ABET
Self-Study Report

for

Petroleum Engineering Program

at

Petroleum Technology Department
University of Technology
Baghdad, Iraq

2016 /2017

to
Engineering Accreditation Commission
ABET, Inc.
111 Market Place, Suite 1050
Baltimore, MD 21202-4012

CRITERION 1. STUDENTS

A. Student Admissions

1- To be accepted for an undergraduate degree in Petroleum engineering Division, applicants must hold the official Iraqi Secondary School Certificate. The Ministry of higher Education and Scientific Research controls and distributes electronically the admissions of students in the governmental institutions and faculties according to their grades from the Secondary Schools, and these are some of the most important requirements for controlling the accepting of students:

A- To be Iraqi nationality and born on 1991 and up.

B- Have a certificate from an Iraqi secondary school authorized from the ministry of education.

C- Have a medical certificate to ensure that he is qualified.

D- Be a full-time study.

E- Not to be acceptable and continues to study in another college.

F- Non-Iraqi students (arrivals) who obtained a certificate of an Iraqi secondary school admitted according to the central acceptance.

G- Admission of graduates of the Petroleum Institute of the Ministry of Oil in the first class in the department.

To be accepted for an undergraduate degree, the students must hold the official Iraqi Secondary School Certificate, issued by Ministry of Education.

The number of students who attend in the departments is shown in table (1-1)

Table (1-1):show number of graduates of each year

No	Graduate Year	STUDENTS NO.
1	2011/2012	143
2	2012/2013	92
3	2013/2.14	27
4	2014/2015	55
5	2015/2016	33
6	2016/2017	46

B. Evaluating Student Performance

Student evaluations are done through grading of their homework assignments, midterm exams, and final exams for all courses. In the lab and capstone design courses, class/lab participation, teamwork, and grades for term projects/reports also influence the student's grade. The Evaluation process and assessment measures are as following table.

Table (1-2): show Annual Courses

Annual Courses							
Subject with lab.	First Term 5%	Midterm10%	Second Term 10%	10% lab. evaluation	5% continuous evaluation	Final Exam 60%	Final Grade 100%
Subject without lab.	First Term 5%	Midterm15%	Second Term 10%	N/A	5% continuous evaluation	Final Exam 65%	Final Grade 100%
Integrated Field Development and Management	70% Engineering Projects and Reports Discussion					Final Exam 30%	Final Grade 100%
Project	First Term Seminars 10%	Mid Term Discussion 20%	Second Term Seminars 10%	N/A	20% continuous evaluation	Final Discussion 40%	Final Grade 100%
Semester Courses							
Subject with lab.	Mid Term 25%			10% lab. evaluation	5% continuous evaluation	Final Exam 60%	Final Grade 100%
Subject without lab.	Mid Term 30%			N/A	5% continuous evaluation	Final Exam 65%	Final Grade 100%

Students who were not able to attend the relevant final examination are allowed to take a second attempt exam. Students who were not able to attend the relevant second attempt examination because of conditions out of their control (due to security and violence issues) are allowed to take a third attempt exam (only by the permission of Ministry of Higher Education & Scientific Research). If the student are fails to pass the last attempt (third attempt). If he/she fails to get 50%, he/she will be considered as (FAIL) in that course. The student allows taking two failed courses to the next level, but if he/she failed in more than two courses, the student has to repeat the academic year. Fail to succeed two successive years, he/she dismiss from the university.

C. Transfer Students and Transfer Courses

An applicant who has studied at a recognized institution of higher education may apply for admission as a transfer student. A transfer applicant will not be considered for admission if he or she is on academic probation, suspension, or dismissal from the previous institution. The transfer students' conditions are the followings:

1. The Chancellor of the University has the authority to transfer students (either those who pass or not pass the final exams) except the first and last year students to the corresponding departments and branches in another university according to capacity after obtaining clearance from the original and new university.

2. Students who pass final exams have the right to move to the corresponding colleges, departments, and branches in universities at their geographic regions according to the absorptive capacity after obtaining no objection from the original and new university.

3. Movement between colleges at the same governorate is not allowed.

4. Conduct scientific clearing in according to the applicable roles.

5. The departments of UOT represent colleges, and the transfer between them is central and according to an electronic form.

6. Sons and daughters of scientific titles of the faculty have the right to move between the branches of the colleges.

7. Students in community (private) colleges who are pass the final exams with first grade, and at least have a (very good) grade, have the right to move to the corresponding department in the public universities.

8. Acceptance of foreign students (Iraqi and non-Iraqi) from outside Iraq must be performed by the Ministry of Higher Education and Scientific Researches roles. For more information visit the link (**http://www.dirasat-gate.org**).

D. Advising and Career Guidance

Committee Educational Guidance: - tasks of this committee represent the following points:

1- A meeting of mentors and faculty members assigned to the guidance on how to provide a safe environment for students, and contribute to modify their behavior.

2- Hold a seminar for students in grades first and familiarize them with the functions of the educational guidance and how to deal with the problems they may face and be educated on how to deal with a faculty member, and the style of problem-solving manner true.

3- Develop educational and professional releases that contribute to the benefit of students in the school and the various aspects of life.

4- Participate in field trips for students of the branch to the relevant authorities.

E. Work in Lieu of Courses

The Petroleum Technology Department held a number of memorandums of cooperation with government ministries and oil companies operating in Iraq, including:

1- Cooperation agreement with the Ministry of Oil with a view to coordination to provide the required field of work.
2- Prepare the exam has been conducted for graduates by Chinese oil companies to compete for the job opportunities provided by the company and it is held at the end of the semester.

F. Graduation Requirements

The undergraduate program requirements for the Bachelor of Science in petroleum engineering are comprised of three major segments: foundation courses in Mathematics and Basic Sciences; Petroleum Engineering courses; and General Education courses in the Humanities Sciences. The number of units for each required segment is as follows:

- Petroleum Engineering courses (6) Units.
- Mathematics and Basic Sciences (41) Units.
- The Humanities Sciences (102) Units.

After completing the following requirements:

1- Passing all units of the four stages of theoretical and practical subjects.

2- Successful student pass for practical training in the training center and laboratories.

3- Completion of the student for the training period in the summer vacation in one of the oil companies of the Iraqi Ministry of Oil for a period of three months.

G. Transcripts of Recent Graduates

To connect with graduates, the following department:

1 - The department conducts periodic seminars at least once a year for graduates working in oil companies to present their point of view in the curricula, and how to benefit from them in the field of work.

2. Through the Graduate Follow-up Unit, a questionnaire is submitted for graduates working in oil companies to obtain feedback to update the curricula according to the needs of the field of work.

CRITERION 2. PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

A. University Mission Statement

The mission statement of University of Technology:

Graduate numbers of applied engineers and scientific research cadre efficient and unique level of knowledge and technological innovation to achieve quality assurance and academic accreditation in accordance with the discreet standards universally adopted in engineering and scientific curriculum with a commitment to ethics engineering and scientific.

The mission statement of petroleum engineering:

Prepare undergraduate and post-graduate staff have the basic knowledge and necessary skills of modern oil technology that assist to work successfully in petroleum field. The preparation of petroleum engineers graduates have the ability to solve practical problems, competition and challenge to gain experience in order to catch up with the development of the oil industry. Preparing graduates with communication skills and working in a multi-disciplinary team.

B. Program Educational Objectives

The Petroleum engineering program has established the following Program Educational Objectives:

Objective 1: Educate undergraduate and post-graduate students the basic knowledge and necessary skills of modern oil technology that assist to work as successful petroleum engineers.

Objective 2: Teach the graduates how to solve the practical problems and put them under the competitive and challenging to active the high experience in order to catch the development in the petroleum industry.

Objective 3: Acquire the graduates the skills to communicate and to work in multi specialist team.

C. Consistency of the Program Educational Objectives with the Mission of the Institution

Consistency of the Program Educational Objectives with the Mission of the University of the Technology through the following:

1- The objective (1&2) consistency with (Prepare undergraduate and post-graduate staff have the basic knowledge and necessary skills assist to work successfully in petroleum field. The preparation of petroleum engineers graduates have the ability to solve practical problems, competition and challenge to gain experience in order to catch up with the development of the oil industry).

2- The objectives (3) consistency with (Preparing graduates with communication skills and working in a multi-disciplinary team).

D. Program Constituencies

The main constituencies of the Petroleum program are:

- **Students**
- **Faculty**
- **Staff**
- **Alumni**
- **Employers**
- **Program Advisory Board**

The constituencies and their relationships to the program are described below:

1) **Students:**

Students have a clear interest in having a broad knowledge of the program related principles, tools, and theories as this prepares them for related careers, and helps them secure jobs locally and abroad. The importance of student engagement is reiterated in student forums discussions, the course surveys and the alumni surveys.

2) **Division members:**

Division members strive toward graduating students who are technically capable; have an understanding of the ethical and social dimensions in the program; capable of life-long learning, and who can work in teams. Such traits would elevate the program status and improve its reputation locally, regionally, and internationally. The Division works with course coordinators in order to review courses and ensure that they are aligned with the program outcomes, which in turn contribute to the program's objectives.

3) **Staff members:**

The program receives support at the Division, Departmental and University levels. The personnel provide administrative and technical support. Their tasks include overseeing the up keeping of department, academic, financial, and documents, arranging and sending calls on behalf of the chair for departmental meetings, data collection process for evaluation activities. They also maintain updated student records, personnel, alumni data, and work closely with the Registrar's office to coordinate all program related matters, as well as administering training/internship opportunities for the potential students. Many other staff members contribute to the support of the IE program; these include all laboratory technicians and staff from other departments, IT unit personnel, and others.

4) **Alumni:**

Alumni are clearly influenced by the Department's reputation, as this would help them advance their careers. They frequently contact faculty for recruitment purposes.

Finally, the Department regularly surveys alumni in order to confirm that the objectives are in line with current trends.

5) **Employers:**

Employers or industry partners have indicated that they have a clear interest in having students prepared upon entering the workforce. Clearly, the technical and personal preparation of the students is instrumental. Employers are also surveyed to get their feedback and ideas on the state of our graduates and the relevancy of the program's outcomes and objectives.

6) **Program Advisory Board:**

This board was composed at first from key graduates and then expanded to include industrial representatives, employers, and recognized alumni members. The advisory board is expected to reiterate the importance of understanding general trends in technology, the ability to pursue life-long learning awareness of quality standards, capability of effectively managing projects, ability to work in teams, possession of high ethical standards, and the possession of good communication skills.

E. Process for Review of the Program Educational Objectives

All petroleum Engineering constituents (current students, alumni, advisory board/employers, and the mechanical engineering faculty) periodically review the PEOs and provide feedback on whether the objectives remain consistent the University mission and with meeting the needs of program constituents. The goal is to provide an opportunity for all constituent groups to review the PEOs no less than every four years, with some groups as often as every year. Below in Table 2.1 is a summary of the timelines for PEO reviews, along with methods of review over the most recent years.

Table 2.1: show the process of review the POE.

Program Review Constituents	Frequency of Review	Method of Review	Most Recent Results (Date)
Students (Graduating Seniors)	Every year	As part of Senior Exit Survey	2016 Graduating Seniors >70% Very Appropriate Rating on each PEO; Average = 75.8% (Original surveys available at site visit)
Faculty	Every year	Discussion in faculty meeting about continued appropriateness	Reconfirmation of support for PEOs at Nov 21, 2016 faculty meeting; and previously in October 2015. (Meeting minutes will be available at site visit)
Alumni	Every 2-3 years	Alumni Survey	Spring 2016 Survey data >70% Very Appropriate rating on Each PEO. Average = 74.0% July 2012 Survey data collected by Follow-up Unit for Graduates >75% very appropriate ratings (Original data available during site visit)
Industrial Advisory Board (IAB)/ Employers	Every 2-3 years	IAB discussion during meeting, followed by written survey	Dec 6, 2016 IAB Meeting >70% rated PEOs as very appropriate Average = 76.7% (Original data available during site visit)

CRITERION 3. STUDENT OUTCOMES

Student Outcomes

Students from the petroleum engineering program will attain (by the time of graduation):

a. an ability to apply knowledge of engineering, science, and mathematics (including multivariate calculus and differential equations);
b. an ability to design and conduct experiments, as well as to analyze and interpret data;
c. an ability to design systems, components, or processes to meet desired needs within realistic constraints;
d. an ability to function on multi-disciplinary teams;
e. an ability to identify, formulate, and solve energy and renewable energies engineering problems;
f. an understanding of professional and ethical responsibility;
g. an ability to communicate effectively in oral and written forms;
h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
i. a recognition of the need for, and an ability to engage in life- long learning;
j. a knowledge of contemporary issues in energy and renewable energies engineering;
k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

It is noted that the initial Student Outcomes of the petroleum Engineering program began with the same set of the ABET Criterion 3 Student Outcomes (a) through (k). It has been carefully reviewed whether the Student Outcomes are properly linked to our Program Educational Objectives and also whether our students would be well prepared to achieve the Program Educational Objectives in future practice, if they attain the Student Outcomes by the time of graduation. Through the ongoing review and assessment process, no need for additional outcomes has been identified. However, the Student Outcomes were slightly modified by specifying the Energy and petroleum Engineering components into some of the outcomes in the end of 2015-2016. Since then, minor revisions on the Student Outcomes have been made reflecting the changes in the ABET Criterion 3.

B .Relationship of Student Outcomes to Program Educational Objectives

The achievement of the Student Outcomes ensures that our graduates are well equipped to achieve the Program Educational Objectives in actual practice following graduation. The linkage between the individual Program Educational Objective (PEOs) and the Student Outcomes (SOs) is shown below in Table 3-1

The educational objectives of the undergraduate program are to produce graduates (within a few years of graduation):

Objective 1: Educate undergraduate and post-graduate students the basic knowledge and necessary skills of modern oil technology that assist to work as successful petroleum engineers.

Objective 2: Teach the graduates how to solve the practical problems and put them under the competitive and challenging to active the high experience in order to catch the development in the petroleum industry.

Objective 3: Acquire the graduates the skills to communicate and to work in multi specialist team.

Table 3-1 Relationship of Student Outcomes to Program Educational Objectives

	Objective 1	**Objective 2**	**Objective 3**
Outcome A: Apply knowledge of mathematics, science and engineering	X	X	
Outcome B: Design and conduct experiments	X	X	
Outcome C: Design a system, component, or process within realistic constraints		X	X
Outcome D: Function on multidisciplinary teams		X	X
Outcome E: Identify, formulate, and solve engineering problems	X	X	X
Outcome F: Understanding of professional and ethical responsibility		X	x
Outcome G: Communicate effectively		X	X
Outcome H: Impact of engineering solutions in a global and societal context	x	X	
Outcome I: Lifelong learning	X	X	
Outcome J: Contemporary issues		X	
Outcome K: Use the techniques, skills, and modern engineering tools for engineering practice	X	X	X

C- Relationship of Courses in the Curriculum to the Program Outcomes

To assure that our graduates have achieved the Student Outcomes, the curriculum must contribute for achievement of each Student Outcome collectively. As all the Student Outcomes are addressed within the core curriculum, students of the EP Program will be trained to achieve the Student Outcomes throughout the coursework as presented in Table 3-2

Table 3-2: Relationship of Courses in the Curriculum to the Program Outcomes

Subject Symbol	Subject	a	b	c	d	e	f	g	h	i	j	k
PE111	Technical English	0	0		0							
PE121	Calculus I	0						0				
PE122	Analytical Chemistry	0	0		0							
PE123	Physics	0	0			0						
PE124	General Geology	0	0		0							
PE131	Engineering practices I	0						0	0	0		
PE112	History of oil industry	0	0					0				
PE132	Workshop					0	0				0	
PE141	Introduction to PT											
PE125	Calculus II	0						0				
PE126	Organic Chemistry	0	0		0							
PE133	Mechanics	0						0				0
PE127	Sedimentation and sedimentary rocks	0		0								0
PE134	Engineering practices II	0						0	0	0		
PE128	Computer programming (visual basic)	0							0	0		
PE221	Ordinary Differential Equations	0								0		
PE222	Structural Geology	0	0									0
PE231	Fluid Mechanic I											
PE241	Crude oil and products properties	0							0		0	
PE232	Strength of Material	0			0	0						
PE233	Thermodynamic	0	0			0						
PE223	Computer Programming (Fortran)	0	0									
PE211	Human Rights						0	0			0	
PE224	Partial Differential Equations	0								0		
PE225	Petroleum Geology	0	0		0							
PE234	Fluid Mechanic II											
PE235	Probability and Statistical	0	0		0							
PE242	Reservoir Petrophysics	0	0					0				
PE226	Geology of Iraq and Middle East	0	0		0							
PE227	Computer Programming (Matlab)	0	0									
PE212	Democracy						0	0			0	

PE341	Drilling I											
PE342	Well logging	0	0					0				
PE343	Drilling fluid lab I					0						0
PE344	Well completion and stimulation											
PE321	Geophysics	0	0		0							
PE345	Reservoir Fluid											
PE34D1	Drilling Equipments											
PE34R1	Gas Reservoirs	0								0	0	
PE346	Rock mechanics		0		0							0
PE347	(Gas and Oil Transportation)	0							0		0	
PE348	Drilling II											
PE349	Formation evaluation	0	0					0				
PE3410	Drilling fluid lab II		0			0						0
PE3411	Economics	0							0		0	
PE3412	Artificial Lift and well performance											
PE331	Optimization											
PE34D2	field measurements											
PE34R2	Surface Production facilities	0	0		0							
PE3413	Contracts											
PE332	Environmental Engineering			0			0		0			
PE448	Integrated field development and management	.			.	.	.					
PE446	Natural gas technology	.	.	.								
PE441	Applied reservoir engineering	.	.		.							.
PE447	Engineering project	.	.		.	.						.
PE443	Petroleum production optimization	.			.						.	.
PE442	Petroleum drilling technology	.	.	.								
PE449	Numerical methods and simulation	.	,	.								.
PE445	Improved oil recovery	.		.	.							

D- Assessment process

Student Outcome (b): an ability to design and conduct experiments, as well as to analyze and interpret data

Subject: Environmental pollution Assist Proff. Layla lateef

Student Outcomes	Performance Indicator	Identify Assessment
1- The graduates understand the different environmental pollutants and their sources and effect ,	1- Give correct answer about different pollutants 2- classify the effect of sources of the pollutants 3- classify the effect of the pollutants 4- Limit the team to Prepare the report and discussion. 5-Looking for the references required to prepare the report.	- For (1&2&3) , exam the students -For (4&5) Review of their report - discussion in the classroom
1- know the information on how engineering techniques control the environment pollution.	1- Give answer about the different controlling techniques 2- Draw the sketches and diagrams of the engineering control of the different pollutants 3- Determine the team tasks to solve the problem. 4- Looking for the references requirement to solve the problem. 5- Prepare the report and discussion the results.	- Mid Exam of the students. - Quiz exam

Student Outcomes	Performance Indicator	4-Exceed	3-Meets	2-Progressing	1-Below
1- The graduates understand the different environmental pollutants and their sources and effect , .	1- Give correct answer about different pollutants 2- classify the effect of sources of the pollutants 3- classify the effect of the pollutants 4- Limit the team to Prepare the report and discussion. report.	Classify the pollutants ,and know the effect of them, and work with team .	Classify most of the pollutants and their effects and work with team.	Classify some of pollutants and effects and work with team	They can't classify the pollutants and their effects
2-know the information on how engineering techniques control the environment pollution . .	1- Give answer about the different controlling techniques	Full information about controlling techniques with drawing the sketchs	Almost know about .	The team can get the solution of the design.	The team cannot get the solution of the design.
	2-Draw the sketches and diagrams of the engineering control of the different pollutants	The preparation of the report was a new and interesting and included all aspects of the design	Prepare the report was well in the Design View	Prepare Report and presenting the results were good, but the report did not include in the discussion of results	Prepare Report is good sequence of items , but the report failed to show results and discussion.

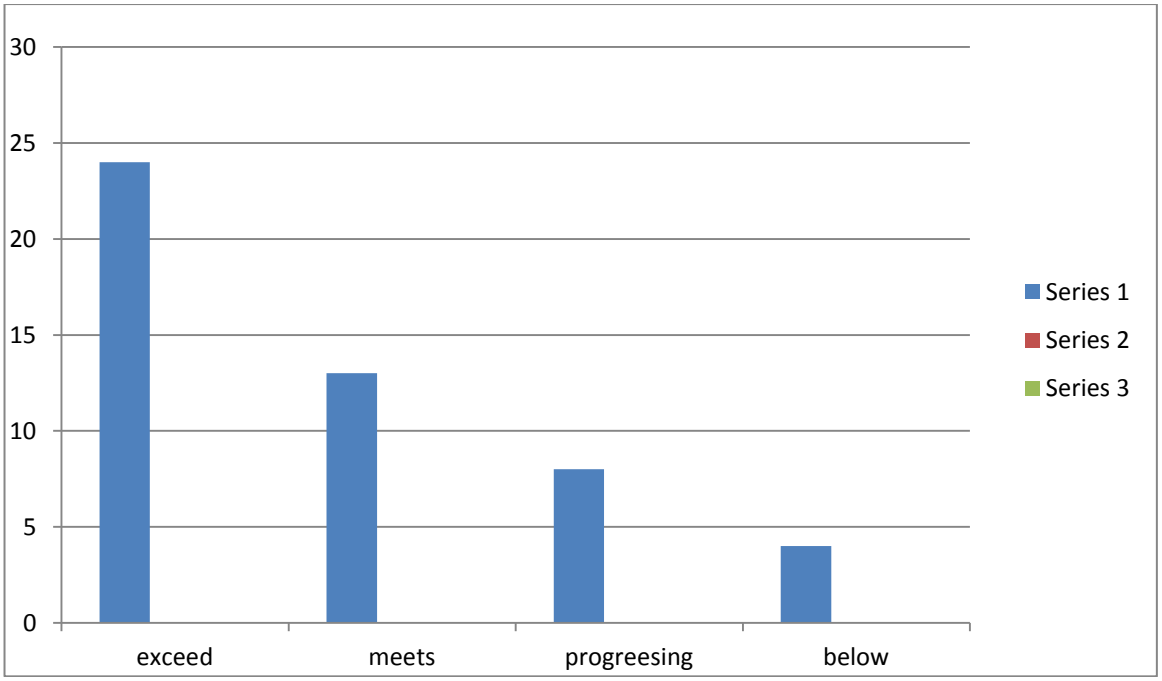


Fig.1 rubric of : student outcomes (1)

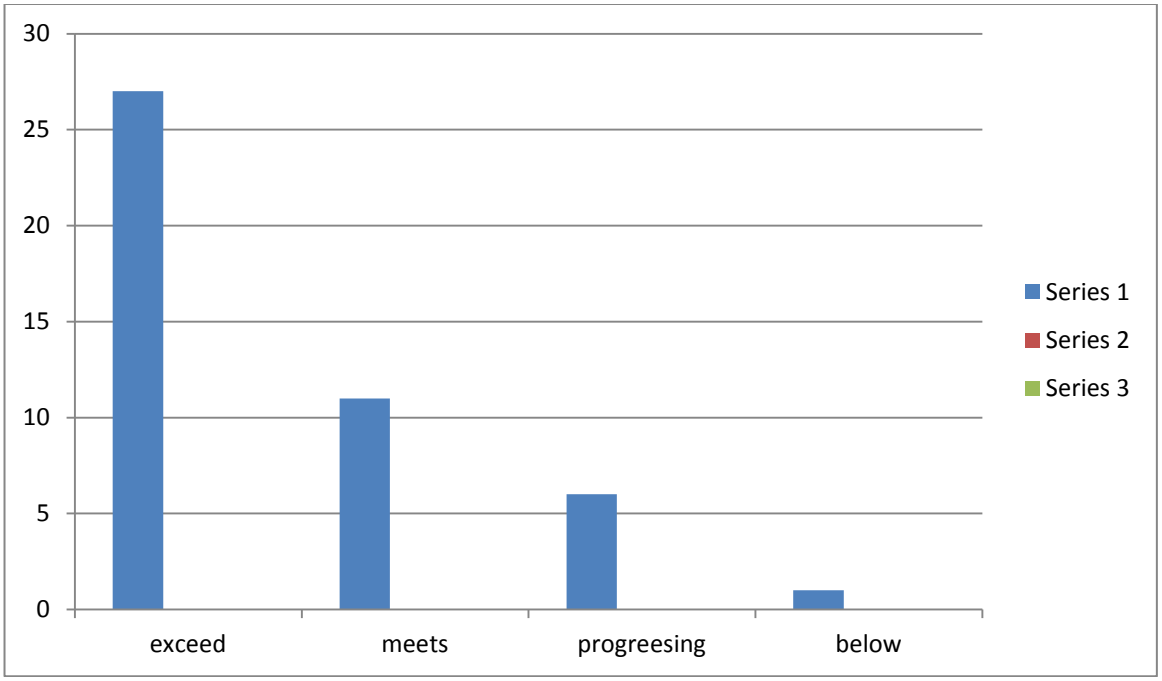


Fig.2 rubric of : student outcomes (2)

Performance Indicator

1- Ability to conduct experiments approaches.

2. Ability to present experimental results through appropriate graphical display.

3. Ability to analyze and discuss the data.

Assessment Tools:

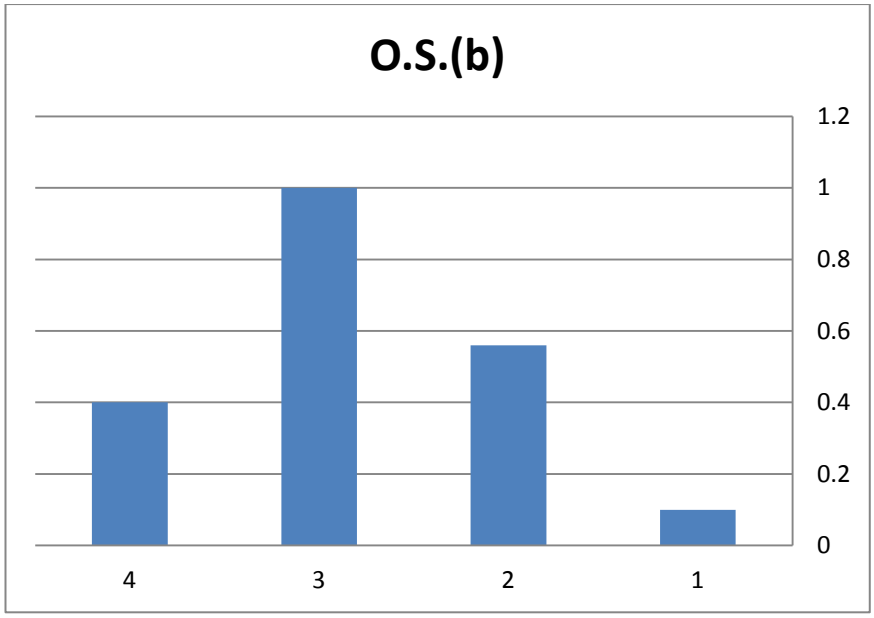
PI(1) : Lab reports and oral exams

PI(2): Lab reports

PI(3): Lab reports and oral exams

Scoring Rubric:

	4- Exceeds	3- Meets	2- Progressing	1- Below
Ability to conduct experiments approaches.	The students show an excellent knowledge in the purpose of each part of the experiment and its function	The students understand the purpose of each part of the experiment and its function	The students do the experiments as its cited in the experiment procedure	The students show poor knowledge in the purpose of each part of the experiment and its function
Ability to present experimental results through appropriate graphical display.	An excellent representing of experimental data in tables and graphs and fitting the data	All the graphs and tables are accepted with the requirements	Some of the graphs and tables are accepted with the requirements	All the graphs and tables are not suitable with the requirements
Ability to analyze and discuss the data.	An excellent analyzing of the collected data and a scientific discussion depending on scientific conclusions	The discussion and analyzing of the experimental data are accepted	Part of the discussion and analyzing of the experimental data are accepted	There is no any scientific discussion or analyzing


O.S.(b)
1.2
1
0.8
0.6
0.4
0.2
0
4
3
2
1

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

Performance Indicators:

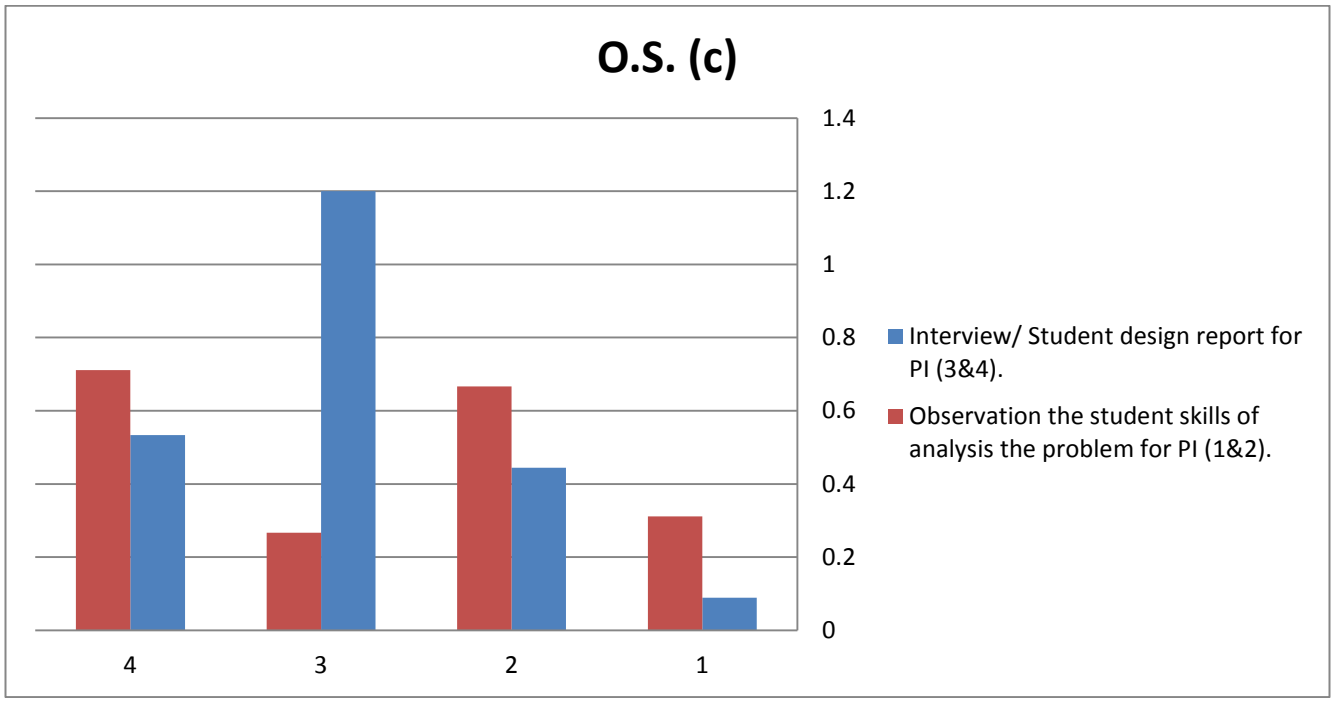
1. **Limit the design waste container problem.**
2. **Limit the suitable type of waste container.**
3. **Determine the hypothesis and functions requirement to solve.**
4. **Calculate and discussion the results of the container design.**

Assessment Tools:

PI (1): Observation the student skills of analysis the problem for PI (1&2).
PI (2): Interview/ Student design report for PI (3&4).

Scoring Rubric: Outcome (c) Scoring Rubric / (Engineering practice subject)

Student Outcomes	4- Exceeds	3- Meets	2- Progressing	1-Below
Limit the design waste container problem.	Limit the design problem is create new idea to meet four needs of the working field.	Limit the design problem is cover four of the needs of the working field.	Limit the design problem is cover three of the needs of the working field.	Limit the design problem is not proportion to business need.
Limit the suitable type of waste container.	Determine the container that meets all the necessary requirements in Iraq with the addition of design	Identify the container that meets all the necessary requirements in Iraq	Identify the container that meets some of the necessary requirements in Iraq	Identify the container that is not suitable for the necessary requirements in Iraq
Determine the hypothesis and functions requirement to solve.	Determine by hypothesis and derivative new functions to solve the problem.	Determine four of The hypothesis and functions to solve the problem.	Determine three of The hypothesis and functions to solve the problem.	The hypothesis and functions are not satisfied to solve the problem.
Calculate and discussion the results of the container design.	Calculate and discuss all design requirements and design additions	Calculation of all design requirements without additions and discussion	Calculate all design requirements without additions without discussing them	Calculate part of the design requirements without additions and without discussing them


O.S. (c)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
4
3
2
1
Interview/ Student design report for PI (3&4).
Observation the student skills of analysis the problem for PI (1&2).

Outcome (d) an ability to function on multidisciplinary teams

Performance Indicators:

1. **The team limits the solutions of design waste container.**
2. **Supports team decision process and supports final decision.**
3. **Prepare the report and discussion the results.**

Assessment Tools:

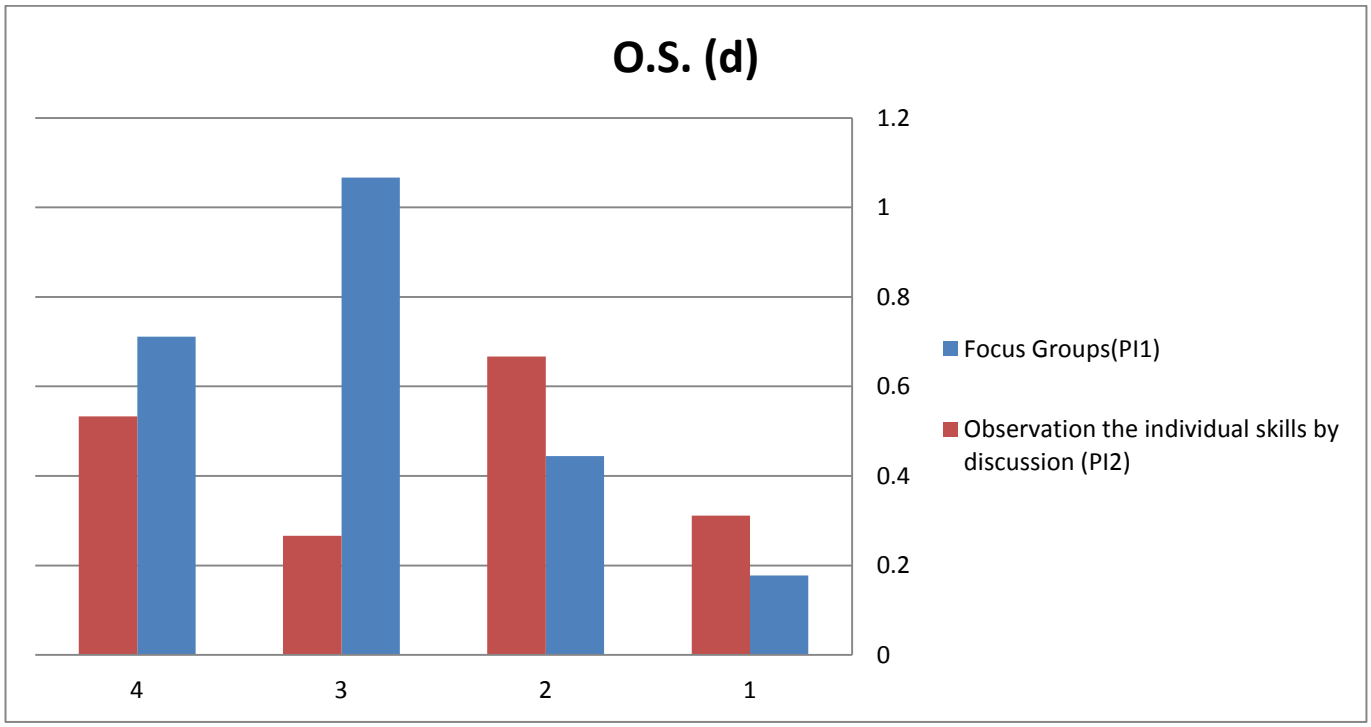
- PI(1): Focus Groups.
- PI(2): Observation the individual skills by discussion.

Scoring Rubric: Outcome (d) Scoring Rubric / (Engineering practice subject)

Student Outcomes	4- Exceeds	3- Meets	2- Progressing	1-Below
The team limits the solutions of design waste container.	The team can get new solution of the design.	The team can get the best solution of the design.	The team can get many of the solutions to the design.	The team cannot get the solution of the design.
Supports team decision process and supports final decision.	The preparation of the report was a new and interesting and included all aspects of the design.	Prepare the report is covered all aspects of good report.	Prepare the report was well in the Design View.	Prepare Report is good sequence of items, but the report failed to show results and discussion.
Prepare the report and discussion the results.	Understands the different approaches to making team decisions. Fully supports the team decision once made.	Follows the decision making approach the team leader chooses and accepts the decision made by the team.	Follows the decision making approach and usually accepts the team decision although sometimes must be reminded to include the outcome of the decision in their work	Does not agree with the decision process, usually fights the decision once made. Often neglects the outcome of the decision simply because they did not agree with it.

Scoring rubric: Questionnaire for outcome (d)

PI 1	What are design requirements of your design project?
	Who determines design requirements?
	Was the design project meeting the needs of the community?
PI 2	What is the definition of "design space?"
	How does the design engineer determine the design parameters that should be used to define the design space? How did you do this for your design project?
	Has the project been considered economically feasible?
	Have you gained experience in designing designs and design space?
PI 3	What are the necessary procedures for the design calculations?
	Was the method of describing the results suitable for design?



Outcome (g) an ability to communicate effectively

Performance indicators:

1. Writing Skills
2. Verbal Presentation Skills
3. Content
4. Organization
5. Data presentation format

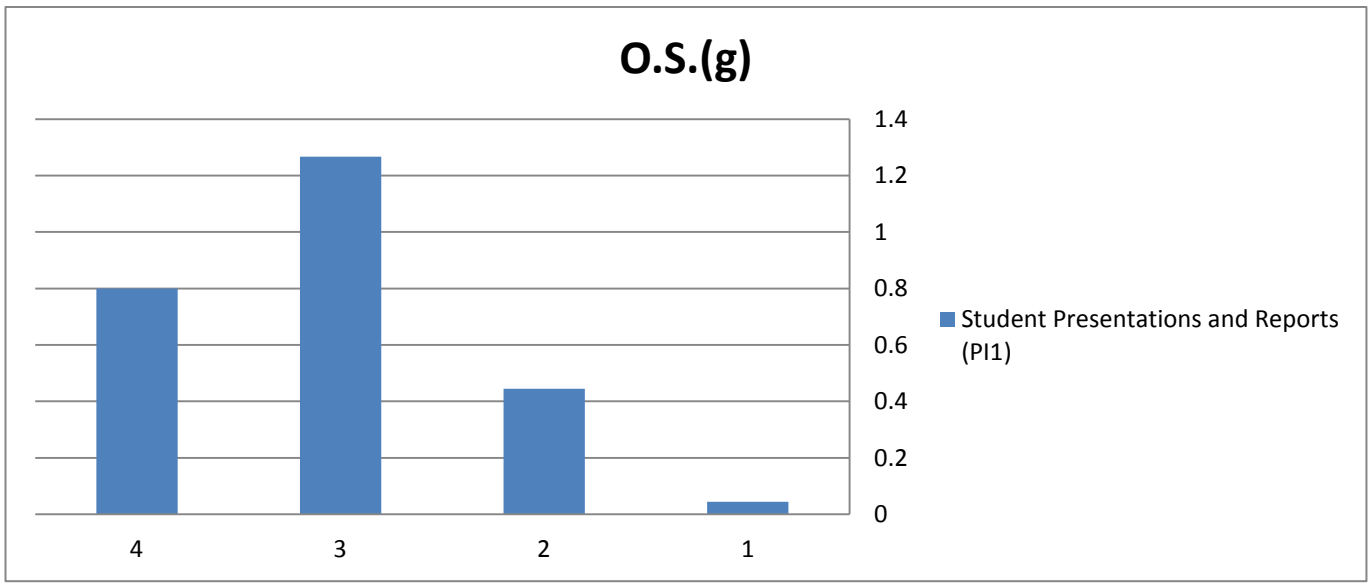
Assessment tools:

PI(1): Student Presentations and Reports

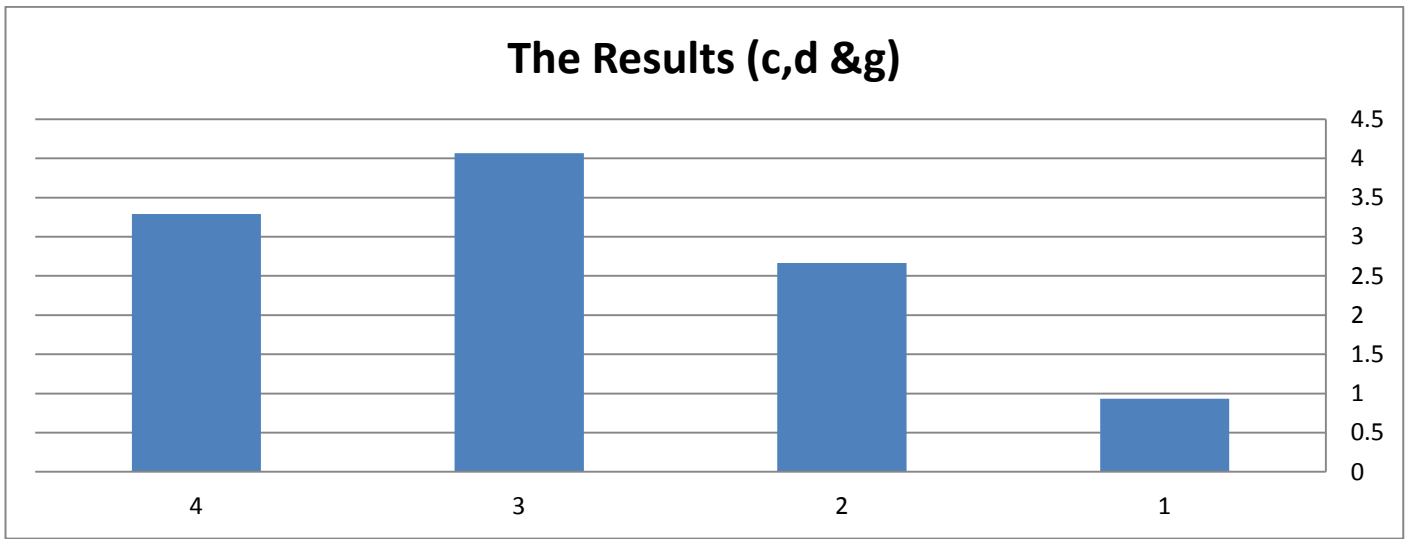
Scoring Rubric: Outcome (g) Scoring Rubric / (Engineering practice subject)

Score	4-Exceeds	3-Meets	2-Progressing	1-Below
Writing Skills	Grammar, spelling, sentence structure is good, active voice is used whenever possible	Grammar, spelling, sentence structure is adequate; some minor errors	Grammar, spelling, sentence structure is mostly adequate, but some paragraphs have faults	Grammar, spelling, sentence structure is inadequate for a large portion of the report.
Verbal Presentation skills	Professional delivery. No issues with body language or pointing devices. Volume good and keeps audience's attention.	Smooth delivery of material, any nervousness controlled, some minor issues may be present, but not distracting to the audience	Generally has a smooth delivery, but has many faults such as use of pointing device, talking to the screen, volume too low	Lack of preparation/rehearsal. Not knowledgeable of content. Pauses, nervous to point of distracting the audience. Talking to the screen.
Content	Covers all requirements in a succinct but complete way. Audience is able to easily follow the presentation/report to a logical conclusion.	Adequate for the presentation/report. Depth is consistent and appropriate. Audience is able to follow and understand material and reach	Mostly adequate material and depth of presentation/report mostly adequate. Some sections may be weak. Audience has difficulty	Misses the point of the presentation/report. Depth and/or relevance not adequate for the purpose of the presentation/report. Audience is unable

		a reasonable conclusion.	following the presentation/report to a reasonable conclusion.	to understand the material.
Organization	Organization makes it very easy to follow the flow of the presentation or report.	Organization is acceptable and the audience is able to follow the flow to the conclusion.	Organization is generally acceptable, but there are sections out of place which if corrected would make if much easier for the audience to follow.	The report or presentation does not flow in the right sequence, rather it jumps around making it difficult for the audience to follow
Data presentation	All data is presented in using graphs and tables that are appropriate for the data being presented. Audience is easily able to grasp significance.	Is presented in the appropriate form of tables or graphs depending on what point is trying to be made. Not all choices are best, but audience is still able to grasp significance.	Is mostly presented in a way so as the audience can understand the purpose of presenting it and can grasp the significance. Some data is not presented properly	Data is consistently presented in a way that makes it hard for the audience to grasp.



The results of rubric of student outcomes (c, d &g) of engineering practice subject:



CRITERION 4. CONTINUOUS IMPROVEMENT

The assessment and evaluation process of the Petroleum Engineering (PE) program consists of two separate systems; one for the Program Educational Objectives (PEOs) and the other for Student Outcomes (SOs). The assessment and evaluation results are used for continuous improvement of the PE curriculum and also used to revise and update the PEOs and SOs as needed. It is noted that the PE faculty and Industrial Advisory Council (IAC) play an important role in the annual review and assessment process

.

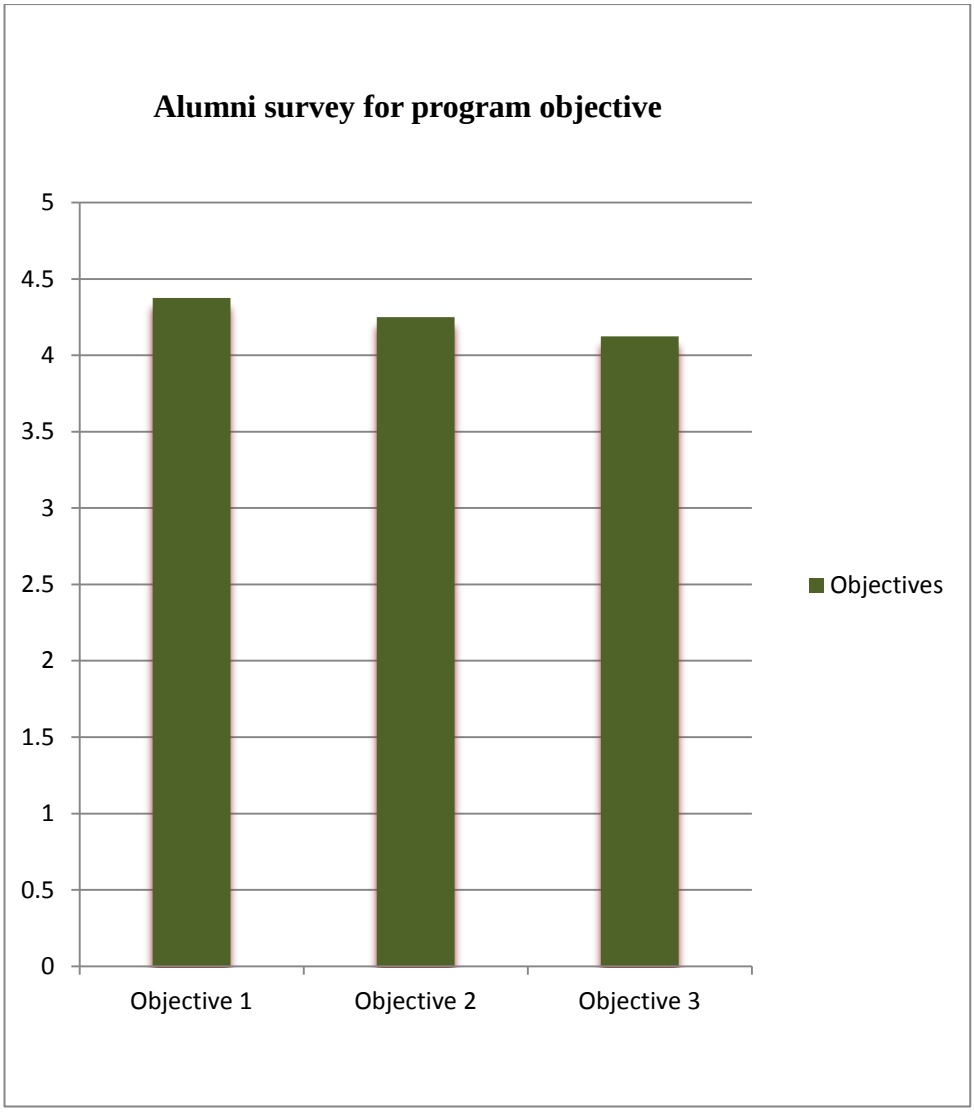
A. Program Educational Objectives

The PE Program utilizes feedback from the alumni and employers of our graduates to assess achievement of the Program Educational Objectives (PEOs). Both of the alumni survey and the employer survey were conducted at the end of the year 2015-2016. The PEOs at the time of the 2015-2016 are listed below. The educational objectives of the undergraduate program in ERE Engineering are to produce graduates who (during the first several years following graduation):

Objective 1: Educate undergraduate and post-graduate students the basic knowledge and necessary skills of modern oil technology that assist to work as successful petroleum engineers.

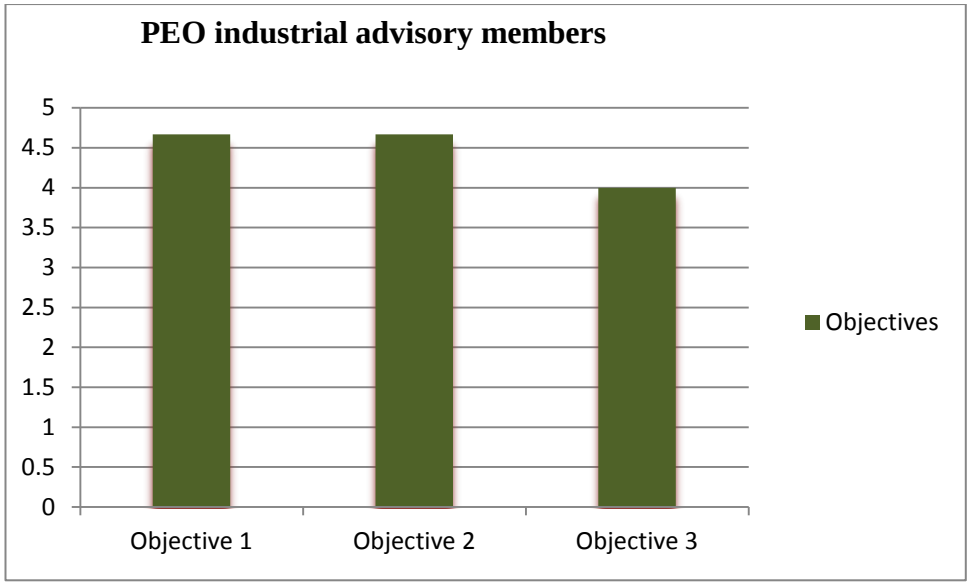
Objective 2: Teach the graduates how to solve the practical problems and put them under the competitive and challenging to active the high experience in order to catch the development in the petroleum industry.

Objective 3: Acquire the graduates the skills to communicate and to work in multi specialist team.



The survey results

were discussed at the PE faculty meetings during the May 2016. It was noted that the top two suggestions from our alumni for improvement of our program were "more real world experience" and "better communication skills". The faculty members will ask to consider more real world problems in their teaching materials in annual meeting September 2016



Our PEOs were revised at the end of 2015-2016 PEOs by our constituents. The PEOs were assessed and evaluated through the alumni and employer surveys during the 2015-2016. The revised PEOs are listed below. The educational objectives of the undergraduate program in Energy and Renewable Energies Engineering are to produce graduates who (within a few years of graduation):

1. Successfully practice the energy and renewable energies engineering disciplines;
2. Contribute to society and the profession;
3. Engage in life- long learning to advance professionally through continuing education and training;
4. Succeed in graduate studies in energy and renewable energies engineering or a related field if pursued.

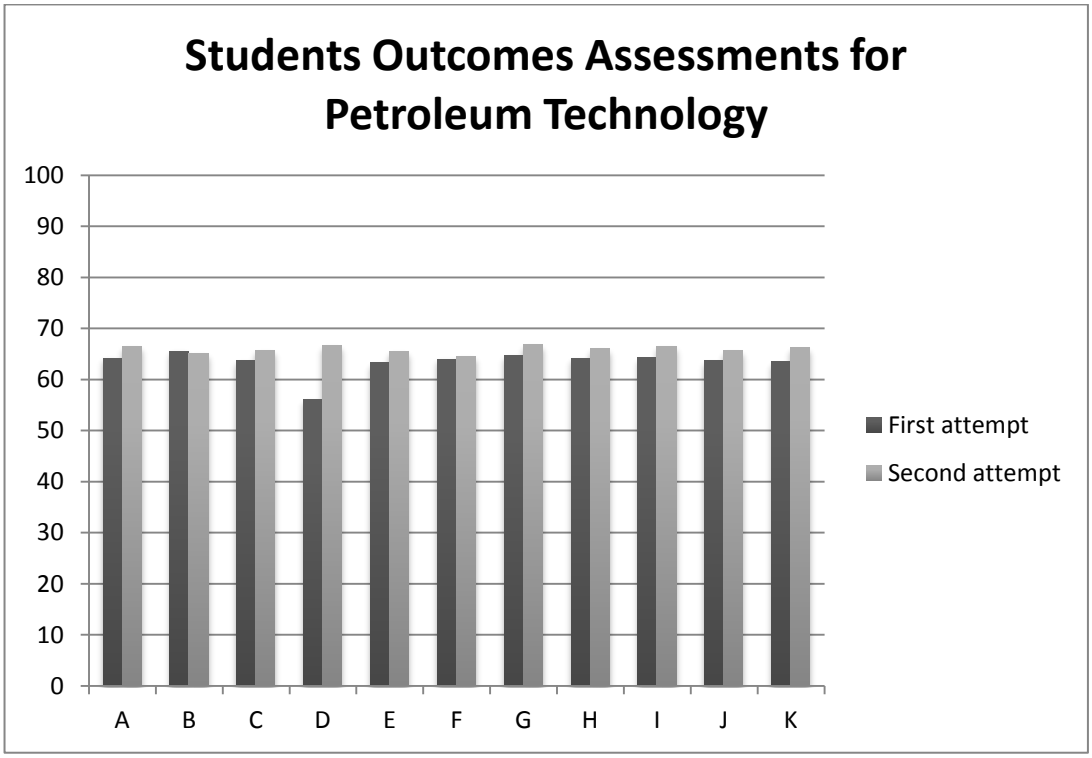
B. Student Outcomes

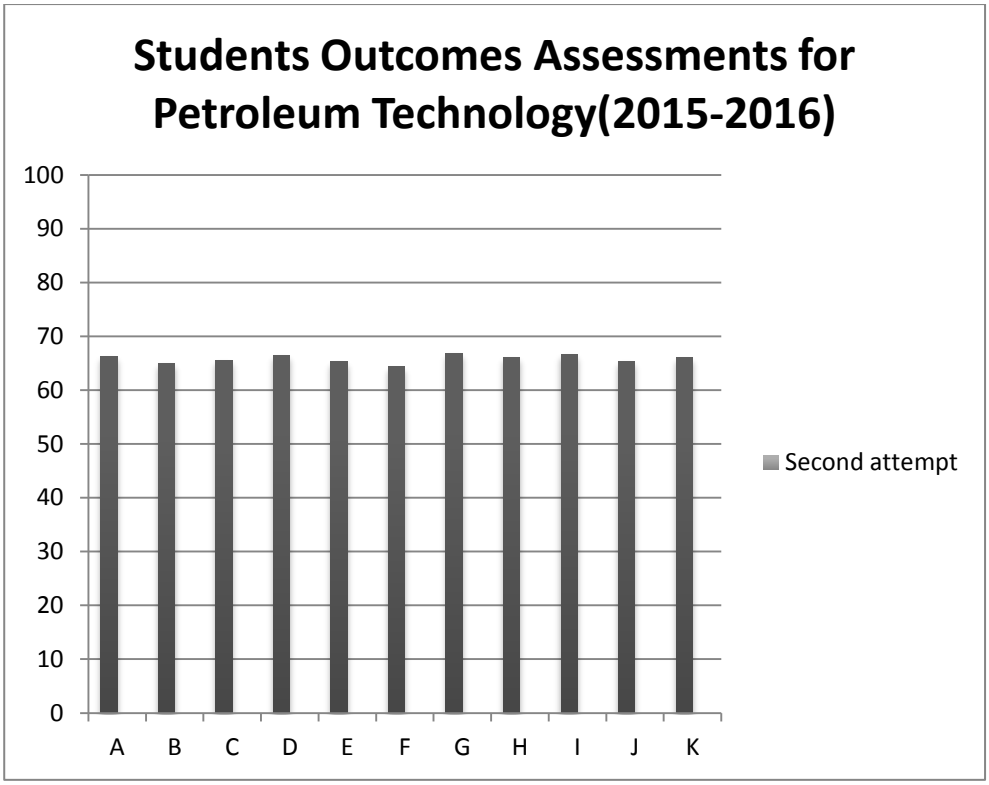
B.1. Assessment and Evaluation Process of the Student Outcomes

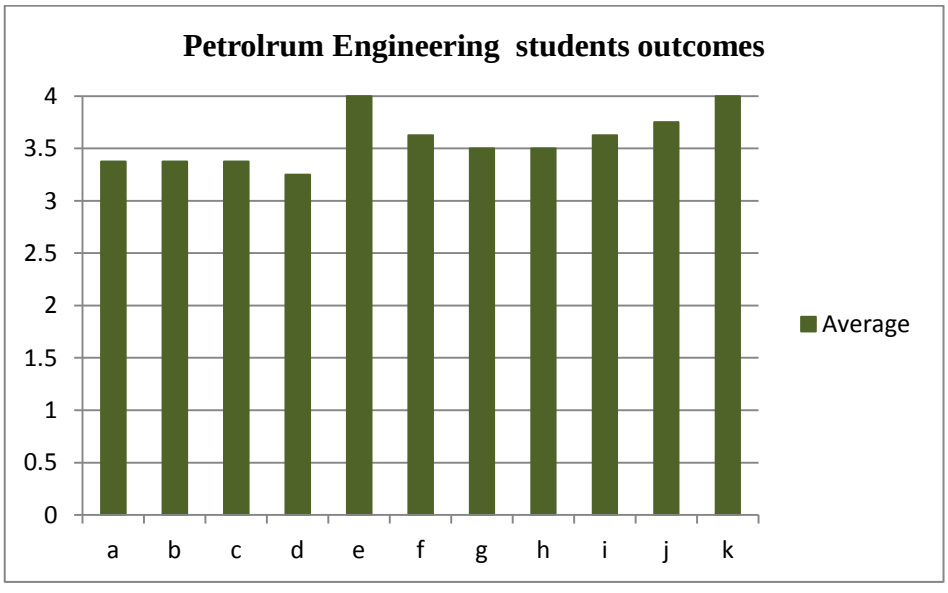
The assessment methods for the Student Outcomes (SOs) include Course Assessment and SOs surveys at the Exit Interview and Alumni. The assessment data collected during each academic year are analyzed during the following summer. The assessment results and actions for improvement are discussed at the beginning of the annually faculty meeting in September. The PE ABET Coordinator oversees all the assessment process while the PE Undergraduate Committee discuss the assessment results and recommend the possible actions for improvement to the PE faculty. The two assessment methods for the assessment and evaluation of Student Outcomes (SOs) are briefly described below.

courses	Grade of 2014-2015	Grades 2015-2016
PE111 / Technical English	68.5	70.84
PE121/ Calculus I	67.6	68.15
PE122/ Analytical chemistry	58.4	71.84
PE131/ Engineering practices I	60.8	65.23
PE123/ Physics	63.2	65.61
PE124/ General geology	58.1	59.23
PE112/ History of oil industry	64.03	65.84
PE132 / Workshop 1	64.96	70.34
PE133 / Mechanics	58.75	62.76
PE141 / Crude oil and products	68.31	61.30
PE125 / Calculus II	63.25	69.38
PE126/ Organic chemistry	61.65	65.69
PE132/ Workshop 2	63.15	70.57
PE127/ Sedimentation and sedimentary rocks	54.95	58.07
PE134 / Engineering practices II	59.86	64.65
PE128 / Computer programming (visual basic)	62.03	64.61
PE232 /Computer Programming (Foretran)	60.06	63.17
PE241/ Introduction to PT	68.06	62
PE224/ Partial Differential Equations	56.20	66.05
PE231 /Fluid Mechanic I	56.41	58.30
PE225 /Petroleum Geology	60.12	69.71
PE232/ Strength of Material	59.51	64.17
PE221/ Ordinary Differential equations	56.20	69.86
PE222/ Structural Geology	61.75	61.44
PE233/ Thermodynamic	55.75	68.61
PE211/ Human Rights	65.86	72.63
PE234/ Fluid Mechanic II	56.41	56.55
PE235/ Probability and Statistical	68.47	70.28
PE242/ Reservoir Petrophysics	67.7	61.19
PE226/ Geology of Iraq and Middle East	62.18	63.71
PE227/ Computer Programming (Matlab)	70.86	70.59
PE212/ Democracy	65.86	71.11
PE341/ Drilling I	59.1	65.17
PE344/ Well completion and stimulation	67.8	62.92
PE342/ Rock mechanics	55.8	60.79
PE3412/ (Gas and Oil Transportation	64.7	65.89
PE346/ Drilling II	65.4	57.61
PE347/ Formation evaluation	61.8	66.62
PE349 /Economics	70.1	66.53
PE331 /Optimization	62.4	61.62
PE441/ Petroleum Reservoir Engineering	62.53	61.40
PE443/ Engineering Project	80.06	77.96
PE444/ Well Testing	61.21	55.56
PE445/ Integrated Field Development and Management I	69.46	71.60

PE431/ Engineering Ethics	67.4	75.44
PE441/ subsurface production equipments	61.02	54.88
PE44R1/ Natural Gas Engineering	72.75	68.64
PE442/ Enhanced Oil Recovery	61.88	63.51
PE443/ Engineering Project	80.06	80.06
PE44R3/ Reservoir Simulation	60.2	62.21
PE449/ Risk analysis	55.8	60




Students Outcomes Assessments for Petroleum Technology(2015-2016)
100
90
80
70
60
50
40
30
20
10
0
A
B
C
D
E
F
G
H
I
J
K
Second attempt


Petrolrum Engineering students outcomes
4
3.5
3
2.5
2
1.5
1
0.5
0
a
b
c
d
e
f
g
h
i
j
k
Average

CRITERION 5. CURRICULUM

A.1 Program Curriculum

Table 5-1 illustrates the normal course sequence in the program along with the average section enrollment in each course.

Table 5-1 Curriculum

Subject Symbol	Subject	Indicate Whether Course is Required, Elective by an R, and E	Subject Area (Credit Hours)			Last Two Terms the Course was Offered: Year and, Semester, or Quarter	Maximum Section Enrollment for the Last Two Terms the Course was Offered2
			Math & Basic Sciences	Engineering Topics	General Education & humanity		
PE111	Technical English	R			2	2013-2014	*50*
PE121	Calculus I	R	2				*50*
PE122	Analytical Chemistry	R	3				*50*
PE123	Physics	R	3				*50*
PE124	General Geology	R	3				*50*
PE131	Engineering practices I	R		2			*50*
PE112	History of oil industry	R			2		*50*
PE132	Workshop	R		2			*50*
PE141	Introduction to PT	R		2			*50*
PE125	Calculus II	R	2				*50*
PE126	Organic Chemistry	R	3				*50*
PE133	Mechanics	R		2			*50*
PE127	Sedimentation and sedimentary rocks	R	3				*50*
PE134	Engineering practices II	R		2			*50*
PE128	Computer programming	R		2			*50*

	(visual basic)						
PE135	Workshop	R		2			*50*
							50
PE221	Ordinary Differential Equations	R	3			2015-2016	*27*
PE222	Structural Geology	R	3				*27*
PE231	Fluid Mechanic I	R		2			*27*
PE241	Crude oil and products properties	R		2			*27*
PE232	Strength of Material	R		3			*27*
PE233	Thermodynamic	R		2			*27*
PE223	Computer Programming (Fortran)	R		2			*27*
PE211	Human Rights	R			1		*27*
PE224	Partial Differential Equations	R	3				*27*
PE225	Petroleum Geology	R	2				*27*
PE234	Fluid Mechanic II	R		3			*27*
PE235	Probability and Statistical	R		3			*27*
PE242	Reservoir Petrophysics	R		3			*27*
PE226	Geology of Iraq and Middle East	R	2				*27*
PE227	Computer Programming (Matlab)	R		3			*27*
PE212	Democracy	R			1		*27*
PE341	Drilling I	R		3		2016-2017	50
PE342	Well logging	R		2			50
PE343	Drilling fluid lab I	R		2			50
PE344	Well completion and stimulation	R		2			50
PE321	Geophysics	R	2				50

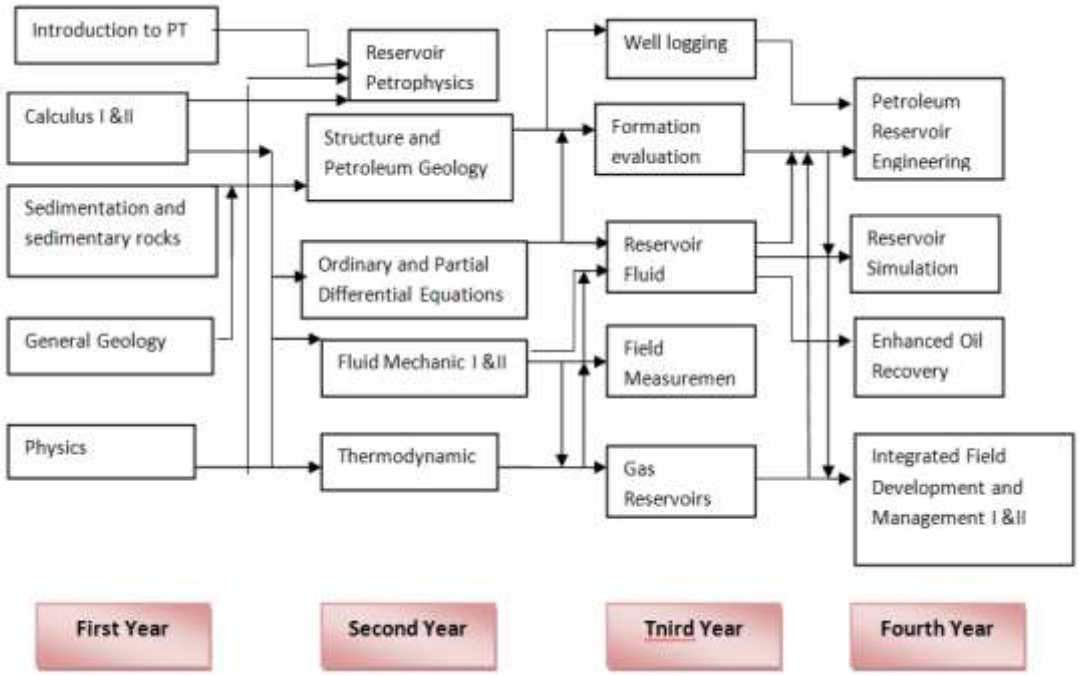
PE345	Reservoir Fluid	R		3			50
PE34D1	Drilling Equipments	S		2			50
PE34R1	Gas Reservoirs	S		2			50
PE346	Rock mechanics	S		2			20
PE347	(Gas and Oil Transportation)	S		2			30
PE348	Drilling II	R		3			50
PE349	Formation evaluation	R		3			50
PE3410	Drilling fluid lab II	R		2			50
PE3411	Economics	R		2			50
PE3412	Artificial Lift and well performance	R		2			50
PE331	Optimization	R		2			50
PE34D2	field measurements	S		2			-
PE34R2	Surface Production facilities	S		2			50
PE3413	Contracts	S		2			-
PE332	Environmental Pollution	S		2			50
PE441	Petroleum Reservoir Engineering	R		3			
PE442	Drilling Problems	R		3			
PE443	Engineering Project	S		2			
PE444	Well Testing	R		2			
PE445	Integrated Field Development and Management I	R		2			
PE431	Engineering Ethics	R		2			
PE44D1	*subsurface production equipments*	S		3			
PE44R1	*Natural Gas*	S		3			

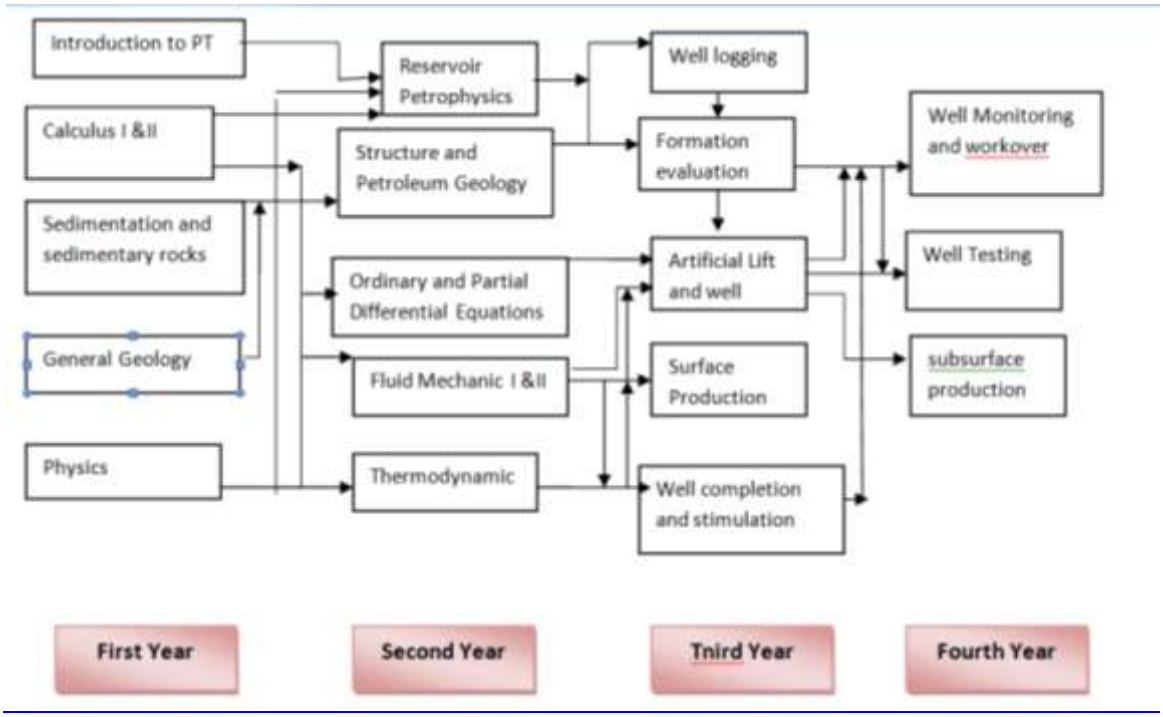
	Engineering						
PE44D2	*Advanced topics in drilling*	S		2			
PE44R2	*Enhanced Oil Recovery*	S		2			
PE446	Horizontal Drilling	R		4			
PE443	Engineering Project	R		2			
PE447	Well Monitoring and workover	R		2			
PE432	Engineering management	R		2			
PE448	Integrated Field Development and Management II	R		2			
PE433	Hazard and safety	R		2			
PE44D3	*Drilling simulation*	S		3			
PE44R3	*Reservoir Simulation*	S		3			
PE449	*Risk analysis*	S		2			
PE4410	*Custody Transfer*	S		2			
OVERALL TOTAL CREDIT HOURS FOR COMPLETION OF THE PROGRAM		149	41	102	6		
PERCENT OF TOTAL			27.5%	68.4%	4%		

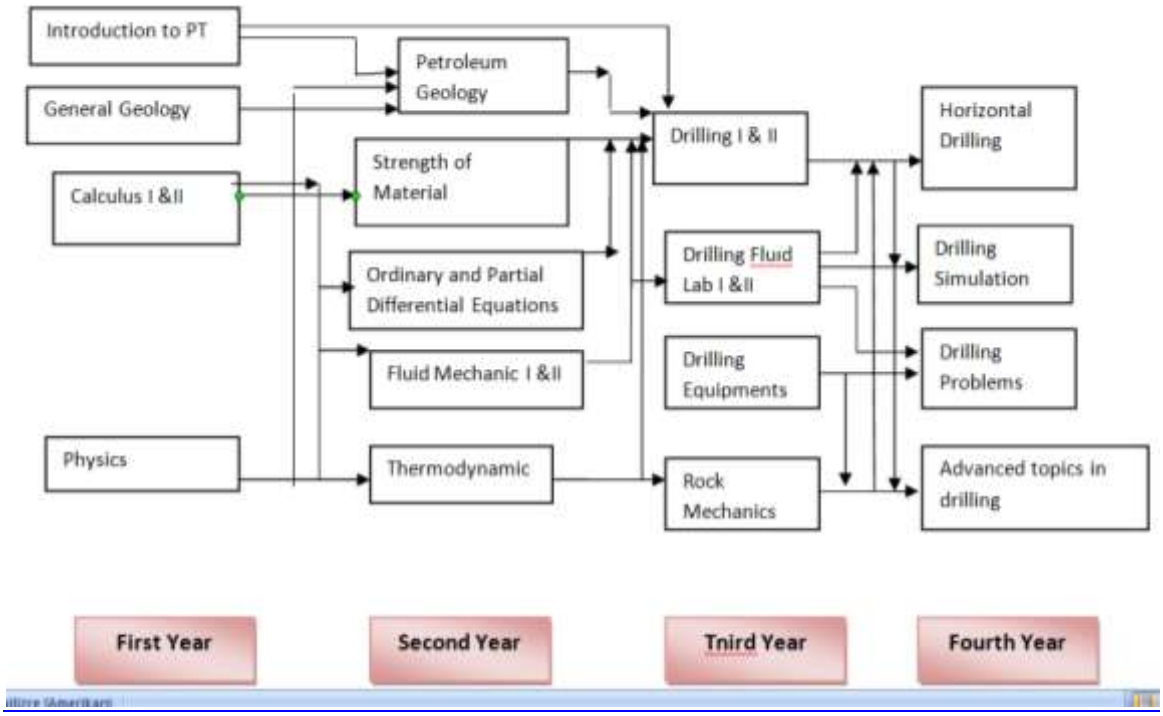
A.2. Prerequisite Flow Chart

A flow chart showing the prerequisite structure of the PE curriculum is shown in figure 5-1

Figure (5-1)







A.3. Major Components of the Program

There are three major components of the program: (1) foundation in the mathematical and physical and general sciences, (2) general education in the humanities and English course s, and (3) engineering and special engineering topics

CRITERION 6. FACULTY

A. Faculty Size

The size of faculty is 32 instructors.

B. Professional Development

In faculty vitae

C. Authority and Responsibility of Faculty

Instructions for the job description of faculty members

Article 1

A faculty member at University of Technology teaches, performs academic research, provides educational guidance and academic supervision to the students of undergraduate and postgraduate students, provides experience, and participates in academic and other committees.

Article 2

Faculty members dedicate their time to teach at the university. The college council may approve an exception for a faculty member from full-time commitment for reasons that the council finds convincing.

Article 3

I. The faculty member shall work a minimum of (30) thirty hours per week.

II. The faculty member shall conduct academic research in accordance to an annual academic plan suggested by the academic department, recommended by the college council, and authorized by the university council, provided that the member shall complete at least one study per year.

III. Hours spent in providing academic supervision and educational guidance by faculty members tasked to do so are considered lectures at the rate of one hour per group, but shall not exceed (4) four hours per week.

IV. The faculty member shall participate in:

a. University activities (cultural fairs, University Day, college exhibitions, graduation ceremonies, and student events, as well as other academic, social, and educational events upon request.

b. Writing, translation, and publishing.

c. Membership in permanent councils and committees inside and outside the university. One additional hour shall be noted for membership in a permanent council.

d. Intellectual, educational, and academic development of the academic departments by submitting studies, research, reports, plans, educational syllabi, etc.

e. Conducting tests and monitoring their conduct

f. Seminars, conferences, and classes in Iraq and abroad.

g. Continuing education courses held at the university and elsewhere

h. Working at the University's specialized advisory centres, offices, and clinics.

V. The department head shall determine the number of hours needed to accomplish the tasks provided in item IV of this article, which are among the duties of the faculty member, provided that such hours shall not be counted against his quota or articles except for the provisions of item III and paragraphs (c) and (e) of item IV of this article

Article 4

I. The faculty member's weekly quota shall be as follows:

a. Professor: (4) eight teaching hours.

b. Ass. Prof: (8) eight teaching hours.

c. Lecturer: (10) ten teaching hours.

c. Ass. Lecturer: (12) twelve teaching hours.

II. The quota may be reduced by no more than two thirds of the quota for those employed at the university's research centers.

III. The number of the faculty member's classroom and practical teaching hours shall be at a rate of hours per week as authorized for the academic rank.

IV. The quota for the faculty member shall be limited to classroom and practical teaching hours, supervision of undergraduate and postgraduate projects, academic supervision, and educational guidance.

V. Two hours shall be reduced from the quota of faculty members whose are fifty years old or older.

VI. The quota for the faculty member during university vacations and the summer quarter shall be zero.

Article 5

Classroom and practical teaching hours for a full-time university faculty member shall be calculated according to the following:

I. The upper limit for theoretical subjects in a single quarter is (3) three subjects in his or her specialty, which may be increased by one subject only in cases of absolute necessity as determined by the college council and subject to the approval of the president of the university.

II. Each hour of practical, applied, or field teaching, training, or discussion shall be calculated as one hour.

III. Supervision of each graduation research project at the undergraduate level shall be calculated as two hours per week, provided that the number of projects supervised is no more than (4) four.

IV. Supervision of each postgraduate student's dissertation shall be calculated as follows:

a. (3) Three preliminary theoretical hours in the first week for a high diploma.

b. (4) Four preliminary theoretical hours in the first week for a master's degree.

c. (6) Six preliminary theoretical hours in the first week for a doctorate.

V. In cases of joint supervision, supervision hours and bonuses are accounted in full for each of the supervisors.

VI. Each hour of teaching at the postgraduate level shall be accounted as the equivalent of two theoretical hours at the undergraduate level for the purposes of compensation for extra lectures

VII. A faculty member may exclusively teach or supervise postgraduate dissertations, or combine the two, when necessary, with the approval of the college council.

Article 6

I. The number of doctoral theses simultaneously supervised by a faculty member shall not be more than (3) three.

II. The number of magisterial dissertations simultaneously supervised by a faculty member shall not be more than (3) three. However, in cases of absolute necessity, subject to the recommendation of the competent department and the approval of the college council, the number may be increased to no more than (6) six dissertations.

III. Joint supervision of dissertations is possible in cases specified by the department council and authorized by the college council. In such cases, compensation shall be as specified in item V of article 5 of these instructions.

IV. The number of professional higher diplomas supervised by the faculty member shall not be more than (4) four, which may be increased to no more than (6) six in cases of absolute necessity by a decision from the college council.

V. No more than nine dissertations may be supervised individually or jointly.

VI. If a faculty member has supervisory duties of one type (doctoral, magisterial, or

higher diploma), supervision shall be as follows:

a. (5) Five doctoral dissertations

b. (7) Seven magisterial dissertations

c. (9) Nine higher diploma dissertations

Article 7

I. The president of the university, as required for the general good, may task a member of the faculty with duties related to the overall academic, educational, and administrative activities. In such a case, the faculty member be entitled to additional hours of no more than (6) six hours per week.

II. The college council may allocate no more than (4) four additional hours per week to the faculty member if the faculty member is tasked with duties related to the development of the educational or administrative process, provided that this takes place at the start of each educational year or quarter.

Article 8

The weekly quota is:

I. Dean: (2) two hours.

II. Assistant Dean: (4) four hours.

III. Department head: (4) four hours.

Article 9

I. The quota of the department coordinator is reduced by (4) four hours per week.

II. The college council may reduce the quota of the person tasked to be the postgraduate coordinator by no more than (4) four hours per week.

Article 10

I. A part-time faculty member shall work no fewer than (30) thirty hours distributed as required by the college. Any additional hours shall be treated as overtime pursuant to the effective instructions on lecture pay.

II. Priority shall be given to full-time faculty members when forming branch councils and the Saddam Medical College Council.

III. Part-time faculty members may practice their professions outside of official working hours.

IV. Priority shall be given to full-time faculty members in academic courses and dispatches.

Article 11

A part-time faculty member shall teach the same quota for his or her academic rank as a fill-time member, provided that his or her weekly hours are no more than (29) twenty-nine hours.

Article 12

The Chancellor of the university may dedicate faculty members to work at the university administration, academic research centers, and academic authorities and centers

Faculty Qualifications (6-1)

Faculty name	Highest Degree Earned - Field and year	Rank	Type of Academic Appointment T,TT, NTT	Pt Or Ft	Govt\lnd practice	Teaching	This Institution	Professional Registration\certification	Professional Organizations	Professional Development	Consulting\summer work in industry
Mohamed salih jawad	PH.D Petroleum Engineering	prof	TT	FT	-	31	5	-	H	H	H
Aswer abdulrasoul kwayery	PH.D Chemical engineering 2006	Ass.prof	TT	FT	-	١7	١7	-	H	H	H
Ramzi sayhod	٢٠٠٩ Chemical engineering	Ass.prof	TT	FT	-	١5	١5	-	H	H	H
Najim abd kadim	PH.D 1995 Chemical	Ass.prof	TT	FT	١٥	١5	١5	-	H	H	H

	engine ering										
Layla lateef	M.SC Lndust rial engine ering	Assist. prof	TT	FT	٣٤	١1	١1	-	H	H	H
Ahmed abdullah ramadhah	PH.D Earth scienc e 2004	lectur e	TT	FT	٢٦	6	6	١	H	H	H
Mohamme d abdul alhasan	PH.D Mecha nlc englne er2010	lectur e	TT	FT	-	٢9	٢9	-	H	H	H
Raed name	PH.D Techic al educat ion201 0	lectur e	TT	FT	١٤	١3	١3	-	H	H	H
Anwar nadim	PH.D Mecha nical engine ering	lectur e	TT	FT	-	١5	١5	-	H	H	H
Hadeel fouzi	PH.D Mass media	lectur e	TT	FT	-	١1	١1	-	H	H	H
Maysaa ali	PH.D Geolog y scienc e	lectur e	TT	FT	٥	١1	7	-	H	H	H

Samher abdulrasoul	PH.D Petroleum Engineering		TT	FT	١٢	2	2	-	H	H	H
Hussain Laibi	Ph.D Geologicul2003		TT	FT	12	2	2	-	H	H	H
Hiba tariq	M.SC Geophysical	lecture	TT	FT	-	4	4	-	H	H	H
Mohammed ghazey	M.SC Chemical engineering	lecture	TT	FT	-	15	15	-	H	H	H
Ranaa abaas	M.SC **Biochemi**	lecture	TT	FT	-	١7	١7	-	H	H	H
Nagam ali	M.SC	lecture	TT	FT	-	١5	١5	-	H	H	H
Muna khader	M.SC Computer science	ASS lecture.	TT	FT	-	٢5	٢5	-	H	H	H
Mayada gaffer	**M.S.C Chartered accountant**	ASS lecture.	TT	FT	7	6	4	-	H	H	H
Sundus	M.SC	ASS lectur	TT	FT	-	13	13	-	H	H	H

Ibrahim	Computer1989	e.									
Fadhil Sarhan Kadhim	PH.D Petroleum Engineering	lecture.	TT	FT	**7**	11	7	-	H	H	H
Samira mohammed	PH.D Petroleum Engineering	Ass.prof	NTT	PT	-	-	-	-	H	H	H
AbdAlkareem abbas	PH.D Petroleum Engineering	Ass.prof	NTT	PT	-	-	-	-	H	H	H
Nada sabah	PH.D Petroleum Engineering	lecture.	NTT	PT	-	-	-	-	H	H	H
Hussain ali bakar		lecture.	NTT	PT	-	-	-	-	H	H	H
Ahmed senan		Assist. prof	NTT	PT	-	-	-	-	H	H	H
Sarahnoori	M.SC Reservoire2014	Ass.prof	NTT	PT	9	1	1	-	H	H	H
Abd alal Aldabag	PH.D Petroleum	Ass.prof	NTT	PT	-	-	-	-	H	H	H

	Engineering										

Table 6.2:

First Course

NO.	FACULTY Member name	Pt or Ft	Classes taught (course No.\credit Hrs.) term and year	Work load	theory	practical	project	Above a work load	Teaching	Research or scholarship	Other	% time Devoted to the program
١	Mohamed salih jawad	FT	4thclass (6hr) Msc class(3hr)	٢	٨	-	٤	١٢	30%	10%	60 %	١٠٠ %
٢	Aswer abdulrasoul kwayery	FT	2nd class (5hr) 3rd class (6hr) 4th class(2hr) Msct(2hr)	٨	١٠	٢	٤	١٠	50%	30%	20 %	١٠٠ %
٣	Ramzi sayhod	FT	3rd class(2hr) 3rd class(6hr) 2nd class(2hr)	٨	٤	٢	٤	٤	50%	30%	20 %	١٠٠ %
٤	Najim abd	FT	1ST	٨	٧	١	-	١	70%		30	١٠٠

	kadim		CLASS (2hr) 2nd class (2hr) Msc class(2hr) Msc phd (arch)(2hr)								%	%
٥	Layla lateef	FT	1st class(2hr) 3rd class(2hr)	٤	٥	٢	٦	٩	50%	20%	30 %	١٠٠ %
٦	Ahmed abdullah ramadhah	FT	2nd class(3hr) 3rd class(6hr) Msc class(2hr)	٤	٢	-	٤	٣	50%	20%	30 %	١٠٠ %
٧	Mohammed abdul alhasan	FT	2nd class(2hr) 1st class(3hr	٤	٤	٢	٢	٤	30%	20%	50 %	١٠٠ %
٨	Raed name	FT	1stclass(6hr)	٤	٤	-	٢	٤	50%	20%	30 %	١٠٠ %
٩	Anwar nadim	FT	1st class(3hr) Ast class(3hr) 1st class(2hr) 2nd	١٠	٤	-	٤	٢	60%	10%	30 %	١٠٠ %

			class(1hr)									
١٠	Hadeel fouzi	FT	2nd class(2hr) 1st class(1hr)	١٠	٢	٦	-	-	40%	10%	50 %	١٠٠ %
١١	Maysaa ali	FT	1ST class(8hr) 2nd class(extraction 4hr	٦	٦	٦	٢	١٠	60%	20%	20 %	١٠٠ %
١٢	Samher abdulrasoul	FT	1ST class(8hr) 2nd class(extraction 4hr	١٠	٨	٤	٤	١٠	60%	10%	30 %	١٠٠ %
١٣	Hussain Laibi	FT	1class2nd class	١٠	٢	٤	٤	-	70%	20%	10 %	١٠٠ %
١٤	Hiba tariq	FT	1st class (4hr) 2nd class(1hr) 3rd class (2hr)	١٢	-	٨	٤	١	50%	30%	20 %	١٠٠ %
١٥	Mohammed ghazey	FT	1st class(4hr) 2nd class(8hr) 3rd class(4hr)	١٠	-	١٢	٢	٤	60%	20%	20 %	١٠٠ %

١٦	Ranaa abaas	FT	1class 3hr 2nd class4hr	١٠	٣	٨	-	-	60%	20%	20 %	١٠٠ %
١٧	Nagam ali	FT	1st class(4hr) 1st class(4hr) 1st class(4hr	١٠	-	٨	-	-	50%	20%	30 %	١٠٠ %
١٨	Muna khader	FT	1st class(4hr) 2nd class(8hr) 3rd class(4hr)	١٢	٣	٨	-	١	60%		40 %	١٠٠ %
١٩	Mayada gaffer	FT							70%	20%	10 %	١٠٠ %
٢٠	Sundus Ibrahim	PT	2nd class (4hr) 3th class(2hr)	٦	٢	٤	-	-	20%	80%		١٠٠ %
٢١	Fadhil sarhan	FT	3rd 1ST	4	4	-	1	-	20%	30%	50 %	١٠٠ %
٢٢	Samira mohammed	PT	4th Msc	٧	-	-	-	-				١٠٠ %
٢٣	AbdAlkareem abbas	PT	3rd class(8hr) Msc class(2hr)	٨	-	-	-	-				١٠٠ %

٢٤	Nada sabah	PT	4th class(6hr) Msc class(3hr	١٠	-	-	-	-				١٠٠ %
٢٥	Hussain ali bakar	PT	4th class	٢٠	-	-	-	-				١٠٠ %
٢٦	Ahmed senan	PT	1th class(class(3hr	٦	-	-	-	-				١٠٠ %
٢٧	Sarah noori	PT	4th class class(3hr	٥	-	-	-	-				١٠٠ %
28	Abd alal Aldabag	PT	4th class Msc	١٥	-	-	-	-				١٠٠ %

Secend Course

NO.	FACULTY Member name	Pt or Ft	Classes taught (course No.\credit Hrs.) term and year	Work load	theory	practical	project	Above a work load	Teaching	Research or scholarship	Other	% time Devoted to the program
١	Mohamed salih jawad	FT	4thclass (6hr) Msc class(3hr)	٢	٨	-	٤	١٢	30%	10%	60 %	١٠٠ %
٢	Aswer abdulrasoul kwayery	FT	2nd class (5hr) 3rd class (6hr) 4th	٨	١٠	4	٤	١4	50%	30%	20 %	١٠٠ %

			class(2hr) Msct(2hr)									
٣	Ramzi sayhod	FT	3rd class(2hr) 3rd class(6hr) 2nd class(2hr)	٨	٤	-	٤	3	50%	30%	20 %	١٠٠ %
٤	Najim abd kadim	FT	1ST CLASS (2hr) 2nd class (2hr) Msc class(2hr) Msc phd (arch)(2 hr)	٨	6	3	-	١	70%		30 %	١٠٠ %
٥	Layla lateef	FT	1st class(2hr) 3rd class(2hr)	6	4	-	4	7	50%	20%	30 %	١٠٠ %
٦	Ahmed abdullah ramadhah	FT	2nd class(3hr) 3rd class(6hr) Msc class(2hr)	٤	4	-	٤	6	50%	20%	30 %	١٠٠ %
٧	Mohammed abdul alhasan	FT	2nd class(2hr) 1st	٤	2	-	٢	1	30%	20%	50 %	١٠٠ %

			class(3hr									
٨	Raed name	FT	1stclass(6hr)	٤	٤	-	٢	٤	50%	20%	30%	١٠٠%
٩	Anwar nadim	FT	1st class(3hr) Ast class(3hr) 1st class(2hr) 2nd class(1hr)	١٠	7	2	٤	7	60%	10%	30%	١٠٠%
١٠	Hadeel fouzi	FT	2nd class(2hr) 1st class(1hr)	١٠	٢	٦	-	-	40%	10%	50%	١٠٠%
١١	Maysaa ali	FT	1ST class(8hr) 2nd class(extraction 4hr	٦	4	٦	٢	8	60%	20%	20%	١٠٠%
١٢	Samher abdulrasoul	FT	1ST class(8hr) 2nd class(extraction 4hr	١٠	12	6	٤	١8	60%	10%	30%	١٠٠%
١٣	Hussain Laibi	FT	1class2nd class	١٠	4	8	٤	6	70%	20%	10%	١٠٠%
١٤	Hiba tariq	FT	1st class (4hr) 2nd class(1h	١٢	-	6	٤	-	50%	30%	20%	١٠٠%

			r) 3rd class (2hr)									
١٥	Mohammed ghazey	FT	1st class(4hr) 2nd class(8hr) 3rd class(4hr)	١٠	-	8	٢	-	60%	20%	20 %	١٠٠ %
١٦	Ranaa abaas	FT	1class 3hr 2nd class4hr	١٠	-	10	2	2	60%	20%	20 %	١٠٠ %
١٧	Nagam ali	FT	1st class(4hr) 1st class(4hr) 1st class(4hr	١٠	-	٨	-	-	50%	20%	30 %	١٠٠ %
١٨	Muna khader	FT	1st class(4hr) 2nd class(8hr) 3rd class(4hr)	١٢	2	10	-	3	60%		40 %	١٠٠ %
١٩	Mayada gaffer	FT		12	-	10	-	-	70%	20%	10 %	١٠٠ %
٢٠	Sundus Ibrahim	PT	2nd class (4hr) 3th class(2hr)	٦	4	٤	-	2	20%	80%		١٠٠ %

٢١	Fadhil sarhan	FT	2nd class 3rd	12	7	3	1	-	20%	30%	50 %	١٠٠ %
٢٢	Samira mohammed	PT	4th Msc	٧	-	-	-	-				١٠٠ %
٢٣	AbdAlkareem abbas	PT	3rd class(8hr) Msc class(2hr)	٨	-	-	-	-				١٠٠ %
٢٤	Nada sabah	PT	4th class(6hr) Msc class(3hr	١٠	-	-	-	-				١٠٠ %
٢٥	Hussain ali bakar	PT	4th class	٢٠	-	-	-	-				١٠٠ %
٢٦	Ahmed senan	PT	1th class(class(3hr	٦	-	-	-	-				١٠٠ %
٢٧	Sarah noori	PT	4th class class(3hr	٥	-	-	-	-				١٠٠ %
28	Abd alal Aldabag	PT	4th class Msc	١٥	-	-	-	-				

CRITERION 7. FACILITIES

A. Offices, Classrooms and Laboratories

1- The department includes many Offices (such as administrative, faculty, clerical, and teaching assistants),The total area of the secion 729m

Section extension area 1456 m

2-The department include classrooms for students , which contain study equipments (computer,data show,board) , as shown in 1- class room spacein the e xtension Section 8 area 171m

2 class room Section space 4 area360m

Classrooms (Table 7-1)

Table 7-1: Classrooms used for Ep required courses

ROOM CODE	Use as	Area (m)	Capacity
1	Lecture room	115 m	120
2	Lecture room	115 m	120
3	Lecture room	115 m	120
4	Lecture room	115 m	120
HD	High studies	54 m	46
LIB	library	107 m	45
LNT	internet	35 m	15

B. Computing Resources

There are (113) computers and (8) data show which open to the student (6) hr per day and software include

C. Guidance

The labroratory engineers give the students the appropriate guidance regarding the use of tools, equipment, computing resources and laboratoriers and there are many indexes and information in the laboratoriersas shown in safety procedures ;

These tests are considered an integral part of his theory of study and there is ageneral guidance of

The safety of the laboratory;

1-avoid tam pering with electrical and electronic appliances or chemicals inside the laboratory.

1- avoid smoking when alighed to the laboratory from chemicals flammable .

3 -hot to carry out any chemical reaction frees fumes or toxic gases in side the closet butpuling fumes.

2- avoid the use hand –haked in the transfer of chemicals and acids and toxic snbstances
5. reall laboratory services and chemicals to the original place in the science labafter cleaning Supervisor
6- in the event of any mechanical failure or electrical in any tool or device inside the laboratory Must in form the specialists do and repaired by the student .

Conference Room

The PE conference room (3) is used as a faculty meeting room, an interview room and a classroom with modern data show and screens, which is an area (300 m_2) and capacity (234) people

Laboratories

All Petroleum Engineering laboratories are described in Table 7-2, with room number, size and courses taught for each room along with the condition of the laboratory and its adequacy for instruction.

Table 7-2: EREE Laboratory Facilities

Laboratory, Including Courses Taught	Condition of Laboratory	capacity	Area (Sq. m.)
Petroleum technology	Very Good	20	50
Material lab	Very Good	20	50
Chemistry	Very Good	20	50
Physical Chemistry	Very Good	20	50
Petroleum geology	Very Good	20	50
fluid	Very Good	20	50
Drilling	Very Good	20	119
Reservoir	Very Good	20	52
Computer lab 1	Very Good	30	50
Computer lab 2(statistica lp)	Very Good	30	49
Numerical lab	Very Good	20	50
Reservoir management lab	Very Good	20	50

D. Maintenance and Upgrading of Facilities

All devices are maintained down in holiday summer and in the end of each semester as well as aperiodic maintain on soures & devices .

E. Library Services

The library of the departments works on the winisis system and it contains the following:

	Type	number
books	423	686
Journals	112	389

Digital CD (digital books)	240	261
Students projects	62	73
Other (reports, conference proceedings, newsletters, etc.)	3	50

CRITERION 8. INSTITUTIONAL SUPPORT

The petroleum Engineering has sufficient Institutional Support and Financial Resources to assure the quality and sustainability of the program in support of the *Program Educational Objectives* and *Student Outcomes*. The decentralized budget affords the branch the opportunity to make prudent decisions and allocate their available resources appropriately. The financial resources are sufficient to attract on an ongoing basis qualified faculty. The resources also insure the department's ability to acquire, maintain and operate the facility and associated equipment

A. Leadership

The petroleum Engineering Branch is led by an experienced administrative leadership. Dr. Fadhil Sarhan Kadhim., He has a Ph.D. in Petroleum Engineering from the University technology Malaysia 2016, he has been named the Chairman of the petroleum Engineering Branch. In addition to leading the branch, some of his time has been devoted to develop new strategic plans that emphasize continuous careful review of the undergraduate curriculum and develop changes that are consistent with modern trends in engineering education.

Department administration/leadership is composed of three major components: Department Dean, Dean Assistances, and Chairs of the Branches. To ensure seamless integrations for all courses in the Branches, the Area Committee Chairs are the automatic members of the Branch Council. For curricular issues pertinent to a specific program Area, the Area Committee Chair brings those issues back to his Area Committee for discussions and recommending solutions. The recommended solutions are brought back to the Branch council where balanced views from other Areas Committees are developed and discussed before recommending to the general faculty for further discussion and adoption. ABET preparation; assessment in particular, is a major task given to the ABET coordinator. The ABET coordinator is in charge of coordinating the ABET material preparation, assessment, and holding the time lines throughout the entire period of program accreditation. The ABET Report has a stationary spot in the PE Faculty Meeting. It outlines and prepares for the annual activities for ABET, particularly the assessments for both Student Outcomes and Program Educational Objectives. By working with the Chair, the ABET coordinator makes annual presentation to both the PE faculty and the PE Industrial Advisory Council. The Chair leads the discussion, identifies problems, and develops possible solutions with the faculty based on the assessment results.

B. **Program Budget and Financial Support**

The operating budget of EREE is satisfactory to meet the department's goals, objectives, and projected outcomes. The decentralized budgeting process allows the department to plan and execute, as it deems appropriate. The ability to manage the department's financial resources on a continuous basis and re-deploy available resources as the needs change insures flexibility and an immediate response to departmental needs. The Department manages and monitors its own budget, which includes all the operating expenses of the Department and capital equipment for continuous improvement of undergraduate laboratories. The budget is allocated through Ministry of Higher Education and Scientific Research. The University distributed the budget in the various categories after Ministry permission. The categories include; maintenance and repair, functional operations of undergraduate laboratories, over load teaching, educational support, and staff salaries. Capital equipment fund for continuous improvement of undergraduate laboratories is allocated separately by the Ministry, for last five years, **one million dollar** was spent on undergraduate Labs to buy a new devices

C. **Staffing**

The department organized different courses through the center of continuing education in several areas, including the use and applications of computer systems, maintenance and how to use them in administrative work.

Educational Technology Courses were organized in continuing education center to teach the new staff how to teach, these courses were organized periodically for new member of staff.

Every teacher must enter a course in teaching methods, especially if he is one of the new graduates as well as a course in Computer and thereafter subjected to practice teaching under the supervision of two known faculty staff and for a period of three months and are tested suitability for teaching during this period. He is then evaluated and interviewed by the supervised professors and under the form prepared in advance and then the teacher is called to a meeting of the Scientific Committee in the department in order to present a subject chosen by him and be asked in order to know the level of his scientific, ability and strength of character to answer questions. The teacher is rated by the Scientific Committee using special form prepared by the board of the department. If the teacher is eligible from the viewpoint of the department to enter the

educational process, his papers is sent to be treated in the Scientific Committee of the university and assessed there under a form especially prepared by this Committee, in order to be deciding on the validity or non-validity of the teaching

.

D. Faculty Hiring and Retention

The member of staff in the branch is sufficient for teaching.

E. Support of Faculty Professional Development

The university professional development efforts represent a prime objective of the university, which are manifested in the following two areas:

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

2. University Research Development, which is administered also by the Ministry (R & D Office in the MOHESR), University Funding allocated is adequate for the needs of both lines. Accordingly, both planned activities and allocated funding are adequate for the university professional development.

PROGRAM CRITERIA
1. Curriculum

Criteria for petroleum System Engineering Program:
our curriculum satisfy ABET petroleum Engineering criteria:
The curriculum must require students to apply principles of engineering, basic science, and mathematics (including multivariate calculus and differential equations); to model, analyze, design, and realize physical systems, components or processes; and prepare students to work professionally in both thermal and mechanical systems areas.
The curriculum must include applications appropriate to the program name; mathematics through differential and integral calculus; sciences (defined as physical science); and engineering topics (including computing science) necessary to analyze and design .

2. Faculty
The program must demonstrate that faculty members responsible for the upper- level professional program are maintaining currency in their specialty area. The curricular requirements of the petroleum Engineering Program Criteria are satisfied by attainment of Student Outcomes 'a', 'c' and 'e'. First, the component of "mathematics (including multivariate calculus and differential equations)" was included in our Student Outcome 'a' as described in the section "CRITERION 3 STUDENT OUTCOMES". Therefore, the first part of the curricular requirements is satisfied by attainment of the Student Outcome 'a' and the second part, by the Student Outcomes 'c' & 'e'. The assessment and evaluation of the Student Outcomes 'a', 'c' and 'e' are described in the section "CRITERION 4 CONTINUOUS IMPROVEMENT".

Student Outcomes:
a. an ability to Educate undergraduate and post-graduate students with the basic knowledge and necessary skills that assist to work as successful petroleum engineers.

c. an ability to Provide the graduates the ability to use all the available knowledgments in order to solve the practical problems and put them under the competitive and challenging to acteive the high experienc in order to catch the development in the petroleum industry.

e. an ability to Give the graduates the ability to communicate and to work in multi specialist team.

The faculty requirements of the Mechanical and Electrical Engineering Program Criteria are satisfied by the qualifications of our faculty members, which are described in the section "CRITERION 6.