college should carry out course assessment and submit a course assessment file to their departmental assessment coordinators at the end of the term.

Alumni Survey

Alumni are important constituent group and should be involved in the evaluation process. Survey of the graduates who are pursuing graduate study locally or abroad can be obtained by inviting them to an annual meeting at the college and/or e-mailing them the survey. Selected alumni from the industry could also be consulted.

Employers Survey

A survey form could be sent to selective employers for their comments. The results of the employer survey which is distributed every year will be used by including questions about the PEOs and POs for each engineering program at the college. Also, many of our capstone design courses involve student presentations before a panel of professionals who also represent employers. We can plan to survey these professionals when they visit the department.

Senior Exit Survey

They are our most important constituent group. The response from students will formally be discussed and addressed with the faculty during their evaluation process. In general, the students' input is considered during the annual departmental assessment meeting and at regular faculty meeting:

- Seminar will be offered on September to inform all students about ABET process and importance of the evaluation of PEOs.
- Survey of student forms consists of at least 6 junior and senior students, who maintained a reasonable GPA, selected by faculty advisors, student committee or other means. This could be an initiation of student council for each program.
- Survey of graduating students who are taking senior project course.

4.1.1 Evaluating Students' Performance

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

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

4.1.2 Advising and Guidance

During the past years, the ChE department as well as the college of engineering had an educational advising scheme where one or two advisors were assigned to give advice to one level of study (1st, 2nd, 3rd, or 4th) year. Starting from this year 2015-2016, the department and the college has the intention to apply a new scheme of advising with the following steps:

1. The chairman of the department distributes the students on the selected faculty members (advisors) such as each advisor is assigned a number of advisees from the same that the faculty member teaches. Each month the advisor meets her/his assigned advisees according to a pre-scheduled appointments.
2. Each advisor delivers her/his monthly report to the chairman who is responsible of arranging the work of the advisors and gives recommendations of solving any problems that may face both the advisors and the students.
3. These appointments can be classified as:

a. Evaluation meeting: assess the student's readiness and abilities and accordingly determine the best advising approach to follow.
b. Diagnostic meeting: usually is used to make tests and answering questions to reach an accurate diagnosis in order to lay out the work plan of advising.
Guidance/Treatment meeting: where the treatment is applied according to the plan set in the previous meeting. This treatment depends a lot on the skills and abilities of the advisor.

4.2 Admission Process and Enrollment

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

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

After the names of the accepted students are announced, the registration committee which contains at least ten members including the dean's assistant has only ten days to meet the accepted students and to register them at the college. They are distributed again according to their high school grades on the eight departments in the college (petroleum engineering, architecture engineering, computer engineering, civil engineering, electrical engineering, chemical engineering, mechanical engineering, and materials engineering). For the computer engineering department, the number of the newly enrolled students has changed through the past five years from 80 to 50 students as seen in **Table4.4**.

Table4.4: Records of Admissions Standards Applied over the Past 5 Years

Academic Year	Percentile Rank in Secondary School (% MIN)	Number of New Enrolled Students
2016-2017	87.14%	50
2014-2015	n/a	65
2012-2013	88%	59
2010-2011	n/a	63
2008-2009	n/a	70

4.3 Evaluating Students' Performance

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

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

4.4 Advising and Guidance

During the past years, the ChE department as well as the college of engineering had an educational advising scheme where one or two advisors were assigned to give advice to one level of study (1st, 2nd, 3rd, or 4th) year.

Starting from this year 2016-2017, the department and the college has the intention to apply a new scheme of advising with the following steps:

1. The chairman of the department distributes the students on the selected faculty members (advisors) such as each advisor is assigned a number of advisees from the same that the faculty member teaches. Each month the advisor meets her/his assigned advisees according to a pre-scheduled appointments.
2. Each advisor delivers her/his monthly report to the chairman who is responsible of arranging the work of the advisors and gives recommendations of solving any problems that may face both the advisors and the students.

3. These appointments can be classified as:
    a. Evaluation meeting: assess the student's readiness and abilities and accordingly determine the best advising approach to follow.
    b. Diagnostic meeting: usually is used to make tests and answering questions to reach an accurate diagnosis in order to lay out the work plan of advising.
    c. Guidance/Treatment meeting: where the treatment is applied according to the plan set in the previous meeting. This treatment depends a lot on the skills and abilities of the advisor.

4.5 Graduation Requirements

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

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

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

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

For the 4th year:
1. 40/42 credits (95.23%) are of Computer Engineering courses requirements.
2. 2/42 credits (4.76%) are of College courses requirements.
3. 0/42 credits (0%) are of university courses requirements.

Overall percentile during four years:

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

Table4.5 shows the records, over the past five academic years, of the total number of full time students enrolled in the program and the corresponding number of graduates each year.

Table 4.5: Total enrollment and graduates trends for the past five years

	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Full-time students	235	240	245	246	300
Graduates	6	6	8	4	7

Fig.4.1 is a chart representation of the data tabulated in Table1.2; also it includes the number of the new students accepted in the department in each year.

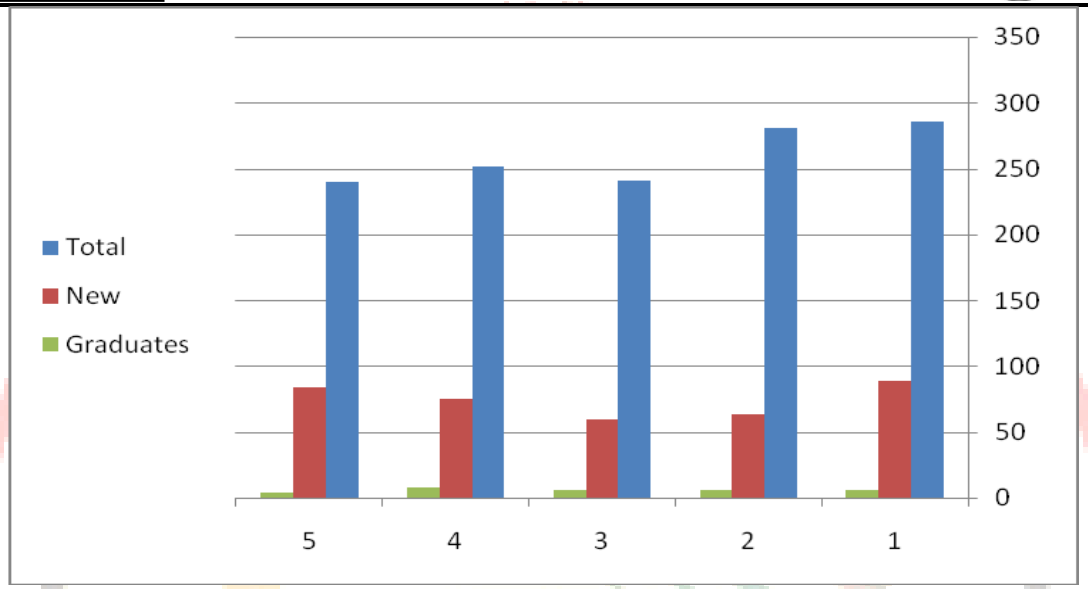


Fig.4.1: Total Number of Students, New students, and Graduates History

4.6 Transfer Students

Each year, the Iraqi Ministry of Higher Education and Scientific Research issues the regulations of transferring succeeded students from/to all colleges and universities in Iraq. It also issues the nomination's modifications for the deferred and failed students. The college of engineering carries out the ministry instructions using a form given by the ministry plus other needed documents. The Students Affairs Department at the University of Basrah keeps following the transferring process that happens during summer holidays, i.e., July – August.

Each transferred student undergoes what is called the scientific reprise executed by the department if the curriculum and credit hours of the two colleges are similar in more than 80%. **Table4.6** shows the numbers of the transferred students from/to the department over the past five years.

Table4.6: The number of students transferred from/to the department over the last five years

Academic Year	Number of Transferred Students	
	From the department	To the department
2015-2016	n/a	5
2013-2014	n/a	n/a
2011-2012	1	3
2009-2010	2	4
2007-2008	1	8

The aim of this section :

Exploring the way in which the college has generated, considered and acted upon feedback from student; is there scope for improvement? How?

The department made a questioner to all classes of student concerning the subject and the lecturer as well and through that questioner the departmental management will act trying to correct the error and making few solution which are important to develop the ability of staff member and subject as well.

Exploring the college response to reports from ministry and professional bodies- how have these been used to enhance provision (examples)? Could more be done?

The department response against the college, university and ministry report always agreed even some of these report it is un logic.

Admissions – quantity/quality of student intake , geographical , socio-economic distribution ; also distribution gender?

In fact the admissions of new student in the department depend on tow factor :

1- Marks summation from the secondary school.
2- The student choice which recorded by the student on a special form including eight departments.

About the quantity it is vary between fifty – seventy student every years. So, male and female it's depend on the above program.

Discussing the links between teaching and research activity?

Through out the year of third and fourth undergraduate , the department has industrial visiting program which give chance to the student to see the theoretical background on the field , moreover the fourth year engineering project tackling the hart of industry form the raw material to the product.

Also the postgraduate student subject which have been design by the department got a very close to the research activity in industry. The student always go back to their lecture to solve many research problem.

Questions and Answers:

How does the college know it's teaching methods promote student learning? What evidence is there?

The department teaching method is always tested by making a several questioner and meeting with student by the academic staff. Through the educational supervision through these think the department management stand on the standard of the student and the staff. Moreover the engineering project in the fourth year which contains all of the engineering subject which gave us a good indication on the how much the student have gland through these years.

What evidence is there that teaching is of a high standard? What mechanisms are employed to collect feedback – questioners ? peer review ? how is feedback on teaching quality processed?

a- Engineering project
b- The result of feedback questioner have been discussed through department staff meeting or department scientific group meeting through which the most of the problem including, scientific , social, residential , etc. have been discussed.
c- Individually each of the staff member with the head of department or with scientific committee trying to solve the problem concerning his subject. Scientifically e.g. increasing the tutorial hours or discussing hours and the home work problem. Socially , trying to bear the unusual behavior of some student and treat them as friendly.

What do the student program statistics tell you about the match between intake profile , assessment criteria and student achievement? If they show areas of concern what action has been taken (or will be taking)?

These statistic programs a chives a big result which can be see through the result of examination as out put of learning program.

Does the assessment criteria demonstrate the achievement of the intended learning outcomes? What evidence is there to support this?

Yes, and the evidence of this is the result of the examination of most of the subject before and after the questioners.

How are student informed about assessment requirements, submission deadline , etc. ?

Yes, through the first : the result of the examination, The second : the treatment of the staff with them through increasing the discussion hour and the number of home work as well.

Are the academic and other supports given to students satisfactory? If so, explain why if not, what is being done to improve it?

Yes, through the fallowing procedure :

1- The management of the department follow the percentage of the success of each subject which has to be develop through the progressing of the year , specially, the law percentage of success.
2- Trying to solve student problem such as the accommodation and some money problem, transportation, etc.

If think go wrong in a course or program how and when would this be known?

If think goes wrong in the course e.g. a staff member has problem with the student about understanding , in this case the management of department of the department has to move to

replace the lecture by another member of staff. And that happen very quick at lest in the same term before the mid year exam.

What does the college consider to be good practice in it's provision? What evidence is there? Is there evidence that programs have been enhanced by the sharing of good practice?

a- The good activities in the department including free wall , social magazine and sport team for the staff and student. And they have been improved by encoring the student to shire these activates.
b- We have a good football team which get successes and they got a champion cup and they give it to department head.
c- The champion in the college and our student have shirring this activity and always earn the champion cup.

Is the feedback given on formative assessment adequate? Are students happy with it? How does the college know?

In this year 2015 – 2016 the chemical engineering department has been choosing out of eight departments to be the very good departments and it's got a special gift on the university birthday which is first of April.

Staff – student ratio

This ratio has been calculated by the fallowing equation :

$$\text{No. of academic staff needed} = [(X + Y - Z)/ (10\ X)](N)$$

Where X =No. of undergraduate + postgraduate hours (theoretical + practical)
Y= No. of hours thought by the department staff out side the department
Z= No. of hours thought by lecturer from outside the department
N= No. of department student (undergraduate + postgraduate)

Intake profile – age , gender, entry qualification/point

The number which have been admitted this year [number of male = 48 and number of female = 49] and the age in between 17 – 19 .

Progression statistics – number of student progressing , repeating , transferring withdrawing and completing at each level for all taught and research programs?

Our plan which depend on department capacity (staff , lecturing room , laboratory) which is between 40 – 50 but the university plan increase the capacity of the college about a number of the new student forest us to admit 97 student and them we up with 70 student.

Chapter5: Curriculum Development and Review

5.1 Education Objectives of the Program

The Program Educational Objectives (**PEOs**) clearly reflect the professional expectations from the graduates of the computer engineering department and prepare them to meet that challenges. **Table5.1** shows the ChE department PEOs.

Table5.1: Program Education Objectives

PEO1	Graduates will be engaged in chemical engineering related careers that could serve the needs of both industry and academia, in private and public sectors, as well. They will adapt to the rapidly changing work environment and attain leadership positions in their business, profession, and community.
PEO2	Graduates must have the pursuit of knowledge and active, continuous and lifelong professional development through the continuous reading of up to date scientific researches, the engagement in the further/continual education courses, and admission to graduate studies.
PEO3	Graduates will contribute to the welfare of society and the development of their profession, through responsible practice of engineering.

5.1.1 Consistency of the PEOs with the College Education Objectives (CEOs)

The PEOs of the computer engineering department are coherent and in flow with those of the college of engineering. They are stated in accordance with the College Educational Objectives (**CEOs**); mentioned in **Table5.2**, while preserving the unique characteristics of the department of computer engineering.

Table5.2: College Education Objectives

CEO1	Prepare globally competent and socially responsible graduates who are specialists in engineering sciences and their applications by providing quality education.
CEO2	Encourage and support the higher degree graduate studies (master and doctorate) in all college departments.
CEO3	Foster research and scholarly endeavors that advance knowledge and help in solving the industrial and social problems.
CEO4	Contribute to the welfare of the country by establishing effective partnerships that can add value and contribute to college programs.
CEO5	Create an enriching supportive working environment for the college community to ensure the achievements of the college objectives.

Table5.3 establishes the links between the PEOs of the department and the major components of the CEOs of both the college of engineering.

Table5.3: Links between the PEOs of the Department and the CEOs of the College

		Program Educational Objectives (PEOs)		
		PEO1	**PEO2**	**PEO3**
College of Engineering Objectives (CEOs)	**CEO1**	**X**	**X**	**X**
	CEO2		**X**	
	CEO3	**X**	**X**	**X**
	CEO4		**X**	**X**
	CEO5	**X**	**X**	

5.2 Curricula

Since its inauguration, the ChE department has put its curricula in a way matching those of other ChE departments in Iraq. At the beginning of each academic year, the "curricula development" committee meets to revise the put curricula and makes any needed modifications. No external stakeholders (only internal, i.e., faculty members), are specifically involved in this review process.

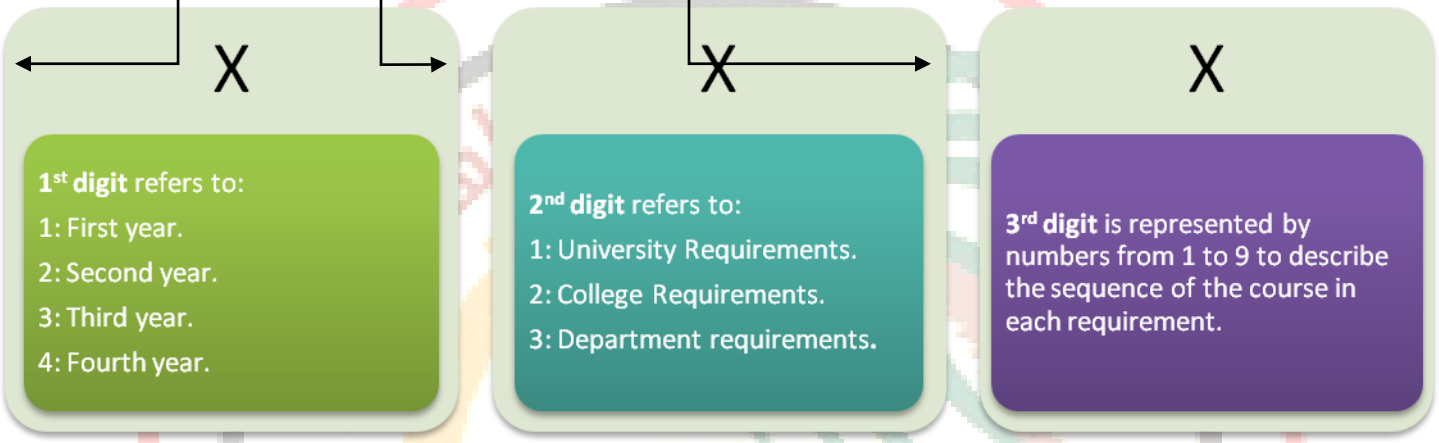
5.2.1 Curricular/Course Description

In chemical engineering department, each curricular is described by:

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

Course Number = CHE + X XX (3 Digits Number)

For



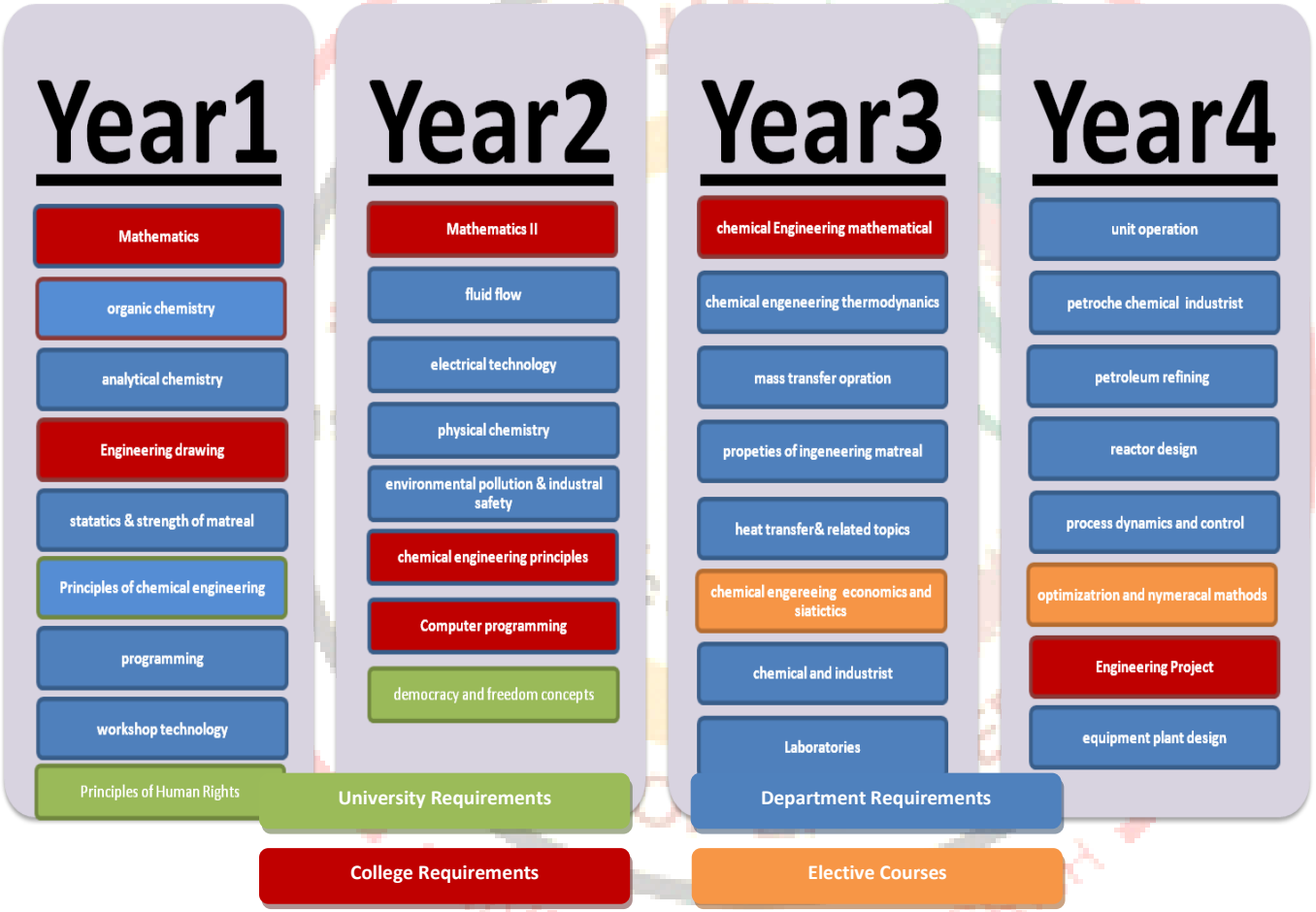
example:CHE434 Reactor Design means that this is a chemical engineering department course that is given to the fourth year; it is the course within the department requirement curriculum.

2. Required or elective: whether it is required course for the chemical engineering mathematics or an elective one.
3. Course description: defines what the course is designed for and why it is given to the students.
4. Recommended Textbook(s): what the used textbook(s) or internet articles to teach this course.
5. Prerequisites (if any): these have been established to assure an adequate and uniform background for students in advanced classes.
6. Course Topics: detailed syllabus of the course.
7. Course Outcomes: they are the key points that the students have learned.

2 Graduation Requirements

To graduate, students have to complete **160 credit** hours during her/his four years study. Fig.5.1 and Table5.4 show the CHE curriculum requirements year by year.

Fig.5.1: Roadmap to Graduation



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

For the 1st year:

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

For the 2nd year:

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

For the 3rd year:

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

For the 4th year:

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

Overall percentile during four years:

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

Table5.4: CHE Curriculum Requirements

Total CHE Requirements: 160 credit hours / 33 courses					
Requirements	**Credit Hours**				
University Requirements	8				
College Requirements	24				
Department Requirements	112				
Elective classes	8				
Total	**160**				
University Requirements: 8 credit hours / 2 courses					
Course No.	**Course Title**	**Credit Hours**	**Weekly Hours**		
CHE111	Principles of Human Rights	**4**	**2**		
CHE211	Democracy and Freedom Concepts	**4**	**2**		
	Total	**8**	**4**		
College Requirements: 24 credit Hours / 5 courses					
Course No.	**Course Title**	**Credit Hours**	**Weekly Hours**		
			Lec.	**Tut.**	**Lab.**
CHE101	Mathematics I	**6**	**3**		**1**
CHE102	**programming**	**6**	**2**		**3**
CHE201	Mathematics II	**6**	**3**		**1**
CHE301	**chemical Engineering mathematical**	**6**	**2**		**2**
CHE406	Engineering Project	**4**			**3**
	Total	**28**	**10**		**10**

Department Requirements: 116 credit hours / 24 courses					
Course No.	Course Title	Credit Hours	Weekly Hours		
			Lec.	Tut.	Lab.
CHE101	organic chemistry	6	2		2
CHE102	analytical chemistry	6	2		3
CHE103	Engineering drawing	2	1		3
CHE104	statistics & strength of martial	5	3		1
CHE105	Principles of chemical engineering	4	3		1
CHE103	workshop technology	1			3
CHE201	fluid flow	5	2		2
CHE202	electrical technology	5	2		2
CHE203	physical chemistry	7	3		3
CHE204	environmental pollution & industrial safety	4	2		
CHE205	chemical engineering principles	4	3		1
CHE202	Computer programming	6	2		2
CHE301	chemical Engineering mathematical	6	2		2
CHE302	chemical engineering thermodynamics	6	3		1
CHE303	mass transfer operation	6	3		1
CHE304	properties of engineering martial	5	2		2
CHE305	heat transfer& related topics	2	2		2
CHE306	chemical engineering economics and statistics	6	2		
CHE307	chemical and industries	4	2		
CHE401	unit operation	7	3		1
CHE402	petro he chemical industries	4	3		
CHE403	petroleum refining	7	3		1
CHE404	reactor design	6	3		1
CHE405	process dynamics and control	7	3		1
CHE407	optimization and numerical methods'	5	2		3
CHE408	equipment plant design	2	1		2
	Total	118	59		49

Elective Courses Requirements: 8 credit hours / 2 courses					
Course No.	Course Title	Credit Hours	Weekly Hours		
			Lec.	Tut.	Lab.
CHE308	Industrial management	4	2		
CHE409	plant designCLASS	6	2		
	Total	10	4		

5.2.3 Program Outcomes

The main objective of the program outcomes, POs, and program Educational Objectives, PEOs, is to measure the level of achievement of the curricular requirement of the department in preparing the graduates to meet the challenges presented to them by the fascinating chemical industry. In other words, chemical engineering Program outcomes, POs, and Program Educational Objectives, PEOs, are two different, but interrelated mechanisms that were developed in order to measure the level of achievement and success of the program.

The Ch.E department has developed ten Program Outcomes (POs) as an initial set of POs. These outcomes are, in effect, what the students expected to know and achieve post graduation. **Table5.5** shows these program outcomes.

Table5.5 chemical Engineering Program Outcomes

Symbol	Description
a	**PO1:** ability to apply knowledge of mathematics, science, and engineering fundamentals.
b	**PO2:** ability to outline and conduct experiments as well as analyze and interpret data.
c	**PO3:** ability to design an integrated system and its various components and processes, within realistic economic, environment, social, political, ethical, health and safety, manufacturability, and sustainability constraints.

d	**PO4:** ability to function on multi-disciplinary teams to analyze and solve problems.
e	**PO5:** ability to identify, evaluate and solve engineering problems.
f	**PO6:** understanding of the responsibility of engineers to practice in a professional and ethical manner at all times.
g	**PO7:** ability to communicate effectively using oral, written, and graphic forms.
h	**PO8:** the broad education necessary to understand the potential impact of engineering solutions on society and the environment.
i	**PO9:** understanding of the need for up-to-date engineering tools and other knowledge acquired through life-long learning.
j	**PO10:** knowledge of contemporary issues related to engineering.
k	**PO11:** ability to use modern engineering tools, skills and design techniques necessary for the practice of engineering.

5.2.4 Relationship of the Program Outcomes to the PEOs

Mapping between the Program Outcomes and the Program Educational Objectives is shown in Table5.6.

Table5.6: Mapping of Program Outcomes to PEOs

	PEOs		
POs	PEO1	PEO2	PEO3
PO-a	X		
PO-b	X	X	
PO-c	X	X	X
PO-d	X	X	X
PO-e	X	X	
PO-f	X		X
PO-g	X	X	
PO-h	X	X	X
PO-i	X	X	
PO-j	X	X	
PO-k	X	X	X

5.2.5 Mapping of Course Learning Outcomes to Program Outcomes

An academic program is, in effect, the superposition of a set of courses, somehow, linked together to achieve program outcome. This means that courses in any academic program represent the building blocks of that program. Assessment of the program would only be possible if the course learning outcomes are mapped to the program outcomes. Course learning outcomes of individual program courses are listed in the detailed course syllabus which are prepared by faculty teaching that particular course and submitted to the student in the beginning of the year. Each year, immediately after tallying the final grades of all courses, mapping between the courses and program outcomes is also established. Mapping of all the courses offered by the CHE department is given below in Table5.7.

Table5.7: Mapping of the CHE Core Courses to the Program Outcomes

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

Questions and Answers:

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

The curricula in all of the Chemical engineering departments in Iraq have been put by the ministry itself. That's why, there is a 80% to 90% match between these curricula around Iraq. They definitely help in developing students since they are much similar to the most highly prestigious used international curricula.

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

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

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

There is no evidence.

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

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

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

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

Chapter6: Management of Quality and Enhancement

6.1 Enhancement

For the main three activities at the department: teaching, learning, and research; there are no available followed mechanism of improvement, rather, the department tries to enhance the three activities whenever it is possible, for example:

- Teaching enhancement:

- Based on the personal motive, each faculty member uses new updated material within the context of the department curriculum.
- Based on the gotten students' exam results, each faculty member tries to improve their own curriculum.

- Learning and Research enhancement:

- Each year, the department buys new stuff and laboratory instruments that help in boosting the students' learning.

6.2 Monitoring

The only thing that the department does to monitor the teaching and learning processes is that the department chair semester follows up each curriculum progressive, i.e., what is the percentage of completion for the assigned curriculum? What is the percentage of students who has successfully passed their exams? The above-mentioned points can be enhanced further if there are quality-training workshops where the department selects some of its faculty and staff to participate in these training programs. By the experience they might get, when they come back, they would be beneficial for the department and help it to build more robust quality-reviewing and monitoring mechanism.

Questions and Answers

1. How are the various quality processes (e.g. reports, course evaluation, staff/student consultative committees, etc) integrated to enhance provision?

The students' examination results (percentage of those who passed exams) are used to focus on the related curriculum. Hence, the department tries to enhance that curriculum progress.

2. Discuss how good practice is identified and disseminated within the department and identify any particular elements of good practice in teaching and learning within the department.

When something good is realized, the department council is held and the matter is discussed to see its positive and negative aspects and how it can be adapted to be used in other curricula. For example, a curriculum has the highest percentage of success.

Chapter7: Support Services

7.1 Sources of Financial Support

The ChE department has no owned financial resources. Each year, the college of engineering allocates some money for each department to buy new stuff and/or fix old ones. The college it self funds its activities from:

1. General governmental funds that represent the greatest portion of the budget.
2. Higher education fund which includes:

a. Laboratorial tests: 65% of funds for test team, 15% for university, 16% for bonuses, and 4% for maintenance.
b. Shops rent: 15% for university, 68% for bonuses, and 17% for maintenance.
c. Continuous learning courses: 65% for course trainers, 15% for university, 16% for bonuses, and 4% for maintenance.
d. Special courses: 65% for course trainers, 15% for university, 16% for bonuses, and 4% for maintenance.
e. Industry cooperation: 80% for work team, 10% for university, 8% for bonuses, and 2% for maintenance.
f. Internet Center: 15% for university, 68% for bonuses, and 17% for maintenance.
g. Student registration fees: 80% for bonuses and 20% for maintenance.
h. Exams results objections fees: 80% for bonuses and 20% for maintenance.
i. Self-funding study master and doctorate fees: 50% for students, 25% for lectures, and 25% for other stuff.
j. Water desalination plant: 15% for university, 68% for bonuses, and 17% for maintenance.

Table7.1 shows a sample of sources and their income for the college of engineering.

Table7.1: College's Sources and Revenue Sample

Item	Revenue
laboratories Tests	739549000
Shop Rents	6850000
Continuous Learning Courses	11125000
Special Courses	9448000
Industry Cooperation	42693000
Internet Center	4625000
desalination Plant	2275000
Total	**816565000**

7.2 Library , The store and the laboratories

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

As for the library, the department has no owned library where students can get books and spend their time reading or doing researches. Instead, our students use the central college library to borrow books as well as theses and dissertations as long as they have their student ID cards in hand. The only thing that the department can provide is the gratis books where all of the ChE department students (as well as faculty members) can get the needed curriculum textbooks at the beginning of every academic year (with a students : book ratio of 4:1) and make sure to give it back to the one in charge by the end of the year.

Questions and Answers:

1. Are program resources poor, enough, or more than good? How does the department secure their availability? Can they be enriched?

The used department resources are enough; they are annually assigned to the department from the budget of the college ← university ← ministry.

2. What is the acquisition and updating policy for texts and journals?

At the department, the gratis textbooks are not updated on regular basis. Instead, each faculty member is responsible for updating the references s/he uses to teach her/his assigned curriculum depend on the internet

3. How does the department work with the Library/IT to match texts, periodicals and IT support to the needs of the curriculum and the overall teaching strategy?

There is no such cooperation between the department and the college library or the IT center.

4. Are the arrangements for the training and induction of students adequate? Is there scope for improvement?

No, they are not. The college can set arrangements to let students participate in academic visits to universities and workshops within the Basrah and/or inside Iraq. This will help in building their experience and give them new prospects.

5. How effective are the central support services in supporting the activities of the department? Are there any improvements that could be made?

When the department has an activity, the college supports it to some extent by facilitating any difficulties that may face the department.

Chapter8: External Relations

8.1 Faculty Deputa

tion Summary

The office of chancellor's assistant for scientific affairs, office of chancellor's assistant for management affairs, department of planning and continuation, and the cultural affairs office in the University of Basrah participate in developing the college of engineering by offering short and long term scholarships for its master and doctorate students. Also, it offers deputations for faculty members. Table8.1 lists the ChE deputation summary for the academic year 2010-2011.

Table8.1: ChE Deputation Summary in 2016-2017

Faculty Name	Date and Location	Activity
Dr. Ala'a Abdulrazzaq jasim	April 10-14, 2016, Iraq	Information Technology and water treatment

So; The staff in the department responsible of aiding minimum of ten per sent of new technology up tend form the net dealing with their subject to develop the chemical processes, and also to match the pedagogy of education. Which represent apart of college plan strategy in all engineering department. There is also a workshop at the university called "teaching methods" which is one of the needed requirements for promoting any faculty member in her/his academic title.

8.2 New island University Coordinate

Last year, the department has established a coordinate with the chemical and environmental department there are a communication between the department in the college and it's effective in participating the use of instrument and sometime the staff as well in post graduate studies and supervise different thesis. In 2009-2010 the postgraduate student in chemical engineering department is take as second supervisor (dr.Mohammed takie) from new island university.

Questions and Answers:

1. Are there satisfactory arrangements for participation by staff and students in external training and visit programs with international universities?

No, there are not such arrangements.

2. Are there satisfactory arrangements for monitoring placements?

Placements at the department are not done by the department itself, rather they are done by the college.

3. If appropriate, do international advisors have an input to curriculum development?

No, they do not have.

Chapter9: SWOT Analysis Summary & Recommendations for Improvement

9.1 Strengths

Helpful to achieve the objectives of internal origins (attributes of the department)

- 20 % of the faculty members are of academic title higher than or equal to assistant professor.
- 5 % of the faculty members are completing their PhD studies from U.K.
  - 20 % % of the faculty members are PhD student in college of engineering in basrah.
  - 20% % of the employer members are completing studies to get M.Sc.
- According the used law of central admission, the department gets only those high-grade students each year.
- Many aspects are used in evaluating students (exams, reports, quizzes, and final year project).
- The department vision, mission, and objectives focus on the graduates and the overall knowledge they get to apply in their future carrier.
- The 160 total credit hours are equal to the number of credit hours at other ChE departments in Iraq and worldwide.
- The used textbooks are updated by the faculty member her/himself using the internet. Thus, no outdated scientific materials are used.
- Student to faculty ratio is 15 : 1 which is considered optimal.
- Most faculty members have teaching or working experience outside the university for a period.
- The department building area is adequate. Also, the number of classrooms/laboratories and their area are adequate.
- Due to the process of assigning budgets to universities and colleges, the department receives some annual amount of money.

9.2 Weaknesses

Harmful to achieve the objectives of internal origins (attributes of the department)

- 50% of the faculty members hold academic title of assistant lecturer.
- The department has one librarian and five technicians are assigned to each lab; this makes it difficult for them to do the maintenance operations.
- The number of the graduates has been decreased over the past five years from 8 to 6.
- Even though the department and college focus on the graduate studies, unfortunately for the last two years, the department has expanded its graduate studies program.
- There are only two elective courses, which are in fact not elective since the students have no choice in studying them.
- The senior year project is of a worth of only 1.31% of the total credit hours.
- The department is more tilted towards teaching rather than learning, research, and other scholarly activities.
- 16% of the faculty members are teaching courses in fields other than their own area of interest.
- The department has an Internet connection which doesn't wok at all or very weak.
- Classrooms have no data show devices.
- The department has no library of its own; it only has the gratis textbooks section.
- The department has no external financial resources - a drawback which needs to be solved. Sometimes, when the assigned annual amount of money is not enough, the chair has to cut the department's expenditures.

9.3 Opportunities

Helpful to achieve the objectives of external origins (attributes of the environment)

- 20 % of the faculty members have the intention to pursue their PhD degree.
- Now, the newly admitted students' rate is better than the one which was five years earlier (the higher is better).
- The newly adopted advising and guidance method will help the department in diagnosing the students' performance.
- By continuously updating the PEO and PO, all the present threats would be vanished.
- By reopening the graduate studies at the department, the weaknesses will be gotten rid of.
- If each faculty member well writes and updates her/his curriculum outcomes, s/he will definitely help in improving the overall POs of the program.
- The new adopted advising scheme will definitely improve the interaction between students and faculty members.
- The department has assigned part of its building to establishing the "testing laboratory " The lab has promised to provide the department with a pocket money.
- The department has established a relationship with the chemical Engineering Department, College of Engineering, new island University, Such partnership may be beneficial for faculty, students, as well as the college as a whole.

9.4 Threats

Harmful to achieve the objectives of external origins (attributes of the environment)

- The inability to employ new faculty members because of the laws and rules of the ministry.
- The department has 2 engineers who hold master degree, but couldn't be added to the faculty to fill the space of the up-to-leave for study faculty members.
- The gotten summer training reports from the companies do not give us a robust feedback including what students had learned; whether they were active or not; what their flaws and strengths are.
- The program outcomes (a-k) do not fully accomplish the PEO3 which focuses on the contributions of the graduates to the welfare of the society.
- the faculty member can not change 20% of the curriculum content to all subject.
- The inability to include new curriculum since the ministry rules don't allow such change.
- The teaching load on most faculty members prevents them from assigning enough time for scientific research.
- The all laboratories have no devices or equipment to all experiments . In this way, when; all the held experiments are shut down and need to be anther way to complete the experiment .,so, the electricity suddenly shut down suddenly Even that the department has a power generator, the switching between national and generator's electricity takes time that mean there is error in experiment.
- No developing workshops or programs are offered to faculty members.
- Deputations are only assigned to professors and persons in charge Strategies for improvement should be formulated.