Ministry of Higher Education

& Scientific Research

Alayen Iraqi University

College of Petroleum Engineering

Self-Assessment Report

for the B.Sc. in

Petroleum Engineering Program

at the

Alayen Iraqi University

Thi Qar, IRAQ

Muharram 24, 1443 September 1st, 2021

E-mail: eng@eng.alayen.edu.iq

Website:

https://en.eng.alayen.edu.iq

+964 7800060302

TABLE OF CONTENT

1. Background and Information

1.1 Contact information

Name	Prof. Dr. Firas Faeq Kazem
Title	Dean of Petroleum Engineering College
Mailing Address	firas.f@alayen.edu.iq
Telephone Number	+964 7822814535
Fax Number	N/A
Web address	https://en.eng.alayen.edu.iq/
Iraqi Accreditation Coordinators	Asst. Prof. Dr. Najeh Yousef Alali

1.2 Program History

About the University

The Al-Ayen University established in 2017. It includes now (at 2023) 7 Colleges and 12 departments; Medicine, Dentistry, Pharmacy, Medical and Health Technologies (Departments of Anesthesia, Optometry, Dental Industry, Laboratories, Radiology and Ultrasound), Petroleum Engineering, Technical Engineering (Department of Computer Technology, Department of Medical Devices), and Physical Education.

About the Petroleum Engineering College

The Petroleum College at Al-Ayen University was established in 2017 with just one B.Sc. program which has been founded as a twin to the Petroleum Engineering Program of University of Baghdad. The period of study is four years to obtain a bachelor's degree in petroleum engineering and graduated from its first course in 2020-2021. The idea of establishing the college as a scientific starting point and renaissance was based on transforming knowledge and science developments into qualified human resources for the localization, innovation, and creativity of technology. The college has provided the community hundreds of graduates.

The program started with 33 students and the 1st batch of the program students (with 32 students) graduated in 2021. The members of the Petroleum Engineering College have made efforts to improve the level of students in order to serve the scientific process and keep abreast of the continuous developments through updating the curricula, developing laboratories, and carrying out scientific research and publishing them in local and international magazines.

1.3 Options

The program has no tracks or options.

1.4 Program delivery modes

The program is comprised of on-campus traditional lecture/laboratory courses. Most courses are delivered in the classroom or laboratory with the exception of two:

1- The Professional Experience course in which students are required to work during the summer of the fourth year at a company that offers professional engineering practice in their field of specialization. The work period covers a minimum of four weeks of full-time work.

2- The Project courses where students are required to work independently, under the supervision of a faculty member in the program, on a final year project in their field of specialization.

The university utilizes an on-line course management system (Google Classroom) to help organize teaching and learning resources and facilitate students' learning through providing supplementary material to classroom instruction.

https://en.eng.alayen.edu.iq/

Study Mode	Delivery Timing	Delivery Location	Delivery Mode	Academic Year	Campus

Full Time	Day Time (8 am-3pm)	Classroom and Teaching laboratories	Course-Based flowing Credit hours System	Two Semesters (Fall-Spring) +Optional Summer Semester	One Campus (Main UoA Campus)

The delivery of the petroleum engineering Program is summarized as follows:

1.5 Program Locations

The program is offered in the main campus of the Al-Ayen University in An Nasiriyah, Thi-Qar. All courses and laboratory sessions are conducted in college of Engineering Buildings.

1.6 Public Disclosure

All information about the University and the College are posted and made accessible to the public at the website of the University as given in the following link.

https://en.eng.alayen.edu.iq/

1.7 Previous Evaluations and the Actions Taken (if applicable)

No previous evaluations have been taken.

2. ACCREDIATION CRITERIA

2.1. Criterion 1 (Program Educational Objectives)

1.1.1. Strategic Planning

University of Al Ayen

University vision:

To be a leading global university that shapes the future of higher education and scientific research and developing the academic programs for achieving the sustaining development.

https://en.alayen.edu.iq/about_the_university

College vision:

Become among the best in the country by educating globally competitive engineers, motivated entrepreneurs, budding researchers, and aspiring academics. To become a center of technological excellence that will impact the future of Iraq's petroleum industry and science. The College of Engineering believes that it is crucial to create an intelligent working and learning environment for students and staff that promotes their appreciation of their culture and heritage and their responsibility to society

https://en.eng.alayen.edu.iq/

University mission:

The University is committed to providing education, teaching and scientific research of exceptional quality by restoring human resources at the level of knowledge, thinking and skills in a creative and competitive environment through the application of analytical and critical thinking strategies. Benefiting society through education, research, innovation and change.

https://en.alayen.edu.iq/about_the_university

College mission:

Cultivate petroleum engineering scientific and technological talents who can improve lives and benefit society. The aim is to produce globally competitive students who are

able to design, develop and test world-class software while keeping abreast of the latest technological developments. Promote continuous learning and integrated research in core and emerging areas. To instill in students a spirit of research, professionalism, teamwork, innovation and entrepreneurship. Exchange expertise with industry and academic and research organizations. To instill moral and social values in students.

https://en.eng.alayen.edu.iq/

Statement of PEOs

The program educational objectives of Petroleum Engineering College are:

Objective 1: Achieving professional qualifications to effectively meet the work needs.

Objective 2: Maintaining the continuous scientific self-learning.

Objective 3: Acquiring the necessary qualification and knowledge to promote for innovation in research and design and to prepare for M.Sc. and later Ph.D. degrees.

1.1.2. PEOs Consistency with the Mission Statement

The program educational objectives of the Petroleum Engineering College are consistent with both the mission of the Al-Ayen University and the mission of the Petroleum College of Engineering as follow:

1. Program educational objective 1 is consistent with the mission of the College of giving high educational and skilled graduates to different work environments.
2. Program educational objective 2 is consistent with the mission of giving professional contributions to the oil careers.
3. Program educational objective 3 is consistent with mission of producing applicable researches that can professionally enhance the oil industry.

Thus, our PEOs are consistent with the mission of the University as well as the College.

1.1.3. Program Constituencies

The main constituencies of the Petroleum Engineering program are:

- **Ministry of Higher Education and Scientific Research (MOHESR)**
  The Ministry of Higher Education and Scientific Research determines the entrances, rates, and numbers of accepted students. It also specifies all the laws and instructions related to the student's academic career during the period of study. It exercises the highest role in supervision, and most of the committees are formed for annual follow-up and evaluation.

- **Students**:
  Students have a clear interest in gaining a comprehensive understanding of the principles, tools and theories relevant to the course as this can prepare them for their careers and help them find employment locally and internationally. Discussions in student forums, course surveys, and alumni surveys emphasized the importance of student engagement. Most students participated in the assessment for all years up to and including the year of assessment via exit survey.

- **Faculty:**
  Faculty members in the college and those in the university who teach/support teaching of non-petroleum engineering courses to our students with many other staff members contribute to the support of the petroleum engineering college; these include all laboratory technicians and staff from other departments, IT unit personnel, and others. All faculties were participated in the evaluation through a specially intended questionnaire in September and through assessments.

- **Staff**
  As mentioned above, staff members contribute to the support of the petroleum engineering college; these include all laboratory technicians and staff from other departments, IT unit personnel, and others.

- **Employers:**
  Employers or industry partners have made it clear that they have a clear interest in preparing students for careers. Of course, students' professional and personal preparation is instrumental. Our college measures partner satisfaction through three methods: The first is to have practical experts in the oil sector join the teaching faculty and staff to provide practical experience and support the theoretical aspects.

The second way is through periodic visits by the teaching and administrative faculty and staff at the college and university to work sites and holding constructive dialogues with officials there.

The third way is concerning the establishment of Experts Industrial Committee EIA which consists of specialized experts and engineers in industry relating to petroleum industry.

Alumni:
Alumni will obviously be affected by the reputation of the college as it will help them advance their careers. They often turn to teachers for recruiting opportunities. They want to ensure that the program adequately prepares them for their career advancement. Alumni participated in the evaluation through an alumni survey. Also there is what is known as a forum for most petroleum alumni which can be regarded as a feedback source to assist and evaluate the teaching and learning process.

Also there is a committee of alumni follow up and community partnership which aims to raise the level of professional and academic skills in a way that ensures achieving the maximum benefit from graduates, fulfilling the requirements of the labor market, and then improving the whole society. It also works to create communication channels between the college, graduates, and civil society organizations with the aim of providing training programs to raise the level of graduates and provide suitable job opportunities for them... and evaluate their performance to identify the level of satisfaction of the beneficiaries to achieve comprehensive quality in the educational process.

It also aims to prepare studies and research related to labor market requirements and creates a database for graduates to help educational institutions looking for employees in fields of specialization to reach graduates easily and conveniently. As well as creating an association for graduates through which we can communicate with them and invite them to participate in the activities and events carried out by the college and other services. Hence,

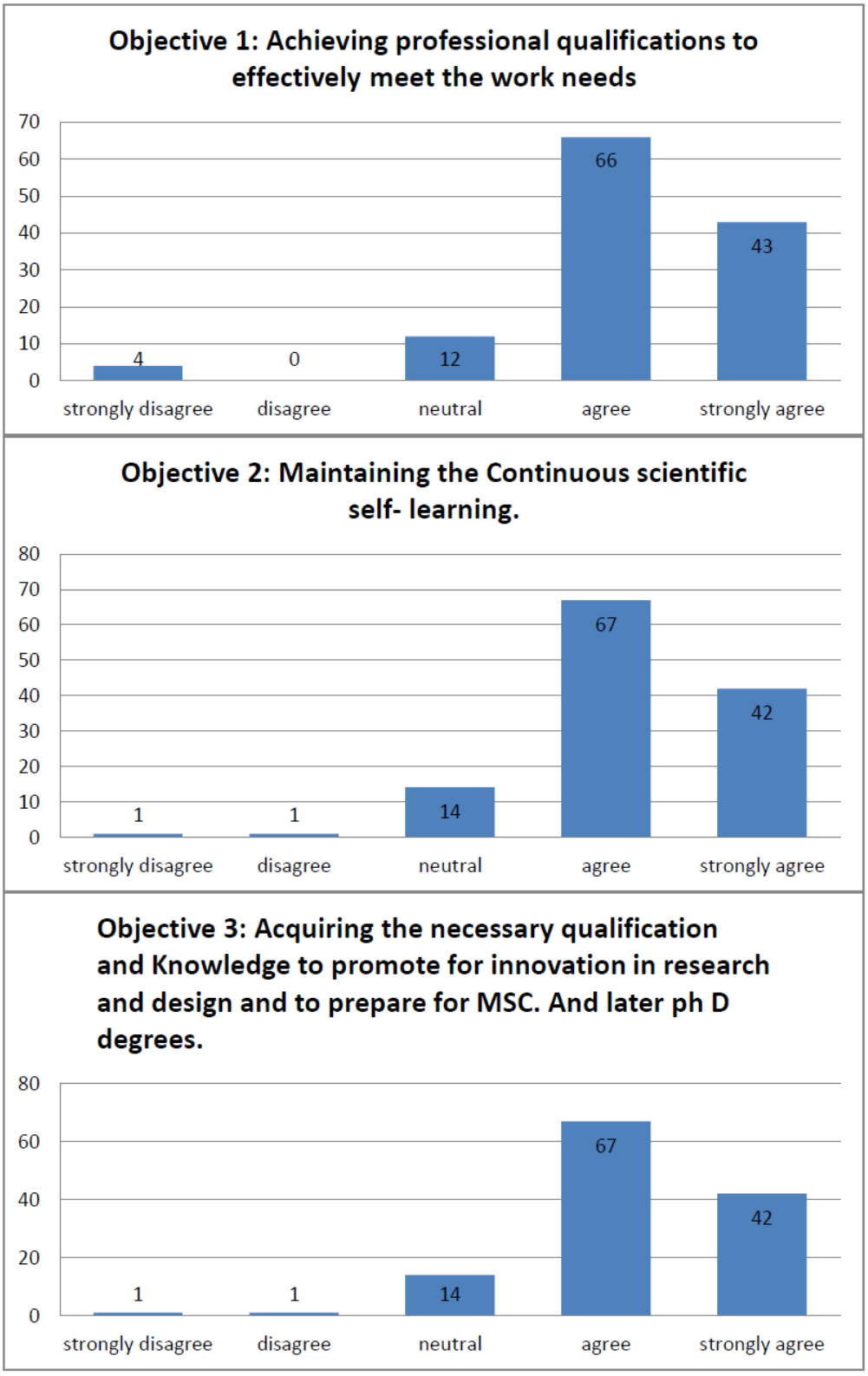
we invite graduates of the College to continuously communicate with the Graduate Follow-up Unit to benefit from these services.

1.1.4. PEOs Review Process

The Petroleum Engineering Program follows periodical procedures to review the program educational objective, these actions include the following tools were used in the assessment of the PEOs:

a. Students Survey.
b. Alumni Survey.
c. Employers Survey.
d. Exit Survey.

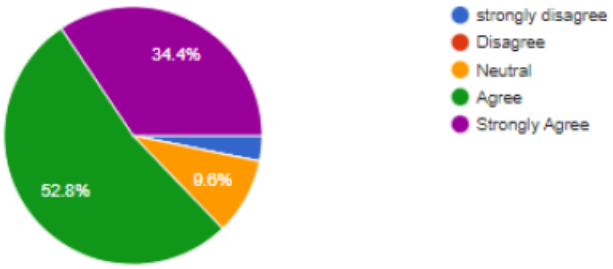
a- Student Survey: Students of the fourth stage are polled about the educational objectives of the Petroleum Engineering program the number of students participating on this questionnaire is 125 students. The students participating on this questionnaire was done using available electronic platforms. The opinions of the students can be displayed as in the following charts:



The opinions of the students are also shown in the following Pie charts:

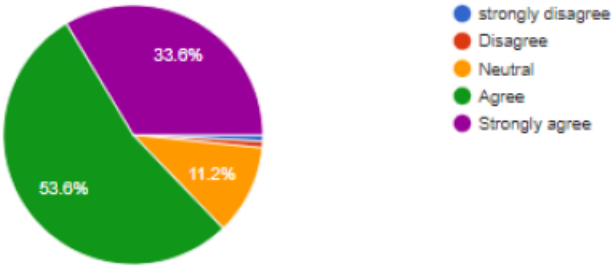
Objective 1: Achieving professional qualifications to effectively meet the work needs.

125 responses



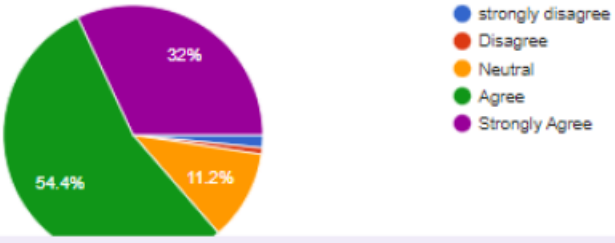
Objective 2: Maintaining the Continuous scientific self- learning.

125 responses



Objective 3: Acquiring the necessary qualification and Knowledge to promote for innovation in research and design and to prepare for MSC. And later ph D degrees.

125 responses



2.2. Criterion 2: (Graduate Outcomes)

2.2.1. Adopted Graduate Outcomes

In order to prepare students to achieve program educational objectives, the College has adopted a set of program outcomes since its establishment in 2017, namely, statements describing the knowledge and abilities that students should have acquired before they graduate. The Petroleum Engineering Undergraduate Curriculum Committee is responsible for establishing and revising the program outcomes. Factors that enhance the review and modification of outcomes include specifications in the **Iraqi National Accreditation Criteria for Engineering Education**, assessment data regarding the achievement of program objectives, and input from program constituencies such as students, faculty, and industry. Petroleum Engineering Program adopted the ABET Graduate Outcomes. The current student outcomes (1) through (7) are listed below as described in the following link:

https://en.eng.alayen.edu.iq/ .

1. **an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.**
2. **an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.**
3. **an ability to communicate effectively with a range of audiences.**
4. **an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.**
5. **an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.**
6. **an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.**

7. **an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.**

Student educational outcomes for each course are listed in table (2.1a) while table (2.1b) illustrates the courses relating to graduate outcomes.

Table (2.1a) Student educational outcomes for each course of PETROLEUM ENGINEERING PROGRAM.

OUTCOMES	**First Year**
Outcome 1	GE110, GE102, PE100, GE108, GE114, GE104, GE101, GE106, GE103
Outcome 2	GE106, GE108
Outcome 3	PE100, GE110, GE112
Outcome 4	----------
Outcome 5	GE114, GE103
Outcome 6	GE104, GE114, GE100, GE101, GE108
Outcome 7	GE103
OUTCOMES	**Second Year**
Outcome 1	PE200, GE202, GE204, PE206, GE208, PE201, PE203
Outcome 2	GE203, PE200, GE204, PE206, PE203

Outcome 3	PE206, GE201
Outcome 4	PE206,GE212
Outcome 5	GE208, PE206, PE201
Outcome 6	GE208, PE206, PE201
Outcome 7	----------
OUTCMES	**Third Year**
Outcome 1	PE300, PE304, PE306, PE308, GE302, PE301, PE302, GE303
Outcome 2	PE300, PE302, PE304, PE308, GE303
Outcome 3	PE302, PE308, PE310
Outcome 4	PE302, PE304, PE308
Outcome 5	PE300, PE302, PE304, PE301, PE306
Outcome 6	PE300, PE302, PE301, GE303, PE306
Outcome 7	PE302, PE304
OUTCOMES	**Fourth Year**

Outcome 1	PE400, PE402, PE404, PE406, PE408, PE410, PE401, PE405, PE403
Outcome 2	PE400, PE402, PE404, PE410, PE405, PE408, PE403, PE406
Outcome 3	PE410, PE402, PE405
Outcome 4	PE410, PE402, PE405
Outcome 5	PE410, PE400, PE402, PE404, PE405, PE408
Outcome 6	PE410, PE402, PE408, PE401, PE403
Outcome 7	PE410, PE405, PE402, PE404, PE408, PE401

Table (2.1b) Courses Related to Student educational outcomes of PETROLEUM ENGINEERING PROGRAM.

STAGE	COURSE CODE	COURSE NAME	GRADUATE OUTCOMES						
			1	2	3	4	5	6	7
FIRST STAGE	GE102	Mathematics I	X						
	PE100	General Geology	X	X	X			X	
	GE106	Engineering Drawing & Descriptive Geometry	X	X					
	GE104	Computer Programming I	X						
	GE101	Analytical Chemistry	X					X	
	GE108	Static & Dynamic Engineering Mechanics	X	X				X	
	GE114	Physics	X				X	X	
	GE110	English Language I			X				
	GE103	Electrical Technology	X				X		X
	GE112	Arabic Language			X				
SECOND STAHE	GE202	Mathematics II	X						
	GE208	Fluids Mechanics	X				X	X	
	GE203	Strength of Material	X	X				X	
	PE200	Structural and Petroleum Geology	X	X	X			X	
	GE204	Computer Programming II	X	X					
	PE206	Fundamentals of Petroleum Engineering	X	X	X	X	X		
	GE210	English Language II			X				
	GE212	Human Rights				X			
	PE203	Engineering Thermodynamics	X	X				X	

	PE201	**Petroleum Properties**	X				X	X	
THIRD STAGE	**GE302**	**Engineering Mathematics**	X						
	PE300	**Reservoir Engineering I**	X	X			X	X	
	PE302	**Drilling Engineering I**	X	X	X	X	X	X	X
	PE304	**Petroleum Production Engineering I**	X	X		X	X		X
	PE301	**Geophysics (1st semester)**	X				X	X	
	PE308	**Petroleum Engineering Economics**	X	X	X	X	X		
	GE310	**Technical English**			X				
	GE303	**Engineering Statistics**	X	X				X	
	PE306	**Well Logging**	X					X	
FOURTH STAGE	**PE400**	**Reservoir Engineering II**	X	X			X		
	PE402	**Drilling Engineering II**	X	X	X	X	X	X	X
	PE404	**Petroleum Production Engineering II**	X	X			X		X
	PE405	**Integrated Reservoir Management**	X	X	X	X	X		X
	PE408	**Numerical Methods and Reservoir Simulation**	X	X			X	X	X
	PE401	**Gas Technology**	X					X	X
	PE403	**Optimization**	X	X				X	
	PE406	**Secondary Oil Recovery**	X	X					
	PE410	**Engineering Project (Capstone Project)**	X	X	X	X	X	X	X

Note: Courses name and code will be listed in appendix A.

2.2.2. Relating GOs to PEOs

To be an effective engineer requires that the student achieve some level of proficiency in all the Graduate Outcomes (GO). Since each Program Educational Objective (PEO) relates in some way to post graduation work in the full capacity of engineering research or practice, it follows that every GO must relate to each PEO, otherwise it would be irrelevant and unnecessary. Therefore, the GO's relate to the PEO's according to the following table.

Table 2.2 Alignment of GO's relate to the PEO's

Graduate Outcome GO	Objective 1 PEO1	Objective 2 PEO2	Objective 3 PEO3
1	√	√	√
2	√	√	√
3	√	√	√
4	√		
5	√	√	
6	√	√	√
7	√		

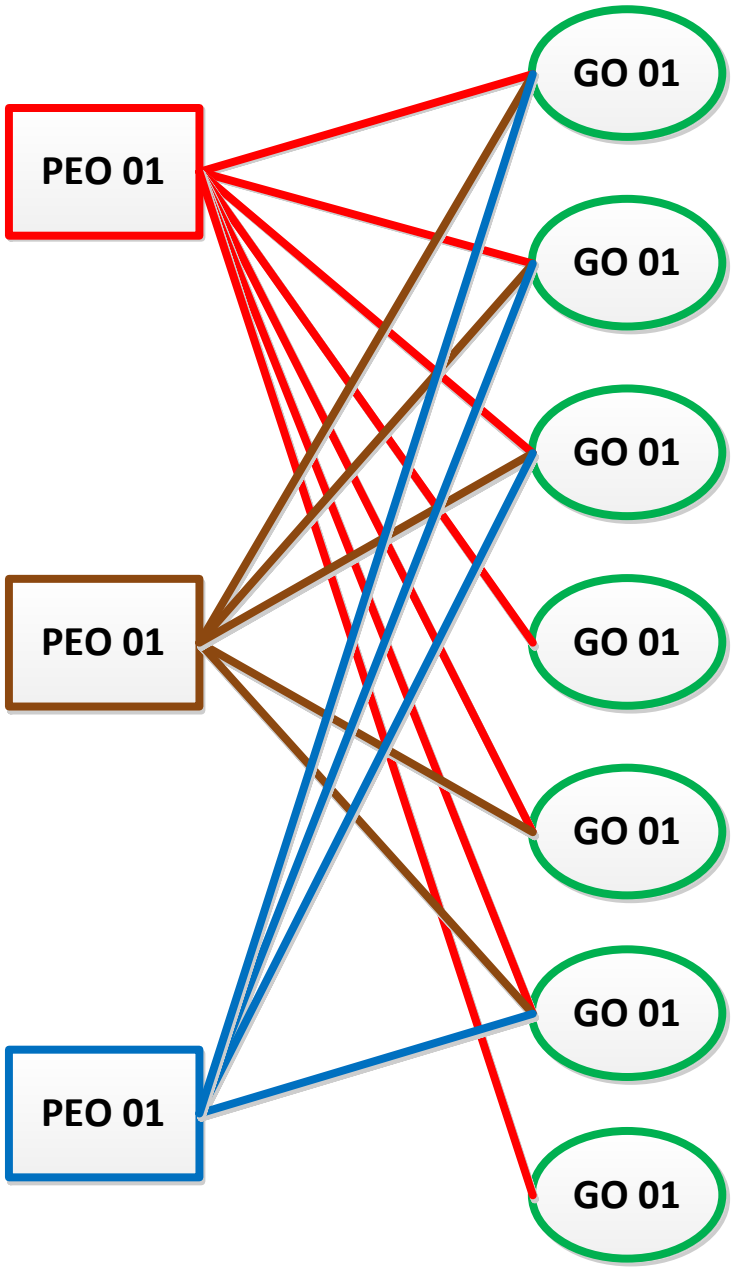


Figure (2.1): Relation between PEO to GO.

In summary, every GO relates to a corresponding PEO.

2.3. Criterion 3: Curriculum

Curriculum requirements identify subject areas suitable for engineering but do not prescribe specific courses. Faculty must ensure that program courses provide appropriate attention and time to each component, consistent with program and

institutional outcomes and goals. Students must prepare themselves for engineering practice through coursework, culminating in a comprehensive design experience that builds on the knowledge and skills acquired in previous courses and takes into account appropriate engineering standards and multiple real-world constraints.

2.3.1.Program Structure and Content

2.3.1.1. Study plan

Table 3-1 describes the study schedule for students in this program, including recommended course schedule information by academic year and semester, as well as the maximum enrollment for all courses in the program in the last two semesters. Lessons are taught. For more details see Appendix A and the following links:

https://en.eng.alayen.edu.iq/colleges/course_of_Study/12

Table 3.1: Curriculum - Petroleum Engineering Program - 2021-2022

Course (Department, Number, Title) .	Course is Required, Elective or a Selected Elective by an R, an E or an SE.1	Subject Area (Units – Total Weekly Hours)				Year of study	Maximum Section Enrollment for the Last Two Terms the Course was Offered[2]
		Math & Basic Sciences	Engineering Topics Check if Contains Significant Design (√)	General Education	Other		
First Year (First Semester)							
General Geology	R	4 – 5				2018-2019	
Mathematics I	R	3 – 4				2018-2019	
Computer Programming I	R	3 – 4				2018-2019	
Engineering Drawing and Descriptive Geometry	R		2 – 4 (√)			2018-2019	
Statics and Dynamics	R		2 – 3 (√)			2018-2019	

English Language I	R			2 – 2		2018-2019	
Physics	R	2 – 2				2018-2019	
Analytical Chemistry	R	3 – 4				2018-2019	
Arabic	R			1 – 2		2018-2019	
First Year (Second Semester)							
General Geology	R	4 – 5				2018-2019	
Mathematics I	R	3 – 4				2018-2019	
Computer Programming I	R	3 – 4				2018-2019	
Engineering Drawing and Descriptive Geometry	R		2 – 4 (√)			2018-2019	
Statics and Dynamics	R		2 – 3 (√)			2018-2019	
English Language I	R			2 – 2		2018-2019	
Physics	R	2 – 2				2018-2019	
Electrical Technology	R		3 – 4 (√)			2018-2019	
Arabic	R			1 – 2		2018-2019	
Second Year (First Semester)							
Structural and Petroleum Geology	R	3 – 4				2019-2020	154
Mathematics 2	R	3 – 4				2019-2020	154
Computer Programming 2	R	2 – 3				2019-2020	154
Fundamentals of Petroleum Engineering	R		2 – 3 (√)			2019-2020	154
Fluid Mechanics	R		2 – 4 (√)			2019-2020	154
English Language 2	R			2 – 2		2019-2020	154
Petroleum Properties	R	2 – 4				2019-2020	154
Eng. Thermodynamics	R		3 – 4 (√)			2019-2020	154

Human Rights	R				1 – 2	2019-2020	154
Second Year (Second Semester)							
Structural and Petroleum Geology	R	3 – 4				2019-2020	154
Mathematics 2	R	3 – 4				2019-2020	154
Computer Programming 2	R	2 – 3				2019-2020	154
Fundamentals of Petroleum Engineering	R		2 – 3 (√)			2019-2020	154
Fluid Mechanics	R		2 – 6 (√)			2019-2020	154
English Language 2	R			2 – 2		2019-2020	154
Strength of Materials	R		3 – 5 (√)			2019-2020	154
Human Rights	R				1 – 2	2019-2020	154
Third Year (First Semester)							
Petroleum Reservoir Eng.1	R		4 – 6 (√)			2020-2021	95
Petroleum Drilling Eng.1	R		4 – 6 (√)			2020-2021	95
Petroleum Production Eng.1	R		2 – 3 (√)			2020-2021	95
Well Logging	R	3 – 4				2020-2021	95
Petroleum Engineering Economics	R		2 – 2 (√)			2020-2021	95
Engineering Mathematics	R		3 – 4 (√)			2020-2021	95
Technical English	R			2 – 2		2020-2021	95
Geophysics	R	2 – 3				2020-2021	95
Third Year (Second Semester)							
Petroleum Reservoir Eng.1	R		4 – 6 (√)			2020-2021	95
Petroleum Drilling Eng.1	R		4 – 6 (√)			2020-2021	95
Petroleum	R		2 – 3 (√)			2020-2021	95

Production Eng.1							
Well Logging	R	3 – 4				2020-2021	95
Petroleum Engineering Economics	R		2 – 2 (√)			2020-2021	95
Engineering Mathematics	R		3 – 4 (√)			2020-2021	95
Technical English	R			2 – 2		2020-2021	95
Engineering Statistics	R		2 – 3 (√)			2020-2021	95
Fourth Year (First Semester)							
Petroleum Reservoir Eng.2	R		3 – 5 (√)			2021-2022	211
Petroleum Drilling Eng.2	R		3 – 5 (√)			2021-2022	211
Petroleum Production Eng.2	R		3 – 5 (√)			2021-2022	211
Secondary Oil Recovery	R		3 – 3 (√)			2021-2022	211
Numerical Methods and Reservoir Simulation	R		3 – 4			2021-2022	211
Engineering Project	R		2 – 3 (√)			2021-2022	211
Gas Technology	R		3 – 3			2021-2022	211
Integrated Reservoir Management	R		1 – 2(√)			2021-2022	211
Fourth Year (Second Semester)							
Petroleum Reservoir Eng.2	R		3 – 5 (√)			2021-2022	211
Petroleum Drilling Eng.2	R		3 – 5 (√)			2021-2022	211
Petroleum Production Eng.2	R		3 – 5 (√)			2021-2022	211
Secondary Oil Recovery	R		3 – 3 (√)			2021-2022	211
Numerical	R		3 – 4			2021-2022	211

Methods and Reservoir Simulation							
Engineering Project	R		2 – 3 (√)			2021-2022	211
Optimization	R		3 – 3			2021-2022	211
Integrated Reservoir Management	R		2 – 3 (√)			2021-2022	211
TOTALS-**ABET** BASIC-LEVEL REQUIREMENTS							
OVERALL TOTAL CREDIT HOURS FOR COMPLETION OF THE PROGRAM	177 Hours	55 Hours	104 Hours	16 Hours	2 Hours		
PERCENT OF TOTAL		31%	59%	9%	1.%		
Total must satisfy either credit hours or percentage	Minimum Semester Credit Hours						
	Minimum Percentage						

Note: All courses are required courses in the table above and there are no elective courses in the program.

2.3.1.2. Alignment with PEOs

The curriculum aligns with the program educational objectives is shown in the following table. See the following table:

Table 3.2: Curriculum Alignment with PEOs

Subject	**Objective**	**Objective 2**	**Objective**
First Year (First Semester)			
PE100	√		√

GE102	√	√	√
GE104	√	√	√
GE106	√		√
GE108	√		√
GE110	√	√	
GE114		√	√
GE101			√
GE112	√	√	
First Year (Second Year)			
PE100	√		√
GE102	√	√	√
GE104	√	√	√
GE106	√		√
GE108	√		√
GE110	√	√	
GE114		√	√
GE103			√
GE112	√	√	
Second Year (First Semester)			
PE200	√		√
GE202		√	√
GE204	√	√	√
PE206	√	√	√
GE208	√		√
GE210	√	√	
PE201	√		√
PE203	√		√
GE212	√		
Second Year (Second Semester)			
PE200	√		√
GE202		√	√
GE204	√	√	√
PE206	√	√	√
GE208	√		√
GE210	√	√	
PE201	√		√

GE203	√		√
GE212	√		
Third Year (First Semester)			
PE300	√	√	√
PE302	√	√	√
PE304	√	√	√
PE306	√		
PE308	√		√
GE302		√	√
GE310	√	√	√
PE301	√		
Third Year (Second Semester)			
PE300	√	√	√
PE302	√	√	√
PE304	√	√	√
PE306	√		
PE308	√		√
GE302		√	√
GE310	√	√	√
GE303	√		√
Fourth Year (First Semester)			
PE400	√	√	√
PE402	√	√	√
PE404	√	√	√
PE406	√	√	
PE408	√	√	√
PE410	√	√	√
PE401	√		
PE405	√	√	√
Fourth Year (Second Semester)			
PE400	√	√	√
PE402	√	√	√
PE404	√	√	√
PE406	√	√	
PE408	√	√	√
PE410	√	√	√

PE403	√		√
PE405	√	√	√

2.3.1.3 Attainment of GOs

The curriculum has been designed based fixed subject system; it was taking into consideration the sequence and level of the topics from one stage to the next stage.

2.3.1.4 Prerequisite Structure

In Petroleum Engineering program, Prerequisite for all subjects is a success in the previous education stage. Where students go to the highest stage:

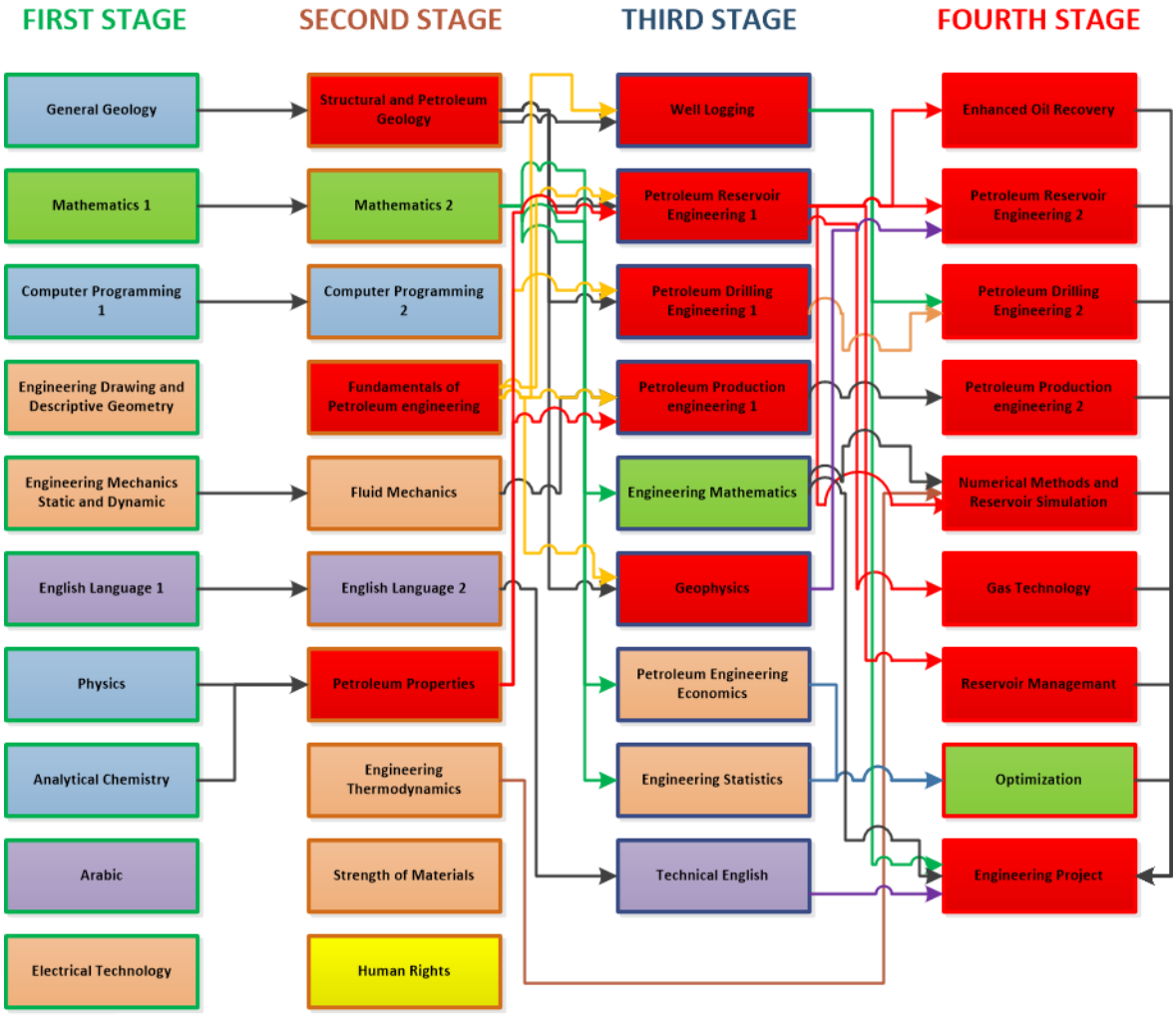
- In the case of success in all subjects
- In the case of loaded by one or two subjects.
- Figure (3.1) shows the prerequisite structure for four stages.

2.3.1.5 Subject Areas Requirements

The Petroleum Engineering program produces graduates who are prepared to enter the practice of petroleum engineering utilizing three major components of the program: (**1**) Foundation in the mathematical and basic sciences. (**2**) Engineering topics in both Analysis and design applications. (**3**) General education in the humanities, languages, and ethics; as can be seen in Table 3.1, Table 3.2, and Fig (3.1).

2.3.1.6 Major Design Experience

During the four years (especially in fourth year) of petroleum engineering program, students learn how to apply the basic engineering science and design principles to formulate a design problem, and then follow recommended process to complete the design project. Students are required to demonstrate their ability to use the knowledge of math, basic science, and engineering design courses for the whole undergraduate curriculum. Some professional components if not taught in other courses, such as life-long learning to keep knowledge up to date, are covered in this course. A poster presentation is required by the end of each course.



SUBJECT AREA	COURSES		HOURS		CREDITS	
	NO.	%	NO.	%	NO.	%
PETROLEUM ENGINEERING	16	40	1635	45	78	46
MATHEMATICS	4	11	405	12	21	13
GENERAL ENGINEERING	8	22	670	20	28	17
GENRAL SCIENCE	5	14	480	14	25	15
LANGUAGES	4	11	240	7	14	8
GENARAL EDUCATION	1	2	60	2	2	1
TOTAL	36	100	3490	100	168	100

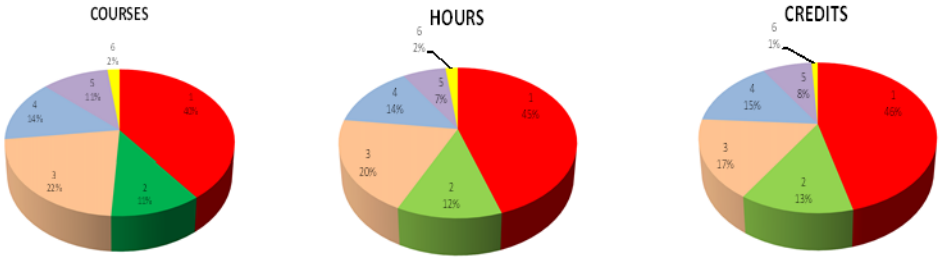


Fig. 3.1: Curriculum Structure Pre-requisites.

The student acquires an accumulated experience in engineering design in laboratories during the four years. The bulk of the experience which gained by the students is presented in the final year project, where always these projects are of a practical nature.

2.3.1.7 Teaching and Learning Strategies

Teaching strategies varies from course subject to another. The traditional form of teaching in Petroleum Engineering program often involves lectures being given to large groups of students, accompanied by tutorials and workshops, with some independent study. However, there are several other modes of delivery that can also be very effective such as the flipped classroom and problem-based learning.
The materials that will be available for review include:

- Course syllabi
- Textbooks
- Example assignments and exams
- Examples of student work.

Course Syllabi; See Appendix A, all the requirements are listed.

2.3.2 Relating Courses Learning Outcomes (CLO) to GOs

In Petroleum Engineering program, there is a special form to be updated on yearly basis by the instructor. This form is called Course Syllabus CS and it must be submitted by the start of the academic year. The form describes every aspect of the course including the course learning outcomes (CLOs) and these are linked to the GOs by the instructor him/her-self. The scientific committee checked these CSs for all courses and then the scientific documentations are updated when the approved.

2.4. Criterion 4: Continuous Improvement

The Petroleum Engineering College PEC at the Alayen University continuously assesses the extent to which the graduate outcomes are being attained. This aims to improve the ongoing educational program of bachelor degree of Science (BSc) in Petroleum Engineering. The College of Petroleum Engineering at University of Al Ayen is committed to deliver high quality engineering education. Continuous improvement is essential to maintain and improve the institutional quality. In order to

achieve the institutional effectiveness vision, the College of Engineering adopted ABETS criteria for its academic accreditation. The goal of the program is also to fulfill the Iraqi National Accreditation Criteria for Engineering Education (INACEE) developed by the Iraqi Accreditation Council for Engineering Education (ICAEE).

The program regularly uses appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained. The results of these evaluations are systematically utilized as input for the continuous improvement of the program. The program always uses appropriate, documented methods to assess and evaluate student learning outcomes. The results of this assessment will be systematically used as input for continuous improvement of the course. The available information can also be used to support continuous improvement of the project. Effective assessment uses measures that are appropriate, relevant, meaningful and related to the outcomes being measured. Modeling methods are also used as assessment methods.

2.4.1 Achievement of Graduate outcomes

2.4.1.1 Assessment Processes

The improvement of BSc program in Petroleum Engineering is a continuous task carried out by PEC at the Alayen University through a scientific committee and any other branched committees (where appropriate). Assessment is one or more methods of identifying, collecting, and organizing data to evaluate student learning. Effective assessment uses measures that are appropriate, relevant, meaningful and related to the outcomes being measured. Quantitative methods can be adopted as an assessment method. Assessment, on the other hand, is a method or methods of interpreting the data and evidence gathered from the evaluation process. Assessment determines how student outcomes are achieved. Evaluation is based on decisions and actions related to program improvement.

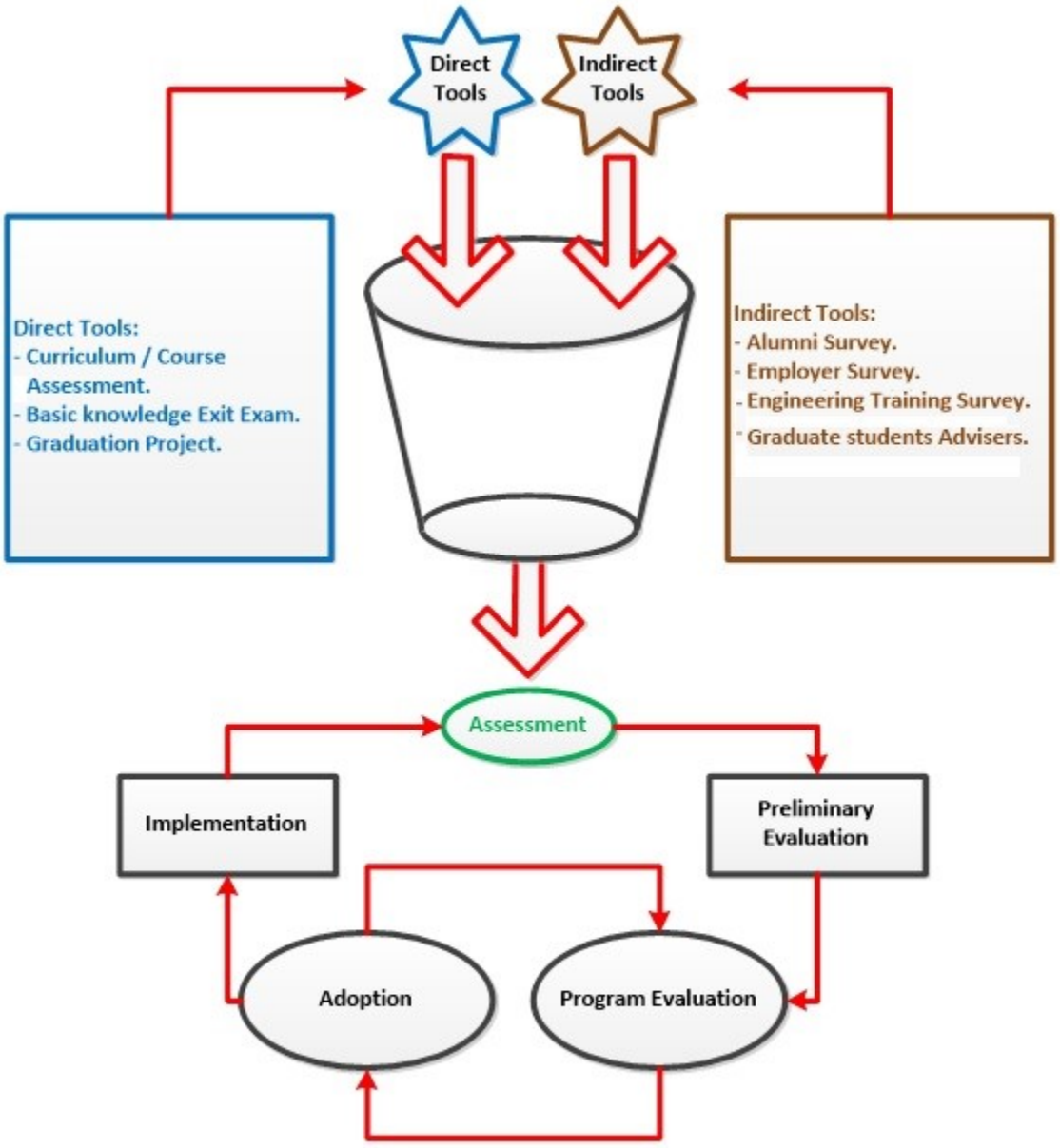


Figure (4.1) Assessment and evaluation Process.

Graduate Outcomes

The Bachelor of Science in Petroleum Engineering Program employs several tools to assess the achievement of the graduate Outcomes (GOs). The system used to assess the achievement of the student outcomes relies on obtaining feedback from the program constituents using a variety of tools. This system consists of two assessment levels: 1. Course-level assessment 2. Program-level assessment. The elements of the

course and program assessment are summarized in Table 4.1 and Table 4.2, respectively.

Table 4.1: Elements of the Course Level Assessment

Direct Course Level Assessment	
Objectives	Assess the achievement of the course learning outcomes (CLOS)
Person in Charge	Course Instructor and Course Coordinator
Coordination	Instructor/Coordinator>>>Assessment Coordinator in Department >>> Chairman/Accreditation Committee >>> Department Council of Faculty Members.
Assessment tools/indicators	- Level of achievement of course learning outcomes from instructor point of view. - Level of achievement of course learning outcomes from students' point of view. - Degree of coverage of course contents from instructor point of view. - Relation of individual assessment Questions/items to course learning outcomes. - Achievement of course learning outcomes based on students' grades on assessment items. - Identification of issues of requiring improvement. - Proposals for improvements based on assessment results. - Students' evaluation of courses and instructors.
Frequency	Every time the course is taught.
Outcome	Course Learning Outcomes Assessment Report.

Table 4.2: Elements of the Program Level Assessment

Program Level Assessment	
Objectives	Assess the achievement of the student outcomes (SOS).
Person in charge	Assessment Coordinator in Department/Accreditation Committee/ Department Chairman
Coordination	Assessment Coordinator in Department Chairman/Accreditation Committee/Department Council of Faculty members
Assessment tools	1. Coverage of program learning outcomes based on course learning outcomes. 2. Achievement of program learning outcomes based on course learning outcomes assessment results. 3. Alumni survey. 4. Employers' survey. 5. Exit survey of graduating students. 6. Feedback from visiting/invited experts, including reports of visiting accreditation teams. 7. Feedback from department advisory board. 8. Students' internship/training survey by employers.
Frequency	Varies from every year (i.e., Exit Surveys) to every few years (i.e. Employer Survey).
Outcome	Assessment Reports as Appropriate

2.4.2 Actions for Continuous Improvement

This is the first year that ICAEE standards are adopted and mapped with course learning outcomes and ABETS student outcomes. Taking into consideration also that it usually takes one year for assessment and evaluation and another year to implement the action required, this year was an assessment/Evaluation year and the results can be seen in **Figs. 4.2 – 4.5.** The college council adopted 60% as the minimum average score in each GO and from the figure it can clearly be seen that although the course assessment by student (CAS) and the passing ratios (PR) are typically within the acceptable limits, the score and course assessment by faculty (CAF) are not. This typical conclusion varied on a wide range from stage to another. For the 1st year class, although the PR and CAS are between 60 and 80%, we can see that the scores are low and that CAF is also under expectations. For the 2nd year class, 3rd year class and 4th year class, the same phenomenon replicate itself with more extreme variations. Some of the results might be justified by the fact that blended teaching is relatively new to our educational system but this shortage in scores and CAF required a root solution and the college council decided to increase the number of faculty training courses/workshops, take more care of the laboratories and maintain testing devices and instruments to acquire the GLP standards. In addition to that, more efforts are done to increase the number of laptops in the computer lab and give more access to the library resources. One distinguished result was getting a fund to train 19 staff members from the College of Engineering/ University of Al-Ayen. In addition to that, course delivery modes are going to be reviewed and necessary modifications shall be implemented next academic year to take into account what have we learnt from our blended teaching this year and the improvements resulting from the training courses.

2.5. Criterion 5: STUDENTS

5.1 Admission Process and Enrollment

Students are admissible to the college of engineering according to a central admission process called (grades comparison) managed by the Iraqi Ministry of Higher Education and Scientific Research /Studies, Planning, and Prosecution Office / Central Admission College. According to what qualifies, the attained average and the student's desire to choose the college and department mentioned in the application

form through the electronic portal of the Directorate of Studies, Planning and Follow-up based on the admission plan.

The accepted students are coming from:

1. High school graduates (scientific disciplines only).
2. Petroleum Training Institute graduates (who are only in top 10% rank).
3. Distinguished employees in Iraqi governmental offices who are originally graduate of high schools.

An applicant for admission to an undergraduate program at Petroleum Engineering College must satisfy the following minimum requirements:

1. He should have an Iraqi secondary school certificate, or its equivalent (scientific disciplines-applied branch only).

2. The number of students accepted is limited to the number of seats available as decided by the Capacity Committee – ministry of higher education and scientific research according to certain variables related to college facilities and other factors.

3. The applicant must submit the required documents to the Admission office within a specified period.

4. Applicants who completed high school outside Iraq must complete twelve years of primary and secondary education in an accredited school. They should also provide a certificate from the Iraqi Ministry of Education. Additionally, take necessary quizzes and courses.

https://alayen.edu.iq/

Useful online links related to admission

1. Information forms for new students (which includes many important forms for students' admission) at:

   https://alayen.edu.iq/

2. How to create a student profile:

   https://alayen.edu.iq/

After the list of admitted students is announced, the registration committee consists of ten members and the associate dean has only ten days to meet with the admitted students and register with the college. The numbers of the newly enrolled students in the past six years are shown in Table 5.1.

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

No.	Academic Year	Percent Rank in Secondary School (minimum)	No. of Enrolled Students
1	2017 – 2018	72	32
2	2018 - 2019	72	51
3	2019 – 2020	72	46
4	2020 – 2021	72	54
5	2021 - 2022	72	43

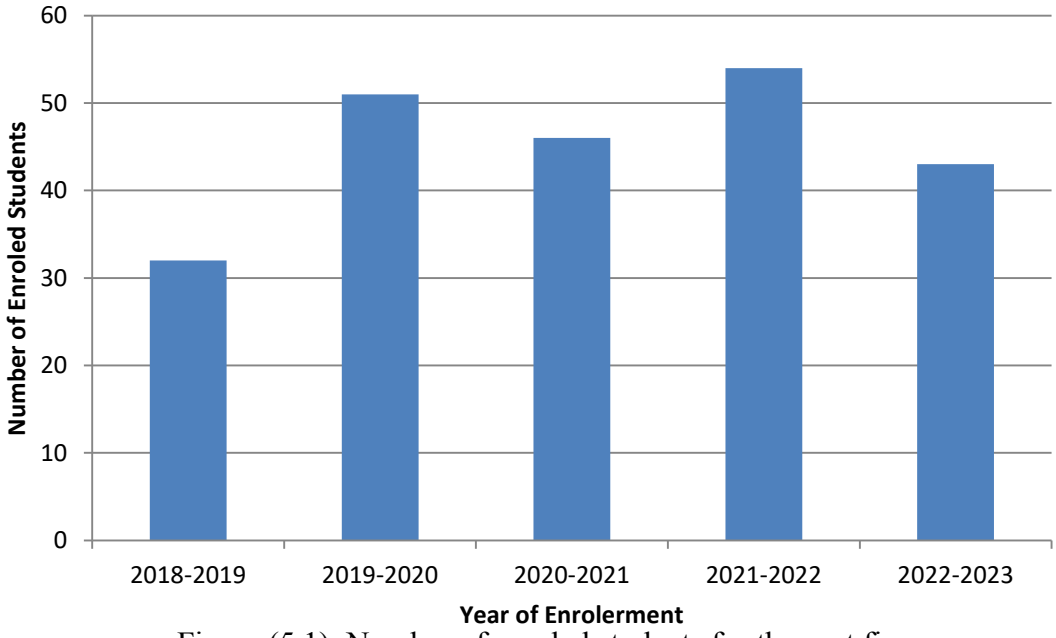


Figure (5.1): Number of enroled students for the past five years
Note: 72% is minimum high school rank for admission for al years

2.5.2 Student Performance and Progress

The academic system, the length of study in the college and the permitted years of wastage:

1- The academic system followed in the college, is the annual system consisting of two semesters. Each academic term is lasting 15 weeks.

2- The duration of study in the college is four years.

3- For the student to succeed to a higher stage of study, he/she is to succeed in the academic subjects of the stage, or they may fail in two academic subjects. In this case, he/she is considered successful by crossing to a higher stage. The student must succeed with the transit courses in the following academic year. In the case of failure, his/her enrolment in the college is permanently written off.

4- If a student does not want to complete his studies at the university, is suspended or fails, he has the right to plan to enter another university. There will be no deferrals or failing grades during the student semester. The deferred or failed academic year, is not counted within the time limit allowed for the student.

5- The student may postpone his/her studies for one year after presenting reasons that are convincing by the College Council. The President of the University, based on the recommendation of the College Council, may postpone the student's study for a second year. The Minister of Higher Education and Scientific Research or whoever authorizes him and based on the recommendation of the University Council and for legitimate reasons that he/she is convinced to postpone the student's study for a third academic year, provided that the student submits a request for postponement in all cases before (30) thirty days at least from the start of the final exam.

6- A student may fail two years in the college, provided that they are not consecutive.

Instructions and regulations that the student must adhere to during the study

First: Examination Instructions (134) for the year 2000 and their amendments, the most important of which are:

A. Clause (6): The minimum passing score that the student must obtain in order to succeed in any academic subject is (50%) fifty percent.

B. Clause (9): A student is considered to have failed in any academic course if his/her absence exceeds 10% of the hours prescribed for that course without a legitimate excuse and 15% with a legitimate excuse approved by the College Council.

C. Clause (12): A student has no right to postpone the second attempt of final exams in any way.

D. Clause (19): A student's relationship with the college ends in one of the following two cases:

1. If he/she fails two consecutive years in his/her class.

2. If the student exceeds the total period prescribed for study in his/her major and half of this period (i.e., six years) and the years of postponement and non-failure are not counted as part of that.

E. clause (20): If it is proven that the student cheated or attempted to cheat in any of the daily, weekly, monthly, quarterly, or final exams, he/she shall be considered as failing in all courses for that year, and if this is repeated, he/she shall be dismissed from the faculty and permanently closing his/her records.

These regulations and others are published and distributed throughout the college campus and the adviser of the stage (for each stage there are several advisers from the faculty staff members). Useful online links related to these regulations at:

https://alayen.edu.iq

Second: Instructions for student discipline in the institutions of the Ministry of Higher Education and Scientific Research No. 160 of year 2007 amended, the most important of which are:

A. The student shall abide by the internal laws and regulations, instructions and orders issued by the Ministry of Higher Education and Scientific Research and the University.

B. Not to prejudice religious beliefs, national unity, or national sentiments by bad or intentionally provoking sectarian or ethnic strife, by word or deed.

C. Not to harm the reputation of the ministry or its institutions by word or deed, inside and outside it.

D. Avoiding everything that is inconsistent with university behavior, with high discipline and respect for the administration, faculty and staff, collegial relations and cooperation with students.

E. Maintains university and college educational resources and properties.

F. Adherence to the uniform prescribed for students by the university.

Third: Examination and grading system:

The examination and grading system of the program is governed by the following regulations:

1. Success in a course depends on student's performance in course work and the final exam. A combined final letter grade must be assigned to the student at the end of the semester.
2. The total grade points for a course are 100. These points are allocated among different activities like assignments, quizzes, midterms, laboratory reports, report writings and exams. Generally, the final exam and midterms have 40% and 20% weightage, respectively, out of total 100%.
3. The passing grade for each course is 50% out of total 100%.

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.
6. Scientific Extracurricular activities during the semester and summer times.

The program grading system follows the requirements of the college of petroleum engineering is listed in Table 5.2.

Table 5.2: Grading System

Marks	Rating
90 - 100	Excellent
80 - < 90	Very good
70 - < 80	Good
60 - < 70	Fair
50 - < 60	Pass
<50	Fail

The total final average of a student in a specific annual subject is determined by dividing the cumulative marks multiplied by annual subject credit-hours (units) of all the registered annual subjects in that year by the total credit-hours (units) of those annual subjects. To elucidate the average related calculations, the average calculation of a hypothetical student for a specific year can be shown in Table 5.3. A student can repeat a subject in which he has a "Fail" grade. The new grade will negate the old grade in the student's transcript.

Table 5.3 An **example** of annual average calculation

Subject	Credit hour (units)	Marks	Marks * Credit hour
1	4	75	4 * 75 = 300
2	4	80	4 * 80 = 320
3	5	88	5 * 88 = 440
4	5	65	5 * 65 = 325
5	6	90	6 * 90 = 540
Total	24		1925

This the student average of this year is (1925/24 = 80.208)

Attendance:

It is very important for engineering students to attend all meetings regularly. For this program, students must attend 85% of all courses in the program. Students who do not meet the course requirements will not be allowed to take the final exam for that course. In addition, students who have not participated in the final examination of the subject shall not take the make-up examination for the subject if they are absent for valid reasons approved by the College Council. However, students are required to attend all laboratory courses. Students who do not attend a lab class will not be able to submit a lab report for a grade.

Summer training performance evaluation:

Each student must participate in the summer training in an external organization administered by a college committee. A student is guided and monitored by a faculty member, acting as a summer training supervisor from the college and a representative from the external organization. Each summer training supervisor is assigned three (3) students for the program.

The student's performance is evaluated as follows (Scientific Extracurricular activities):

1. A field evaluation of the summer training by the representative of the external organization is submitted to the college at the end of the training.
2. By visiting the student's working site in regular basis by the summer training supervisor.
3. The final evaluation is done by reviewing a written report and an oral presentation by all faculty members of the college at the first two-week of the semester following the summer training.

The Evaluation process and assessment measures may be summarized as follows:

Table 5.4: The Subject evaluation process

Subject type	Progress Exam-1	Progress Exam-2	Activities	Lab.	Final Exam	Final Grade

Lab. Subject	15 %	15 %	10 %	10 %	50%	100%
Regular Subject	15 %	15 %	10 %		40%	100%

Students who fail or were not able to attend the final examination are allowed to take a second attempt exam. If the student fails to get 50% in the last attempt, he/she will be considered as (FAIL) in that subject. The student is allowed to transfer/load two failed subjects to the next year level, but if he/she failed in more than two subjects, the student must repeat the academic year. Fail to succeed in two successive years, the student will be dismissed from the university.

Participants and Graduation Trends

Table (5.5) shows participants and the percentage of success for each class over the past five years of petroleum engineering college – Bachelor's program.

Table 5.5: Participants and the percentage of success for each class

Academic year	No. of participants (students)/Percentage of success%				
	1st year	2nd year	3rd year	4th year	Total
2017/2018					
2018/2019					

2019/2020					
2020/2021	54/100 %	46/100 %	51/100 %	32/100 %	183
2021/2022	43/100 %	54/100 %	46/97 %	51/98 %	194

Monitor the Progress of Students

Student progress will be monitored by members of all relevant courses in the College of Petroleum Engineering, who will return final grades at the end of the academic year to the exam board, who will check each student's record to keep up educate. Tuition is also provided to counselors to help them monitor student progress. In order for the student to study the course with appropriate knowledge, he must be present at all times and must not be absent from class repeatedly for a period not exceeding 15% of the total time of the academic year.

2.5.3 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 college of engineering – Alayen University 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 college if the curriculum and credit hours of the two colleges are similar in more than 80%.

Transfer and scientific set-off standards

First: - Transfer procedures

1- The transfer process must start from the student's original college. A letter opposing the transfer of a student from his alma mater to the corresponding faculty must provide the educational material that the student has passed and the number of courses included for the purpose of scientific research. All procedures must be completed electronically through the website established by the Ministry of Higher Education and Scientific Research.

2- Only successful students (from the first stage to the second and from the second stage to the third) are entitled to transfer.

3- The transfer order for the student from his/her original college is issued after the issuance of a letter of no-objection for the transfer from the college to which he/she wants to transfer to. It is not permissible to register the student in the college to be transferred till the transfer order and his/her going away from the original college are issued.

4- Top students in the departments (Physics, Life Physics and Applied Sciences) are entitled to transfer to the college and be accepted into the electrical engineering department and exclusively through the Ministry of Higher Education and Scientific Research.

5- Students returning to Iraq, who continue to study in the morning shift outside Iraq and studying in one of the recognized universities have the right to transfer to the college provided that their pass rate of students is within the minimum limits for admission to the college and must be through the ministry exclusively.

6- Faculty members' sons/daughters are entitled to transfer to universities in the governorate of their residence in the academic year in which they are admitted, provided that the difference in their pass rate does not exceed the minimum for admission to the college by only (5) five degrees.

Second: Scientific Set-Off

A scientific set-off/clearing is intended to make a comparison between the academic courses that the student studied in the original college and in the college to be

transferred to. It is the specialty of the scientific committee formed in the department exclusively according to the following:

1- Admission of the student to the same academic stage. If the academic courses are identical between the two colleges (transferred to and from) or differ in one or two courses with the fact that the academic system is identical.

2- If the difference in academic courses between the two colleges is more than two methodological courses, then the student has the choice between getting back him/her to a lower stage of study or cancelling his/his transfer to the college, in the event that he/she chooses to transfer to a lower stage of study, the academic year is not counted within the total time limit allowed for the student.

3- The subjects (human rights, democracy, computer, Arabic language, English language) are not included in the scientific clearing account and the student will be demanded to them during his/her study years.

Table (5.6): Number of Students transfer to and transfer from Petroleum college – Al Ayen University.

	2018-2019	2019-2020	2020-2021	2021-2022	2022-2-23
Students transfer to	0	4	0	0	?
Students transfer from					

Extracurricular Activities

The fact that students spend 30% of their waking hours in college classrooms provides many options for students to spend time outdoors. Students who participate in study abroad programs demonstrate growth in confidence, teamwork, personal maturity, and goals.

Participating in extracurricular activities gives college students the opportunity to meet and connect with other students, explore areas of interest, and contribute to the school and community. With so many options and a seemingly ever-increasing

workload, it's easy for students to get caught up in opportunities outside the classroom, compromising their success in education

2.5.4 Students Advising

During the past years, the college of engineering had an educational advising scheme where one or two advisors were assigned to give advice to one level of study (1st, 2nd, 3rd, or 4th) year. Starting from year 2017-2018, the college has the intention to apply a new scheme of advising system with the following steps:

1. In each stage, an advising and guidance committee (Chief Stage Advisor "CSA") is formed to be responsible of arranging the work of the advisors, delivering its reports to the (Senior College Advisor SCA) of the college, and its recommendations of solving any problems that may face both the advisors and the students.

2. The Chief Advisor of the stage distributes the students on the selected faculty members (advisors) such as each advisor is assigned a number of advisees. Each two weeks the advisor meets her/his assigned advisees according to a pre-scheduled appointments.

There is another important thing in our advising system. It is the Female Student Affairs adviser and committee which are responsible for all affairs regarding to female students.

The following figure demonstrates the organization of the advising unit system in our college.

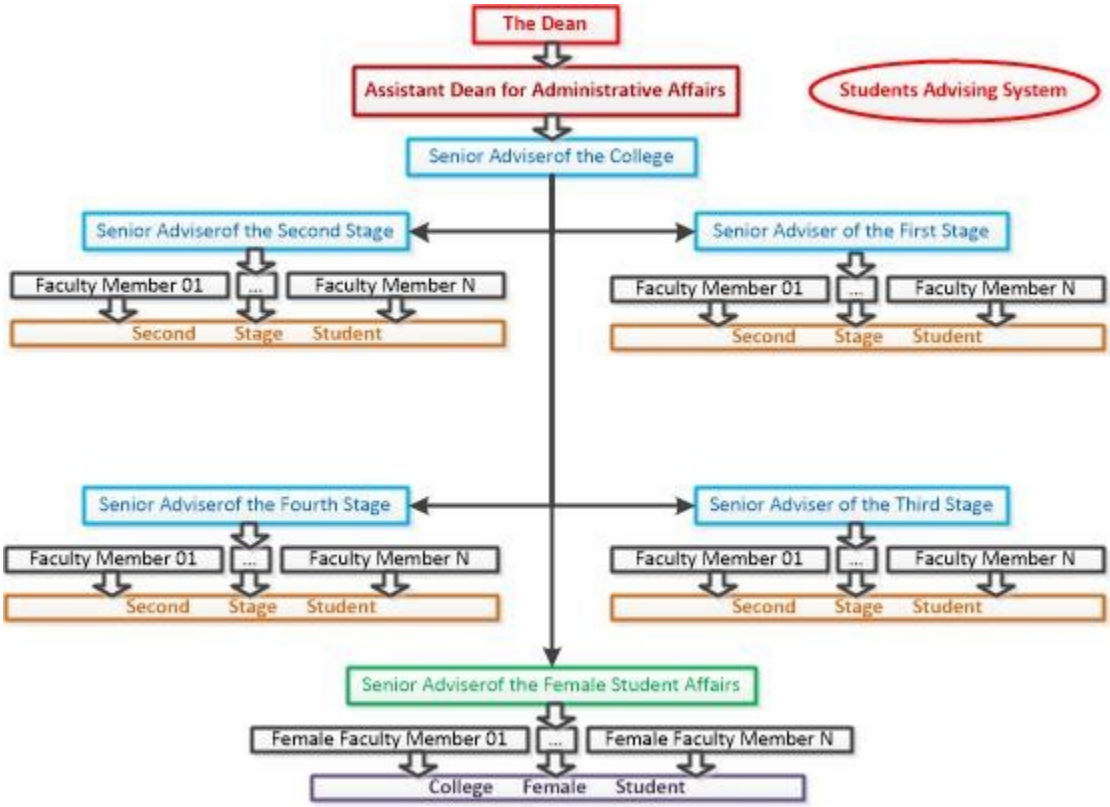


Figure (5.2) Structural of advising unit in college of petroleum engineering.

Student advising unit have many important activities, some of these important activities are:

1. The advising unit at the College of Engineering contacts the stage and provide file for the new students.

2. At the stage level, there is an advising committee which distributes the students among faculty staff.

3. For each student a file is assigned. The file contains all required information pertinent to the student regarding academic progress, behavior, and attitude.

4. The advisor meets the student on regular basis and on demand to monitor his/her progress, solves any problems the student is facing, and advises him/her in any curricular/ extracurricular matters. These appointments can be classified as:

Evaluation Meeting: Regular (weekly) meetings between instructors and advisors of the class with students. Each two weeks, consultant submits a report to the senior advisor of the stage. The senior advisor of the stage

submits a monthly report to the senior advisor of the college during a meeting of Advisory and Oversight Committee. Also there is a senior advisor for the female student which is responsible for all female students in the college and has a direct connection with the senior advisor of the college. There are also monthly consultation meetings with the Dean.

5. All these programs are well documented and kept in the department.

Table (5.7) shows the ratio of the number of students to the number of faculty and degrees in the College of Petroleum Engineering in the academic year 2017-2022. The proportion of students classified by science and mathematics to the total number of students in the School of Petroleum Engineering in the past five years is shown in Table (5.7).

Table 5.7: Ratio of PEC members according to their qualification to the number of students at the past five years

Academic year	Number of students	Number of students per 1 PEC member (ph. D.)	Number of students per 1 PEC member (M.Sc.)
2017/2018	32	1:2	1:2
2018/2019	83	1:6	1:5
2019/2020	129	1:9	1:8
2020/2021	183	1:14	1:12
2021/2022	226	1:17	1:15

Table 5.8 Ratio of PEC members according to their qualification to the number of students at the past five years

Academic year	Number of students	Number of students per 1 Assist. Prof.	Number of students per 1 Lecturer	Number of students per 1 Assist. Lecturer
2017/2018	32	1:2	1:2	2
2018/2019	83	1:6	1:5	5
2019/2020	129	1:9	1:8	8
2020/2021	183	1:14	1:12	12
2021/2022	226	1:17	1:15	15

2.5.5 Graduation Requirements

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

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

The Registration Office and Examination Committee of PEC maintain a complete file on the academic program and progress of each student. This file contains all academic records and related correspondence and documents for the student. The Dean of PEC evaluates the academic records for each student as given in Table 5.6 of the Total Credits Required for Graduation. This evaluation also ensures that the PEC program criteria are fulfilled.

Table 5.8: Total Credits Required for Graduation

Class	No. of Subjects	No. of Units	No. of hours/week			
			Total	Theoretical	Tutorial	Lab.
1st year	10	44	39	18	3	9
2nd year	10	39	30	17	6	7
3rd year	9	44	30	20	6	4
4th year	9	43	31	19	7	5
Total	38	170	130	74	22	25

Table 5.7 shows the records of the total number of full-time students enrolled in the program and the corresponding number of graduates over the two academic years of 2020/2021 and 2021/2022.

Table 5.9: Total enrolled students and corresponding graduates over the past two academic years.

Academic year	No. of Full-time Students	No. of Graduates
2020/2021	183	32
2021/2022	194	50

Graduation average is calculated at the end of program as shown in table 5.10.

Table 5.10: A percentage of yearly average

Academic year	Percentage of Yearly average
1st year	10%
2nd year	20%
3rd year	30%
4th year	40%
Total	100%

To explain calculation of the graduation final average, assume a hypothetical student has a 4-year average values as shown in Table 5.11.

Table 5.11. An Example of graduation average calculation

Academic year	Yearly average	Percentage of Yearly average
1st year	77	0.1*77=7.7
2nd year	65	0.2*65=13
3rd year	85	0.3*85=25.5
4th year	91	0.4*91=36.4
Final Average		82.6

So, the graduation average and its rating are 82.6 and very good, respectively

2.6 Criterion 6: Faculty

Qualified and competent faculty members are the key to the success of the Petroleum Engineering College. Detailed qualifications of the faculty members can be found in the following university of Anbar website:

https://alayen.edu.iq/staff/view_list/3

2.6. Faculty Qualification

The faculty's members teach subjects, conduct research in their specialty areas, and mentor and supervise students at undergraduate levels of the offered programs. The faculty specialization and expertise cover the following Petroleum Engineering disciplines:

1. Reservoir Engineering Evaluation, Management, and Development.
2. Production Engineering – Downstream processes, Midstream processes, and Upstream processes.
3. Drilling Engineering – Vertical, inclined, Directional, and Horizontal wells.
4. Stimulation processes and Enhanced oil and gas recovery.
5. Well logging and logs interpretation.
6. Petroleum and gas geology.
7. Geophysics and oil and gas exploration.

Qualifications of Petroleum Engineering College faculty are adequate to cover all the curricular areas of the program and also meet any applicable program criteria. The classification of the faculty member in the petroleum engineering college according to qualification is included in Tables 6.1. While table (6.2) illustrates the classification of the petroleum engineering college according to scientific rank. The distribution of the petroleum engineering college faculty as full time or part time is given in table (6.3).

Table 6.1 classification of the faculty in the petroleum engineering college according to qualification

qualification	No.
Ph. D.	13 (10 full time, 3 part time)
M. Sc.	10 (6 full time, 4 part time)
B. Sc.	11 (all full time)
total	34

Table 6.2 classification of the faculty in petroleum engineering college according to scientific rank.	
qualification	No.
Professor	5
Assistant Professor	8 (5 full time, 3 part time)
Lecturer	
Assistant Lecturer	10(6 full time,4 part time)
Assistant Researcher	11
total	34

Table 6.3 Distribution of the faculty in petroleum engineering college as a Full Time and Part Time.			
	Full time	Part time	Total
Petroleum Engineering College	27	7	34

Petroleum Engineering College research and areas of interest are detailed in Table 6.4. Petroleum Engineering College staff members are given in Table 6.5.

Table 6.4: PEC Research and Areas of Interest					
No.	**PEC member name**	**Rank**	**Degree**	**Position**	**Teaching, Research, and Areas of Interest**
1	Firas Faeq K. Hussain	Assist. Prof.	Ph.D.	Dean	
2	Najeh Al-Ali	Assist. Prof.	Ph.D.	Assistant Dean for Scientific Affairs	Properties of oil
3	Asaad Shaker Hameed	Assist. Prof.	Ph.D.	Assistant Dean for Administrative	

				Affairs	
4	Ahmed Najam Nimr	Assist. Prof.	Ph.D.		Reservoir simulation
5	Edmon Mtayous Salloum	Assist. Prof.	Ph.D.		Production2 Extraction Gas Technology
6	Emad Sleman Nofal	Assist. Prof.	Ph.D.		Reservoirs 1 Reservoirs 2
7	Abd-Al Hussein Naeema Shnawa	Assist. Prof.	Ph.D.		Synthetic geology Oil Economics English 3
8	Ali Mohammed Hassan	Assist. Prof.	Ph.D.		Palpation of wells
9	Mortada Dghaem Abdullah	Assist. Prof.	Ph.D.		Geophysics Foundmetments
10	Deyaa Khafeef Khashan	Assist. Prof.	Ph.D.		Production 1 Reservoir management
11	Shaker Hawala	Assist. Prof.	Ph.D.		Human Rights
12	Ra'aed Hameed Alawi	Assist. Prof.	Ph.D.		Drilling 1 Drilling 2
13	Ismail Abdel Hussein Radi	Assist. Prof.	Ph.D.		Fluid Mechanics Thermodynamic
14	Ali Jaafar Ghafil	Assist. Teacher	M.Sc.		Mathematics 2
15	Moayed Abdel	Assist.	M.Sc		Engineering

	Hassan Galata	Teacher	.		Mathematic
16	Muhannad Kasim Aliwi	Assist. Teacher	M.Sc.		Computers 2
17	Hasan Fadhil Saad	Assist. Researcher	B.Sc.		Laboratories'
18	Qutaiba Abd Rasool	Assist. Researcher	B.Sc.		Laboratories'
19	Moammal Abbas Maktouf	Assist. Researcher	B.Sc.		Laboratories'
20	Sarmad Khadim Dhyab	Assist. Prof.	Ph.D.		Lecturer
21	Nabeel Ibrahim	Assist. Prof.	Ph.D.		Lecturer

Further details of faculty members can be found in their CVs in **Appendix B**.

Also, can be found in

https://en.alayen.edu.iq/staff/view_list/12

Faculty's CVs follow the format suggested by ABET and show their qualifications, achievements, and some of their recent publications. The program is composed of faculty members some of them have earned their degrees from various highly ranked reputable international universities.

2.6.2 Faculty Workload

The faculty workload for the first and second semesters of the academic year 2023-2024 is shown in **Table 6-2**. Following the University-wide rule, the course load is distributed in accordance with faculty ranks: 8 credit hours minimum for a professor, 10 credit hours minimum for an assistant professor, minimum of 12 credit hours for a lecturer and 14 credit hours minimum for an assistant lecturer. The teaching load of faculty holding administrative duties, including Deans and Vice-Deans of Colleges,

directors of administrative units, coordinators of programs, and others who are assigned special duties by the Chancellor are reduced by 3 to 6 credit hours, depending on the position. Faculty members are generally assigned teaching assistants to assist in grading and tutoring.

A faculty member with more than the minimum course load is compensated financially for the extra credit hours. Apart from fulfilling teaching responsibilities, petroleum engineering college expects all of its faculty members to conduct high quality research and participate in college services. Table 6-2 shows the distribution of faculty activities in teaching, research, and other work. It is clear from the workload that most of the faculty members spend on an average 60% of their time in teaching related activities, 32% in research activities, and the rest on other university and community service activities.000

Table 6.1: Faculty Qualifications – Petroleum Engineering Program

Faculty Member Name	Highest Degree Earned, Field and year	Scientific Rank[1]	Type Of Academic Appointment[2] PS or TS[2]	FT or PT[3]	Years of Experience			Professional registration/ certification	Level of Activity[4] H, M, or L		
					Govt./Ind. Practice	Teaching	This Institution		Professional Organization	Professional Development	Consulting/ Work in Industry
Firas Faeq K. Hussain											
Najeh Al-Ali											
Asaad Shaker Hameed											
Ahmed Najam Nimr	**Ph. D.**	**ASP**	**PS**	**FT**	**2**	**25**	**1**	**SPE+EAI**	**H**	**H**	**H**
Edmon Mtayous Salloum	**Ph.D**	**ASP**	**PS**	**FT**	**-**	**29**	**7**	**-**	**H**	**H**	**H**
Emad Sleman Nofal	**Ph.D**	**P**	**PS**	**FT**	**-**	**39**	**7**	**-**	**H**	**H**	**H**
Abd-Al Hussein Naeema Shnawa											
Ali Mohammed Hassan											
Mortada Dghaem Abdullah											
Deyaa Khafeef											

Khashan											
Shaker Hawala											
Ra'aed Hameed Alawi											
Ismail Abdel Hussein Radi											
Ali Jaafar Ghafil											
Moayed Abdel Hassan Galata											
Muhannad Kasim Aliwi											
Hasan Fadhil Saad											
Qutaiba Abd Rasool											
Moammal Abbas Maktouf											
Sarmad Khadim Dhyab											
Nabeel Ibrahim											

1 Code: P = Professor, ASP = Assistant Professor, L = Lecturer, ASL = Assistant Lecturer and O = Other. 2 Code: PS = Permanent Staff, TS = Temporary Staff. 3 FT = Full Time Faculty or PT = Part Time Faculty, at the institution. 4 The level of activity, H = high, M= Medium or L=Low.

Table 6.2 Faculty Workload Summary

Name of Program

Faculty Member Name	**PT or FT[1]**	**Classes Taught (Course No./Credit Hrs.) Term and Year[2]**	**Program Activity Distribution**			**% Of Time Devoted to the Program**
			Teaching	**Research or Scholarship**	**Other[4]**	
Firas Faeq K. Hussain	FT		100%			
Najeh Al-Ali	FT	Properties of oil	100%			100
Asaad	FT		100%			

Shaker Hameed						
Ahmed Najam Nimr	FT	Reservoir simulation	100%			100
Edmon Mtayous Salloum	FT	Production2 Extraction Gas Technology	100%			100
Emad Sleman Nofal	FT	Reservoirs 1 Reservoirs 2	100%			100
Abd-Al Hussein Naeema Shnawa	FT	Synthetic geology Oil Economics English 3	100%			100
Ali Moham med Hassan	FT	Palpation of wells	100%			100
Mortada Dghaem Abdullah	FT	Geophysics Foundmetments	100%			100
Deyaa Khafeef Khashan	FT	Production 1 Reservoir management	100%			100
Shaker Hawala	FT	Human Rights	100%			100

Ra'aed Hameed Alawi	FT	Drilling 1 Drilling 2	100%			100
Ismail Abdel Hussein Radi	FT	Fluid Mechanics Thermodynamic	100%			100
Ali Jaafar Ghafil	FT	Mathematics 2	100%			100
Moayed Abdel Hassan Galata	FT	Engineering Mathematic	100%			100
Muhanna d Kasim Aliwi	FT	Computers 2	100%			100
Hasan Fadhil Saad	FT	Laboratories'	100%			100
Qutaiba Abd Rasool	FT	Laboratories'	100%			100
Moamm al Abbas Maktouf	FT	Laboratories'	100%			100
Sarmad	PT	Lecturer	100%			100

Khadim Dhyab						
Nabeel Ibrahim	PT	Lecturer	100%			100

1 FT = Full Time or PT = Part Time Faculty, At the institution

2. For the Academic year for which the Self-Assessment Report is being prepared

3. Program activity distribution should be in percent of effort in the program and should total 100%

4. Indicate sabbatical leave, etc., under "other."

5. Out of the total time employed at the institution.

2.6.3 Faculty Size

The total number of PEC members for the academic year 2021/2022 is (15). There are (6) PEC members with Ph.D. degrees and (9) PEC members with M.Sc. degrees. By academic rank, there are (1) assistant professor (5) lecturer, and (9) assistant lecturer. During the current academic year, the total number of students in the program is **253**. Hence, the student-faculty ratio is close to **6**.

Annually, petroleum engineering college complete series of forms known as the New Faculty Request Forms to indicate the existing faculty workloads, projected workloads, and college needs are filled-out in this regard. Requests for new positions are accompanied by request to advertise the positions in certain venues including the University Website.

2.6.4 Faculty Development

Faculty members are actively involved in professional development activities. The petroleum engineering college supports and encourages faculty members to benefit from the various professional development activities offered by the University. The University provides the faculty members with opportunities and support to attend local and international conferences, seminars, forums, workshops, and training programs. Funds for these opportunities are allocated within the College budget.

Additional faculty development opportunities are also provided by the supervising and discussing of post graduate Studies and Research in other universities interdisciplinary research groups, and research visits to reputable universities and research organizations to help faculty conduct part of their research and collaborate with other researchers.

College of Petroleum Engineering provides a wide range of opportunities for professional development to all of its faculty members. The Continuous Education Unit (On-Going Learning Unit) provides series of skills development workshops, seminars, lectures and training courses offered by renowned speakers. A College of Petroleum Engineering committee coordinates with the Continuous Education Unit which organizes lectures and workshops for faculty members in various fields geared toward enhancing educational process (teaching and learning), training on the use of IT in education, and educational assessment and continuous improvement, where local, regional and international experts are invited to share knowledge and experience with all faculties.

2.6.5 Faculty Authority and Responsibility

The responsibilities of faculty members include teaching, research, institutional and college services and community services. Each faculty member is responsible for updating and modifying, if necessary, the contents of his subjects annually to cope with continuous improvements and the latest developments in the scientific areas related to each subject. This includes deciding on which subjects are required within the curricula and determining what new positions are needed, and in which areas. Important decisions related to the curriculum or hiring for vacant positions involve the formation of designated committees to analyze the requirements and to bring recommendations to the College Council for deliberation and approval. Faculty members can also create new subjects within the framework of the program curricular areas. The creation, modification, and evaluation of subjects have to undergo approval processes of the scientific committee then college Council and College Council. All of the faculty members are involved in the process of definition and revision of program educational objectives and student outcomes. Every course is assigned a coordinator (i.e., course coordinator) who is responsible for course updating, maintenance, and development.

The University Bylaws specify the duties and responsibilities of faculty members. The main duties are the following:

1. **Teaching**: Teaching and curricular development are the main duties of faculty members at the University of Alayen.
2. **Research**: Faculty members are expected to actively engage in and lead relevant research, publish their research findings in recognized specialized journals, and present their results at regional and international forums and conferences.
3. **Academic Advising**: Faculty members are assigned academic advising duties to guide students through completing their graduation requirements, assist students with relevant academic issues during their studies, and to help them graduate from the University.
4. **Contribute to Administration**: All faculty members are expected to contribute to the development of the university and get actively involved in relevant committees and tasks at the College and/or University levels.
5. **Community Service**: This entails serving the local community and the profession through providing services and leadership to fulfill their needs and contributing to their advancement.
6. **Interactions with industrial/professional practitioners and employers of students.**

2.7 Criterion 7: Administrative Support

2.7.1. Leadership and Administrative Services

The Petroleum Engineering College (PEC) is an integrated structure that is updated at the beginning of each academic year. The College Dean is led by the BSc. in the context of petroleum engineering projects. He is the most important person in all positions related to the development of knowledge. College and university policies are assigned to the Dean on a daily basis. The Dean also leads the planning of college internships and extracurricular activities based on the deliberations of the selection committee appointed by the college. Every employee in the college has their own

duties and responsibilities. College faculty participates in the decision-making process through various activities and committees in which they participate, and the Faculty Council is the final venue for discussing issues and making decisions about the college. Minutes of Board meetings and committee meetings are recorded and approved by all members. The responsibilities of faculty, college councils, college deans, and other persons and organizations are clearly defined in the university charter. The college organizational structure is as **shown Fig (7.1)**

Dean's Role

The role of the Dean is to ensure that the work and knowledge of the college is carried out. This may be accomplished through:

1. College Affairs: Establishing and achieving the mission and goals of the University college; implementing college policies; conducting office meetings; involving faculty and students in decision-making and office work.

2. Education matters: Implementation of administrative and educational programs; review, manage and improve project training and promote training quality.

3-Administrative College: Administrative college; employs, supervises, tests personnel (secretaries, laboratory assistants); organizes files and documents (documents, students, courses, educational materials, correspondence); maintains equipment and other office property; basic requirements; Book an order.

4. Professional Activities: Provide professional leadership and decision-making within the college; demonstrate technical expertise in teaching, research, and other professional activities; participate in professional groups and public affairs, uphold academic standards; prepare courses.
5. Faculty affairs: Recruitment and orientation of new members; supports and encourages excellence in teaching, research, participation in conferences, seminars

and other professional activities; improves faculty performance and protects faculty rights; evaluates faculty and makes recommendations to their college.

6. Student issues: improving the teaching environment. Academic advising and student services, responding to student grievances and complaints. Certified graduate students.
7. Planning Issues: Organize meetings with teachers to identify additional ways to improve planning. Manage laboratory equipment, daily operations, human resources and other expenses.
8. External Communications: Communicates University policies and activities to the college and represents the college to the university and all external organizations and provides the Office's programs and services to students.

Faculty Role

1. Teaching and writing test.
2. Conduct preliminary research.
3. Document management, student research, and student academic and social activities.
4. Academic advising.
5. Participation in University committees and councils and committees with University approval or participation in University committees.
6. To be committed to the academic work of the University and to maintain standards in research, teaching, leadership and administration commensurate with the status and reputation of the University.
7. Complete tasks requested by the Dean or Dean, as long as these tasks do not conflict with his or her work schedule.
8. Serve the community and meet their needs.

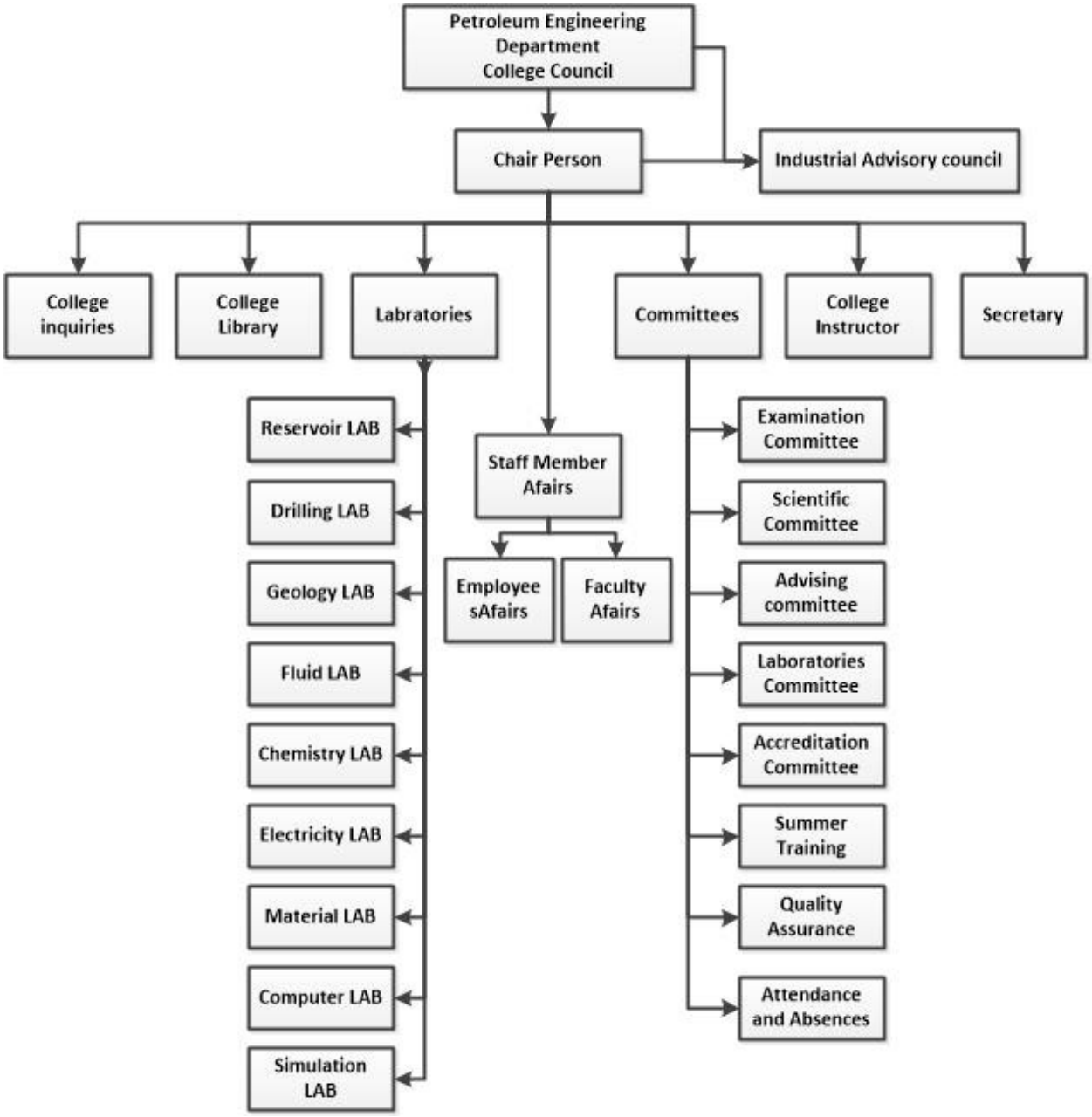


Fig (7.1) The College's organization chart

Staff Roles

Staff responsibilities include managing administrative work, managing laboratories and handling technical matters. The staff's primary responsibility is to provide support services such as secretarial, laboratory management, and budget preparation required for project support and success.

2.7.2 Faculty Support

2.7.2.1 Faculty Recruitment

The University requires departments to assess faculty needs before the start of each academic year. These needs are assessed against educational and other career opportunities. These requests are first discussed and approved within the department and college and then submitted to the Vice President for Academic Affairs for approval.

2.7.2.2 Maintenance and Promotion

Faculty promotion procedures are determined by the Ministry for all Iraqi universities.

https://alayen.edu.iq/college_departments/index/5/4

2.7.2.3 Faculty Development Support

The College of Petroleum Engineering holds several events for graduate students to share and discuss ideas and review project progress. Field trips to oil and gas fields are another activity that allows students to gain practical engineering experience. The final year project competition is organized by the College of Petroleum Engineering to encourage final year students to put their best foot forward in their projects. In addition, internal learning programs occur throughout the academic year to help students achieve program goals and provide training to staff to enhance their skills. The Continuing Education Center holds technical and technical courses to train new employees and occasionally holds these courses for new employees. Teachers are evaluated by the Quality Assessment Committee using a special form prepared by the Ministry of Higher Education and Scientific Research. Professional development activities are a major goal of the University. The University has its own funds to support University activities.

2.7.3 Technical and Administrative Staff Support

2.7.3.1 Staff Size and Development

There are many engineers who know how to run a laboratory.

2.7.3.2 Staff Recruitment and Retention

Enrollment and retention of employees who are continue to study in a number of areas including the use of computers, their maintenance and how to use them for administrative purposes. Petroleum Engineering College in Alayen University adopted a clear plan for staff recruitment to expand the Bachelor program and establishing for higher studies in the near future. The announcement for new recruitment can be found in the following link also can be used for any new application request.

https://alayen.edu.iq/news/view_list/42

2.7.3.3 Staff Development

The college 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.

2.8 Criterion 8: Financial Support

2.8.1 Funding Resources

Petroleum engineering college is fully supported by the Alayen University which is a private institution. Petroleum engineering college budget is a part of the overall budget of the University. The budget is dominated by the laboratory budget. The laboratories are annually inventory to confirm the assets. Additional budget items include furniture, computers, rehabilitations of facilities, etc. Petroleum engineering

college receives the required financial support to continue updating and enhancing the laboratories as well as to support teaching to achieve the program outcomes.

2.8.2 Program Budget:

The Al Ayen University is responsible to provide adequate facilities to support the undergraduate program such as a main college building and laboratories. The maintenance department in the college is in charge of maintaining the college facilities (maintaining the building) after a request from the college through written orders.

2.9 Criterion 9: Facilities

The space and facilities allocated to the College of Petroleum Engineering are sufficient to enable the college to successfully conduct their academic programs. Petroleum engineering college in particular occupies ample space within university. The college also uses classrooms and laboratories in adjacent buildings. An overview of offices, classrooms, and laboratories follows.

2.9.1 Built Spaces and Associated Equipment

2.9.1.1 Offices

All offices (for faculty and staff) are fully equipped with up-to-date computing and printing facilities. Based on the needs, the faculty members may also be provided with a laptop computer, individual scanner, color printer, and other accessories. Each faculty is eligible to request other facilities and equipment that may facilitate his/her academic and research work in order to achieve the student outcomes.

2.9.1.2 Classrooms

Classrooms across the College are adequately equipped with all basic needs and technologies to provide support for teaching and learning activities, including students' desk, a large white board, an overhead projector. Wireless internet connections are available in the college. The Petroleum Engineering College utilizes 6 classrooms with total capacity of 400 seats. Projectors and Data-shows is used to

enable lecturers deliver the course requirements. Table 9.1 provides the sizes of the classrooms and the maximum number of students that can be accommodated.

Table 9.1: Classrooms sizes and maximum number of accommodated students.

Classroom		Area (m^2)	Maximum Number of Students
Room No.	**Type**		
ENG 1	Lecturers	144	100
ENG 2	Lecturers	144	**100**
ENG 3	Lecturers	95	**65**
ENG 4	Lecturers	124	**85**
ENG 5	Lecturers	124	**85**
ENG 6	Lecturers	**95**	**65**

2.9.1.3 Laboratory facilities

The Central Laboratories **Unit**, which reports to the Deanship, is the administrative unit responsible for operating and managing all laboratories at the College. The duties of The Central Laboratories Unit include space management, buildings maintenance, purchasing new equipment, equipment maintenance, store services, inventory, safety, and training. PEC contains several laboratories which include many devices and equipment that are used to conduct experimental tests by the undergraduate students. These laboratories are very helpful to conduct the engineering projects by the 4^{th} (last) class students. Table 9.2 summaries the available laboratories as well as their sizes.

Table 9.2: PEC laboratories and their corresponding sizes.

No.	Lab Name	Subjects served by the lab.	Lab capacity (no. of students per session)	Area (m^2)

1	**Petroleum properties**	**Petroleum properties**	**40**	102
2	**Strength of material**	**Strength of material**	**30**	75
3	**Fluid mechanics**	**Fluid mechanics**	**35**	86
4	**Reservoir Eng.**	**Reservoir Eng.**	**40**	102
5	**Drilling Eng.**	**Drilling Eng.**	**40**	**102**
6	**Electrical Technology**	**Electrical Technology**	**35**	86
7	**Analytical Chemistry**	**Analytical Chemistry**	**35**	86
8	**General Geology**	**General Geology**	**30**	60
9	**Petroleum Geology**	**Petroleum Geology**	**30**	60
10	**Engineering drawing**	**Engineering drawing**	**35**	86
11	**Computer program**	**Computer program**	**30**	77

The Central Laboratory Unit manages all laboratories in the Faculty of Engineering. Our college equips all laboratories with the most modern equipment and ensures safety regulations. The laboratory is open to students during working hours when technicians are available. However, each LAB has a schedule outlining the hours for each course. For a specific course, only students in that course may use the LAB during the time allocated to that course. Students may also use the laboratory for courses, projects or other experiments under the supervision of the laboratory leader/college lecturer/college teaching assistant/course lecturer, provided that the laboratory is free of charge.

Practical experience gained in the laboratory enables students to perform standard tests and measurements; conduct, analyze, and interpret experiments; and apply experimental results to improve processes. Since most experiments involve teams of students working in and outside the laboratory (preparing experiments, writing

reports), students gain the skills to function effectively as members or leaders of technical teams.

2.9.1.4 Campus Infrastructure and Supportive Facilities

Alayen University provides all necessary infrastructure facilities to students, faculty and staff. These facilities include the main library, sports facilities for football, basketball, tennis, volleyball, student dining and recreation centers, faculty centers and gardens, and student residence halls. Alayen University has a hostel for female students in Building **D** on the campus as well as an exterior large building near the main campus of the Alayen University.

The building area... is six floors and equipped with all services and requirements including management, protection, service and maintenance. It is developed according to the highest safety and protection standards. It provides space for approximately more than... students. Ayen University also provides accommodation for faculty members who live far away from the university headquarters. There are two types of housing for faculty and staff: the first is housing for the families of faculty and staff, and the second is housing specifically for male faculty

2.9.2 Computing Assets

In The Petroleum Engineering College general computer support is available by an expert team in the computer labs. Generally, Lab hours are 9 am to 2pm, through Sunday to Thursday (excluding the national holidays). The most commonly used computer labs by Petroleum Engineering College is located in the main Building. This computer laboratories are composed of (35) Laptops, projectors and other facilities for each one. The software that is used within the curriculum includes Microsoft Office applications, MATLAB /Simulink, AutoCAD, and GIS. All the computer hardware and software systems more than adequately support the Petroleum Engineering program educational objectives and outcomes. Also there is an IT unit which is responsible for renewing and maintenance of hardware and software as well asIt also provides advice on creating and developing programs.

2.9.3 Students Direction and Safety Precautions

The program in The Petroleum Engineering gives the candidate a high level of experience in both theoretical and experimental study. To achieve this, different ways are used for example lectures prepared by teaching staff according to the universal level are available to students. To ensure the engaged of theoretical and experimental aspects, the supervisory team who is responsible about each laboratory prepares a guideline book for each lab. The College technicians/teaching assistants/course instructors/lecturers are responsible for the instructional activities along with relevant safety advising in laboratories. Each laboratory has its own instructions including:

1. Instructions for individual experiments.
2. Safety instructions (Electricity, high voltage equipment, heavy machines, Steam and hot equipment).
3. Tools and equipment use and handling.
4. Computers and internet instructions.
5. Chemical use and handling.

All laboratories have signs posted with equipment and safety instructions. Safety procedures are discussed before each practical session and adhered to at all times. Each laboratory is equipped with necessary safety devices. For example, each laboratory has personal protective equipment, general safety signs and instructions, equipment-specific safety instructions and safety labels, fire alarms, fire-fighting equipment, and first aid equipment. There are emergency exits near the laboratory.

Clearly, some of the facilities in our college are suitable and provide a reasonable atmosphere conducive to learning, such as: B. Classrooms, offices, laboratories, related equipment, computer resources and appropriate library services. Additionally, workshops and seminars can provide another option to meet the technical requirements standards of the petroleum engineering sector.

2.9.4 Maintenance and Upgrading of Facilities

All laboratory facilities and equipment insurance and maintenance fall under the purview of the maintenance unit at an engineering college. The maintenance unit regularly sorts out maintenance and insurance concurrences with different specific firms and arranges such activities with the concerned scholarly college.

2.9.5 Library Services

The College of petroleum engineering has an excellent library to provide students by textbooks, journals, and PhD students-thesis. In a very professional way students can

loan any book form the library. Library is managed by an expert team. Hundreds of books are available for students though the working hours of library and can be loaned to help student achieve the course requirements. Besides, e-books are available for students. Overall, library successfully introduces an acceptable level of service.

The entire library system has a distinguished collection of both printed and electronic resources to support faculty, researchers, undergraduate and graduate students. Also provides different online tools and dedicated portal for accessing its resources. These include:

E-Resources: Portal for search of all electronic databases that collage subscribes to, and search engine that simultaneously searches all printed and electronic resources. Abstracts or full text of articles and E-books can be viewed.

Library Catalog: This enables one to find resources from books and E-books with a link for full text display.

Institutional Repository: This is an effective tool for searching the publications of faculty, including theses and research papers published in both international and regional journals.

More details about the E-Resources are available at:

Overall Comments on Facilities

All of the facilities are adequate for students and other staff to achieve their goals. Alayen University - Petroleum College is prepared in any time to keep up with and overhaul the ongoing offices. All Laboratories the Petroleum Engineering College are outfitted with modern new gadgets and with great assigned region for each LAB. This can be viewed as the principal boundary in accomplishing the reason for the academic program. Also the following safety measures are implemented in each facility of the petroleum engineering college in order to safely accomplish program objectives.

Fire Safety:

All laboratories, classrooms halls, and corridors are furnished with modern firefighting systems. In certain labs, sand pails are additionally accommodated stifling flames in machines and equipment.

First Aid:

First aid units are accessible in quite a while and primary halls where workforce workplaces are found. The University Center for Continuing Education regularly

offers safety and first aid trainings, which are paid for by all College of Engineering employees.

Personal Protective Equipment:
When required, all laboratories are outfitted with personal protective equipment, which includes:

- Safety gloves
- Masks
- Lab coats
- Safety goggles
- Safety shoes
- Helmets
- Face masks (for sparks, chips, etc.)

2.10 Specific Program Criteria

Curriculum

" The program must prepare graduates to be proficient in mathematics through differential equations, probability and statistics, fluid mechanics, strength of materials, and thermodynamics; design and analysis of well systems and procedures for drilling and completing wells; characterization and evaluation of subsurface geological formations and their resources using geoscientific and engineering methods; design and analysis of systems for producing, injecting, and handling fluids; application of reservoir engineering principles and practices for optimizing resource development and management; the use of project economics and resource valuation methods for design and decision making under conditions of risk and uncertainty. "

All Petroleum Engineering Program PEP criteria aligned and fulfilled by given courses during the four years of study.

Program Criteria	Course Code	Course name
Applied Mathematics	GE102	Mathematics I
	GE202	Mathematics II
	GE302	Engineering Mathematics
	PE308	Engineering Economy
	GE303	Engineering Statistics
	PE408	Numerical methods

	PE403	Optimization
physics	GE114	Physics I
	GE114	Physics II
	PE201	Petroleum Properties
Chemistry	GE101	Chemistry
	PE201	Petroleum Properties
Area of Petroleum Engineering: Geotechnical Engineering	PE100	Engineering Geology
	PE200	Structural and Petroleum Geology
	PE306	Well Logging Engineering
Area of Petroleum Engineering: Hydraulics	GE208	Fluid Mechanics
	PE304	Production Engineering I
	PE404	Production Engineering II
	PE300	Reservoir Engineering I
	PE400	Reservoir Engineering II
Area of Petroleum Engineering: Structural Engineering	GE108	Engineering Mechanics-Static
	GE108	Engineering Mechanics-Dynamics
	GE203	Strength of Materials
Area of Petroleum Engineering: Construction	GE106	Engineering Drawing
Basic concepts in management and leadership.	PE308	Engineering Economy
	PE403	Optimization
	PE405	Reservoir Management
Courses that are Primarily Design	PE304	Production Engineering I
	PE404	Production Engineering II
	PE302	Engineering Drilling I
	PE402	Engineering Drilling II
	PE306	Well Logging
	PE300	Reservoir Engineering I
	PE400	Reservoir Engineering II
	PE405	Reservoir management
	PE408	Reservoir Simulation

APPENDIX A – COURSE SYLLABI

ABET Course Syllabi for Mathematics I

1. Course number and name: GE102 MATHEMATICS I
2. Credits and contact hours: 6 Credits and (Sunday) 1:30 PM – 3:00 PM.
3. Instructor's Name: Msc. Rana Kareem
4. Textbook: George B. Thomas and Ross L. Finney, "Calculus andAnalytic Geometry,
   Addison- Wesley
   - Calculus Early Transcendental (Sixth Edition) JamesStewart.
5. Specific Course Information:

a. Brief description of the content of the course (catalog description)

This course introduces the students to the fundamentals of domain and range, learn students how they can draw the trigonometric functions, limits, types of integrals including fractional integral, quantify the area under curve, differentiation, and an introduction about the Polar Coordinates as well as the parametric equations.

b. Pre-requisites or co-requisites

Pre-requisite: None

c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program.

GE102 MATHEMATICS I is a required course in the Petroleum Engineering program.

6. Specific goals for the course:

a. Specific outcomes of instruction:

1-. Increase the students skills to deal with the mathematical engineering questions.
2- Increase the level of students in thinking.
3- Prepare the students to understand more developed materials.
4- Determine the area under curve using integration in which the students can use this method to determine the reservoir volume.
5- Perform a connection between the mathematical equations with the petroleum engineering major.
6- Use the optimum approaches to find the solution of mathematical questions.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Grading Plan:	
Homework	10%
Attendance	5%
Participation	5%
Weekly quizzes	10%
Midterm	10%
Final	60%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURSE MEASUREMENTS
Students will develop a solid understanding of fundamental mathematical concepts such as domain and range, trigonometric functions, and quantify the area under curve.	Assessments will include quizzes, homework assignments, and examinations to evaluate students' comprehension of mathematical concepts and their ability to apply them in problem-solving.
Students will be able to apply mathematical principles to solve problems encountered in engineering, science, and other disciplines.	Assessments will include quizzes, homework assignments, and examinations to evaluate students' comprehension of mathematical concepts and their ability to apply them in problem-solving.

7. Brief list of topics to be covered.
a. Fundamental Units
i. domain and range.
ii. Types of integrals.
iii. Polar Coordinates.
b. Engineering Design process
i. Engineering Notebooks.

ABET Course Syllabi for Engineering Statistics

1. Course number and name: GE108: Static's and Dynamics Engineering Mechanics
2. Credits and contact hours: 4 Credits and (Wednesday) 10:30AM-1:30BM
3. Instructor's Name: Mohannad Qasem
4. Textbook: Peck R., Olsen C. and Devore J. L. (2014). "Introduction to Statistics and

Data Analysis". Cengage Learning, USA. ISBNISBN-

5. Specific Course Information:

a. Brief description of the content of the course (catalog description)

The course is very important for the petroleum Engineering and water resources engineers. The course introduces basic statistics concepts. Student in this course will learn a good idea and skills in elementary statistics and. Topics covered in this course include type of statistics, Frequency Distribution, Average and Measures of Central Tendency and Measures of Dispersion.

b. Pre-requisites or co-requisites:

c. Indicate whether a required, elective, or selected elective course in the program: GE108: Static's and Dynamics is a *required* course in the Mathematical Engineering program.

6. Specific goals for the course:

a. Specific outcomes of instruction:

1. Students will be introduced to the engineering design process.
2. Students will be introduced to ethical considerations in engineering and technology.
3. Students will be able to applied the concepts of statistics problems.
4. Students will be able to identify some engineering disciplines and the main problems that they solve.
5. Students will be able to solve of Frequency Distribution.
6. Students will be able to solve Average and Measures of Central Tendency.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Grading Plan:	
Homework	15%
Attendance	5%
Participation	10%
Weekly quizzes	15%
Midterm	20%
Final	20%
Project	15%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURE MEASUREMENTS
Students will be able to applied the concepts of statistics problems	

Students will be able to solve of Frequency Distribution.	Assessment will be by problems presented in homework, quizzes, and tests.
Students will be able to solve Average and Measures of Central Tendency	Assessment will be by problems presented in homework or projects
Students will be able to solve Average and Measures of Central Tendency	Assessment will be by problems presented in homework, quizzes, and tests.

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. Fundamental Units
      ii. Units derived from Fundamental Units
      iii. Mathematical relations and problems.
   b. Engineering Design process
      i. Engineering Notebooks

ABET Course Syllabi for Chemistry

1.Course number and name: GE101 : Chemistry
2. Credits and contact hours: 4 hours (2 theoretical +2 practical)hours
3. Instructor's Name: M Sc Ali Jaafar Ghafil
4. Textbook: Analytical chemistry
5. Specific Course Information: (Analytical chemistry..skoog)
   a. Brief description of the content of the course (catalog description) This course aims to introduce the first-stage student to the definition of analytical chemistry and its sections of quantitative and qualitative analysis as well as the sections of quantitative analysis and to explain the experiments related to this part of the types of chemical analyzes and their benefits.

   b. Pre-requisites or co-requisites: None

   c. Indicate whether a required, elective, or selected elective course in the program: is a required course in the Petroleum Engineering program.

6. Specific goals for the course:
   a. Specific outcomes of instruction:
      1. Review of basic concepts; stoichiometry; chemical reaction and heat
      2. Understand the organic chemistry; fuels; various batteries and electronic cells.
      3. Study principles of corrosion; water for domestic uses
      4. Understand industrial water; atmospheric pollution.
   b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

COURSE OUTCOMES	COURSE MEASUREMENTS
Develop students' ability to conduct reliable experiments with results for institutions and companies	Assessment will be by problems presented in homework and quizzes.
Introducing the idea of scientific research and conducting projects based on equipment in the laboratory	Assessment will be by problems presented in homework and quizzes.

Grading Plan	
Midterm practical	10%
Midterm theoretical	15%
Laboratory Reports	5%
Weekly quizzes, attendance	10%
Final practical	10%
Final\Theoretical	50%
Total	100%

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. Stoichiometry chemical reactions and heat
      ii. organic chemistry; fuels; various batteries and electronic cells.
      iii. Principles of corrosion; water for domestic uses and industrial water; atmospheric pollution.
   b. Engineering Design process
      i. Engineering Notebooks.

ABET Course Syllabi for General geology

1. Course number and name: PE408: General Geology
2. Credits and contact hours: 7 Credits and (Saturday/Monday/Wednesday) 8:30 AM – 3:30 PM , 3:30PM-6:00 PM.
3. Instructor's Name: Lecturer Dr. Murtadha D.Abdullah
4. Textbook:
   - Essential of Geology by Stephen Marshak ,ISBN-13: 978-0393667523,Sixth Edition ,2019.
   - Principles of Earth Sciences by Saadi Al Dahaan ,ISBN:978-9911-20-205-1, Second Edition ,2020

5. Specific Course Information:

   a. Brief description of the content of the course (catalog description):

The Coarse contains :

Describe the shape and surface relief of the Earth, including the major landforms and features, Identify and classify minerals based on their properties and characteristics, Explain the processes of rock formation, including the origin and classification of igneous, sedimentary, and metamorphic rocks, Understand the concepts of weathering and soil formation, and their significance in geological processes, Describe the processes of erosion, transportation, and deposition, and their role in shaping the Earth's surface, Interpret geological maps, cross-sections, and stratigraphic columns to analyze the geological history of an area, and Explain the concept of geological time and the principles of relative and absolute dating.

b. Pre-requisites or co-requisites**:** None

c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: PE100 is a required course.

6. Specific goals for the course:

a. Specific outcomes of instruction:

The General Geology module provides students with a fundamental understanding of the Earth's structure, composition, and geological processes. The module covers a wide range of topics, including the Earth's position in space, its shape, and surface relief. Students will learn about the properties and classification of minerals, as well as the formation and characteristics of igneous, sedimentary, and metamorphic rocks. The module also explores the processes of weathering, erosion, transportation, and deposition that shape the Earth's surface. Students will gain knowledge of geological time and the formation of geological features such as mountains, valleys, and geological hazards.

Grading Plan:	
Quizzes	10%
Assignments	10%
Projects / Lab.	10%
Report	10%
Midterm	10%
Final	50%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURSE MEASUREMENTS
Students will develop a comprehensive understanding of geological principles, including plate tectonics, rock types, geological structures, and Earth processes.	Assessments will include examinations, quizzes, and assignments to evaluate students' knowledge of geological concepts and their ability to identify rock types.

Students will be able to analyze and interpret geological phenomena, such as earthquakes, volcanoes, and sedimentary deposition, and understand their implications for Earth's history and future.	Laboratory exercises will provide opportunities for hands-on experience in geological observation, sample analysis, and the application of geologic principles to real-world scenarios.

7. Brief list of topics to be covered:
Introduction ,Minerals and Rocks ,Igneous, Sedimentary and Metamorphic Rocks, Weathering and Soil, Earth Surface processes, Geological times and dating methods, Geological maps ,Structural geology, Earthquake, Volcanoes, Geological hazards and Engineering project.

ABET Course Syllabi for Workshop Technology

1. Course number and name: CENG 113 Workshop Technology
2. Credits and contact hours: 3 Credits and
3. Instructor's Name: Moayad Abdel Hussein Ghalta
4. Textbook: Foundations of Metallurgical Engineering, written by Kayser, translated by Dr. Shaker Al-Samarrai, Dr. Qahtan Al-Khazraji.
5. Specific Course Information:
   a. Brief description of the content of the course (catalog description)
   This course introduces the students to machine tools, materials, safety protocols, workshop practices, and quality control. It includes hands-on training in machining, metallurgy, and fabrication, emphasizing practical skills and theoretical understanding for effective workshop operation.

   b. Pre-requisites or co-requisites
   Pre-requisite: High school degree or equivalent degree according to the regulations of the Ministry of Higher Education and Scientific Research in Iraq

   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: CENG 113 Workshop Technology is a required course in the Petroleum Engineering program.

6. Specific goals for the course:
   a. Specific outcomes of instruction:

      1. Recognize how to select suitable processes in the production of different parts.
      2. Recognize how to select suitable tools.
      3. Recognize how to select suitable sound materials.
      4. The student will have the skills to manufacture different parts.

5. The student will understand how to control the quality of the parts produced by welding and turning process.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

COURSE OUTCOMES	COURSE MEASUREMENTS
Students will acquire practical skills in workshop technology, demonstrating proficiency in various machining and fabrication techniques.	Performance assessments will include hands-on projects where students showcase their ability to use workshop tools and machinery effectively.
Students will develop a comprehensive understanding of workshop safety protocols, equipment operation, and the application of technology in manufacturing processes.	Written exams and quizzes will evaluate theoretical knowledge, focusing on topics such as material properties, machining principles, and safety procedures within a workshop setting.

Grading Plan:	
Homework	10%
Attendance	10%
Participation	10%
Weekly quizzes	10%
Midterm	10%
Final	50%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

7. Brief list of topics to be covered.

i. Machine Tools and Operations: Overview of different machine tools, introduction to basic turning, milling, and drilling.

ii. Materials and Safety: Understanding material properties, workshop safety measures and equipment usage.

iii. Workshop Practices and Quality: Application of technology in fabrication, quality assurance principles and inspection techniques.

b. Engineering Design process

i. Engineering Notebooks.

ABET Course Syllabi for Strength of material

1. Course number and name: GE203 Strength of material

2. Credits and contact hours: 3 Credits and (Wednesday/Thursday) 8:30 AM – 10:30 AM.
3. Instructor's Name: MSc Ali Jaafar Ghafil
4. Textbook: Strength of material (Singal)
5. Specific Course Information:
   a. Brief description of the content of the course (catalog description)
   This course will present the stresses and strain, torsion, and Hook's law. Coupling helical springs to address the system and how to use Poisson ratio and flanged bolt in engineering applications.

   b. Pre-requisites or co-requisites: None

   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: is a required course in the Petroleum Engineering program.

6. Specific goals for the course:
   a. Specific outcomes of instruction:

   1.Converting expressions from Cartesian coordinates to polar coordinates, and drawing graphs of polar curves, recognizing the equations of standard polar curves.
   2.Understand the partial derivatives of the first and second orders of a function of two real variables.
   3.Understand triple integrals on general volumes.
   4.Understand the arithmetic operations of trends.
   5. Understand the order of an ordinary differential equation and determine whether the equation is linear or nonlinear.
   6.Understand a form of Taylor series from a series Maclaurin.

   b. Explicitly indicate which of the student outcomes listed in Criterion 3 or
   any other outcomes are addressed by the course.

COURSE OUTCOMES	COURSE MEASUREMENTS
The ability to deal with mathematical equations. 2. The ability to understand properties of material	Assessment will be by problems presented in homework and quizzes.
The ability to analyze drawings and figures	Assessment will be by problems presented in homework and quizzes.

Grading Plan

Homework	5%
Attendance	5%
Laboratory Reports	5%
Weekly quizzes	5%
Midterm	15%
Final\Practical	15%
Final\Theoretical	50%
Total	100%

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. stress, strain and torsion
      ii. Hook's law. Coupling helical springs
      iii. Poisson ratio and flanged bolt
   b. Engineering Design process
      i. Engineering Notebooks.

ABET Course Syllabi for Structural and Petroleum Geology

1. Course number and name: PE-200: Structural and Petroleum Geology
2. Credits and contact hours: 6 credit
3. Instructor's Name: Dr. Abdulhussien N. Alattabi
4. Textbook:
   - Structural Geology: Fundamentals and Modern Developments - kosh.
   - Basic Petroleum geology-Peter. K. Link
5. Specific Course Information:
   a. Brief description of the content of the course (catalog description)
   This course introduces the students to: The Mechanics of structural deformation Folds, Faults and Joints. Unconformities and sedimentary environments. Origin of oil, Source Rock, generation ,migration and accumulation of petroleum.. Reservoir Rocks, Cap Rocks, Traps and reservoir mechanics Such as pressure, Temperature),Subsurface Mapping.
   b. Pre-requisites or co-requisites: Pre-requisite: Knowledge in general geology, Mineralogy, Physics and Chemistry.

   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program.PE-100 is required course.

6. Specific goals for the course:
   a. Specific outcomes of instruction:
      5.Knowledge and understanding: the types of traps , source rocks migration and accumulation of oil in reservoirs within traps.

6. Subject-specific skills: To get skill on types of reservoirs and types of traps and how to draw countour maps of beds and reservoirs.
7. Thinking Skills:. From structural and petroleum geology we will study the oil in reservoirs within traps.
8. Teaching and learning methods: The teaching is performed theoretically and practically the types of reservoirs and traps.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Grading Plan:	
Homework	5%
Attendance	2%
Participation	3%
Weekly quizzes	5%
Monthly	25%
Final	50%
lab	10%
Total	100%
Porfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURE MEASUREMENTS
1-Analysis and Design of contour map and traps. 2. Make plans and their execution program. 3. Planning, follow-up, and supervision of the plans..	Assessment will be by problems presented in homework and quizzes.
Students will be able to prepare effectively for classes.	Assessment will be by problems presented in homework, quizzes, and Exam.

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. Deformation on rocks, stress and strain
      ii. Types of structures , folds, faults
      iii. Types of Traps
   b. Petroleum Geology
      i. Source Rocks
      ii. Maturation

iii-Migration

ABET Course Syllabi for Computer Programming 2

1. Course number and name: GE204 : Computer Programming 2
2. Credits and contact hours: (Saturday)8:30AM-10:30AM
3. Instructor's Name: Mohannad Qasem
4. Textbook *an introduction to programming using FORTRAN 90 and MATLAB*
ISBNISBN-
5. Specific Course Information:
   a. Brief description of the content of the course (catalog description)
      This course displays the main basics of the computer system elements. Introduction to Fortran, How to write a Fortran program, Variables, Input and Output, Conditional IF statement, Counters, Loops, Matrices, Functions, Subroutines. Starting with MATLAB, Variables, Input and Output, 2-dimensional plot, Matrices, Functions, Polynomials, Polynomial derivative, Curve fitting, Interpolation, Numerical integration, IF statement, Loops."
   b. Pre-requisites or co-requisites: Computer Programming 2
   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: GE204 : Computer Programming 2 is a required course in the Environmental Engineering program.
6. Specific goals for the course:
   a. Specific outcomes of instruction:
   Acquires basic skills in the computer system (start up- turn off, desktop, icons, and settings).
      1-Learn the principles of types of computer, hardware, software, storages, and the main types of integrated and external equipment.
      2-Learn the difference between operating systems software and application software.
      3-Using windows (main parts, tools and settings).
      4-Introducing and organizing files and folders.
      5-Knowing the main factors that effect on computer, device performance
   b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

COURSE OUTCOMES	COURE MEASUREMENTS
The student acquires basic concepts about computer applications through programming in Fortran languages	Assessment will be by problems presented in homework, quizzes, and tests.
The student acquires basic concepts about computer applications through program them in Matlab	Assessment will be by problems presented in homework or projects

Researching recent topics and defining problems that need more in-depth scientific research	Assessment will be by problems presented in homework, quizzes, and tests.

Grading Plan:	
Homework	15%
Attendance	5%
Participation	10%
Weekly quizzes	15%
Midterm	20%
Final	20%
Project	15%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. Introduction in computer system and computer Components (Types of operating system and windows).
      ii. Representation of information in computer and memory capacity (convert binary and decimal numbers)
      iii. Mathematical and logic relations and problems
   b. Engineering Design process
      i. Engineering Notebooks

ABET Course Syllabi for Fundamental of Petroleum Engineering

1. Course number and name: PE206: Fundamental of Petroleum Engineering
2. Credits and contact hours: 4 Credits and (Saturday) 8:30 AM – 10:30 PM
3. Instructor's Name: Lecturer Dr murtadha.d.Abdullah
4. Textbook:
   a. Fundamental of Petroleum by Kate Van Dyke 4th Edition ISBN-13 :978-0886981624
   b. Fundamental of Petroleum Engineering by Abbas Radhi Second E dition.

5. Specific Course Information:

   a. Brief description of the content of the course (catalog description):

It provides the basic introductory definitions and concepts of the basics of petroleum engineering. Upon completion of the study period for this subject, the student will have the ability to know the concepts and applications of petroleum engineering. The most important basics are oil reservoir engineering, drilling oil wells, secondary extraction operations, production engineering, evaluation of oil wells, palpation operations, pressure tests, and geophysics.

d. Pre-requisites or co-requisites**:** Pre-requisite: General Geology co-requisites Structure Geology

e. Indicate whether a required, elective, or selected elective (as per Table 5-1) coursein the program: PE206 Fundamental of Petroleum Engineering is a *required* course.

6. Specific goals for the course:

a. Specific outcomes of instruction:

1. Develop problem solving skills and understanding of petroleum Engineering through the application of techniques.
2. Gives insights into the role of petroleum engineering in the search and application.
3. The module covers a number of measurement methods and how these are used . to determine important fundamentals parameters such as Bulk volume, grain volume, pore volume and porosity concept
4. This is the basic subject for all petrophysical properties.
5. To understand permeability ,capillary pressure , wettability.
6. To perform sp-log and gamma ray analysis.

Explicitly indicate which of the student outcomes listed in Criterion 3 or any otheroutcomes are addressed by the course.Grading Plan:	
Homework	5%
Attendance	2%
Participation	3%
Weekly quizzes	5%
Midterm	20%
Final	60%
Project	5%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURSE MEASUREMENTS
Understanding the basic principles and concepts of petroleum engineering, including reservoir engineering, drilling engineering, production engineering, and formation evaluation.	Assessments through examinations, quizzes, and assignments to evaluate comprehension of theoretical principles and practical applications in petroleum engineering.
Familiarity with fundamental techniques and technologies used in petroleum exploration, drilling, production, and reservoir management.	Assessment will be by problems presented in homework, quizzes, and Exam.

7. Brief list of topics to be covered:

a. Fundamental Units

i. Fundamentals Parameters such as Bulk volume, Grain volume, Pore volume and Porosity concept.

ii. Permeability, Capillary Pressure, Wettability.

iii. Formation evaluation.

b. Engineering Design process

i. Engineering Notebooks.

ii. Drawing and Sketching concepts.

ABET Course Syllabi for Mathematics II

1. Course number and name: GE202 Mathematics II
2. Credits and contact hours: 3 Credits and (Wednesday/Thursday) 8:30 AM – 10:30 AM.
3. Instructor's Name: MSc Ali Jaafar Ghafil
4. Textbook: Thomas Calculus_ Early Transcendentals 13th Edition c2014 ,E. Kreyszing" Advanced Engineering Mathematics" ,Stroud K. A. " Advanced Engineering Mathematics "
5. Specific Course Information:

   a. Brief description of the content of the course (catalog description)

   This course will present the polar coordinates and vectors, find roots, and solve series equations. introduce functions with more than one variable to address the system and how to use first and second order equations in engineering applications.

   b. Pre-requisites or co-requisites: Pre-requisite: Mathematics I

   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program.

   is a required course in the Petroleum Engineering program.
6. Specific goals for the course:

   a. Specific outcomes of instruction:

   1. Converting expressions from Cartesian coordinates to polar coordinates, and drawing graphs of polar curves, recognizing the equations of standard polar curves.
   2. Understand the partial derivatives of the first and second orders of a function of two real variables.
   3. Understand triple integrals on general volumes.
   4. Understand the arithmetic operations of trends.
   5. Understand the order of an ordinary differential equation and determine whether the equation is linear or nonlinear.

6. Understand a form of Taylor series from a series Maclaurin.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

COURSE OUTCOMES	COURSE MEASUREMENTS
C1- The student shows a desire to know the fields of reflection of functions and how to create equations. C 2 - The student seeks to apply different methods in the solution.	Assessment will be by problems presented in homework and quizzes.
C3 - The student proposes a research topic in the direction of a particular problem. C4- The student has a position in solving a specific problem in his field of mathematics	Assessment will be by problems presented in homework and quizzes.

Grading Plan:	
Homework	3%
Attendance	3%
Participation	2%
Weekly quizzes	2%
Midterm	30%
Final	60%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. polar coordinate, vector and series
      ii. Function with more than one variable
      iii. First and second order functions
   b. Engineering Design process
      i. Engineering Notebooks.

ABET Course Syllabi for Petroleum properties

1. Course number and name: PE201, Oil properties
2. Credits and contact hours: 2 Credits (2 hours theoretical +3 hours practical)
3. Instructor's Name: Najah Yousef Alali
4. Textbook: A Catalogue of Oil Properties, Mark A. Bobra,

P. T. Chung, 1998

5. Specific Course Information:

a. Brief description of the content of the course (catalog description)

This course introduces the students to crude oil and its classification, specifications and characteristics, in addition to identifying oil derivatives and the benefits of their use, by conducting the necessary experiments to determine their validity and scope of use.

b. Pre-requisites or co-requisites: None

c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program PE201, Oil properties is a required course in the Petroleum Engineering program.

6. Specific goals for the course:

a. Specific outcomes of instruction:

1. Understanding Physical and Chemical Properties: Learning aids in comprehending the physical and chemical properties of oil, including density, freezing and boiling points, and chemical composition. This contributes to analyzing oil and understanding how these properties impact its various uses.
2. Identifying Extraction Methods and Techniques: Learning helps grasp the methods used for extracting and refining oil. This involves studying purification and refining processes that result in diverse oil products such as gasoline and diesel.
3. Applications in Industries and Economies: Learning extends to exploring how knowledge of petroleum properties influences its diverse applications in industries, from manufacturing to energy production. Understanding these applications contributes to insights into the economic significance and global impact of the oil sector.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

COURSE OUTCOMES	COURSE MEASUREMENTS
Students will demonstrate a comprehensive understanding of fundamental principles governing oil properties, including viscosity, density, and thermal conductivity.	Assessments will include practical experiments where students measure and analyze key oil properties using laboratory equipment.
Students will be able to analyze and interpret oil property data to make informed decisions in the design and operation of oil-related processes.	Written examinations and assignments will evaluate students' ability to apply theoretical concepts to real-world scenarios, showcasing their proficiency in handling and interpreting oil property data.

Grading Plan:	
Homework	10%
Attendance	3%
Participation	2%
Lab	10%
Weekly quizzes	5%
Midterm	20%
Final	50%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

7. Brief list of topics to be covered.

i. Crude oils (chemical composition, classification, properties).

ii. Heat of combustion, boiling range.

iii. Fractional distillation and TBP curves.

b. Engineering Design process

i. Engineering Notebooks.

ABET Course Syllabi for Engineering Thermodynamics

1- Name of the material: - Engineering Thermodynamics

2- Credits and working hours: Three units per week (every Monday from 8:30 - 11:30 am).

For the evening shift, every Monday from 2:30 - 5:30 pm

3- The name of the subject professor, Dr. Dr. M. Ismail Abdel Hussein Rady

4- The approved methodological book

A-Theory and problems of Heat transfer Second Edition (Schaums outline)

B- Thermodynamics for engineers (Schaums outline)

5- Information about the curriculum

B - A brief description of the course contents

This course includes preliminary information about the principles of heat science, units of measurement, and conversions between the SI system and the BRETISH system. The course deals with the zero th. law, the first, second, and third laws of thermodynamics and their applications in the fields of petroleum engineering, and the use of steam tables and the applications of these tables in solving numerical problems.

B- Prerequisites

Requires information in mathematics, calculus and mechanical engineering

C- A description of whether there are required or optional lectures

These are mandatory lectures

6- Specific objectives of the course

1- Knowing the sources of energy and linking them with thermal energy and converting energy from one form to another

2- The effect of this energy on the transformation of the fluid from one form to another

3- Derivation of the first law of heat

4- Link pressure, temperature and volume into one equation
5- Harnessing these factors to produce and calculate energy
6- Derivation of the second and third laws of thermodynamics
7- Learning how to apply the laws of thermodynamics in practical life
GREDING Plan:

Homework	5%
Attendance	5%
Participation	5%
Weekly quizzes	5%
Midterm	20%
final	60%
Total	100%
Portfolio(Extra Credit)	Up to 5 points on final Grande

Course Outcomes	Course Measurements
The student can harness his concepts of thermodynamic processes in practical applications C2. The student can understand the Carnot cycle and how it works in everyday life. C3. The student can harness the concepts of heat, pressure and temperature and benefit from them in our daily life	Assessment will be by problems presented in homework Assessment will be by problems presented in homework, quizzes, and Exam.

ABET Course Syllabi for Engineering Fluid Mechanics

1- Name of the material: - Fluid Mechanics
2- Credits and working hours: two units per week (every Tuesday from 8:30 - 10:30 am
For the evening shift, every Tuesday from 2:30 - 4:30 pm
3- The name of the subject professor, Dr. Dr. M. Ismail Abdel Hussein Rady
4- The approved methodological book
A- Fluid Mechanics, Frank M. White
B- DOE FUNDAMENTALS HANDBOOK, Thermodynamics, Heat transfer, and Fluid Flow
5- Information about the curriculum
A - A brief description of the course contents
The curriculum includes the specifications and properties of fluids, how they deal with heat, the definition of the system and its boundaries, methods for finding the pressure applied to it, the study of the movement of fluids in pipes, the derivation of Bernoulli's law and its applications, as well as the study of the two-phase movement of fluids and how to solve it with the energy equations in it.
B- It requires information in mathematics, calculus, and mechanical engineering
C- A description of whether there are required or optional lectures

These are mandatory lectures

6- Specific objectives of the course

1- Knowing the sources of energy and linking them with thermal energy and converting energy from one form to another

2- The effect of this energy on the transformation of the fluid from one form to another

3- Derivation of Bernoulli's law

4- Link pressure, temperature and volume into one equation

5- Harnessing these factors to produce and calculate energy

6- Derivation of the law of two-phase fluid motion

7- Learning how to apply the laws of fluid mechanics in practical life

Grading plan

Homework	5%
Attendance	5%
Participation	5%
Weekly quizzes	5%
Midterm	20%
final	60%
Total	100%
Portfolio(Extra Credit)	Up to 5 points on final Grande

Course Outcomes	Course Measurements
The student expresses a desire to know the areas of the types of pumps and how to deal with moving fluids. C 2 - The student seeks to apply different methods in the solution. C3 - The student proposes a research topic in the direction of a particular problem. C4- The student has a position in solving a specific problem in his field of specialization.	Assessment will be by problems presented in homework Assessment will be by problems presented in homework, quizzes, and Exam.

ABET Course Syllabi for Drilling Engineering I

1. Course number and name: PE402: Drilling Engineering I
2. Credits and contact hours: 6 Credits and (Saturday/Monday) 8:30 AM – 2:30 PM
3. Instructor's Name: Raed Hameed Allawi
4. Textbook:
    - Fundamentals of Sustainable Drilling Engineering/ M. Enamul Hossain, PhD Abdulaziz Abdullah Al-Majed, PhD 2015
    - Applied Drilling Engineering, A.T.Bourgoyne & F.S. Young JR. SPE text book series , vol.2.

- Drilling Engineering Workbook, Baker Hughes, 1995.

5. Specific Course Information:

a. Brief description of the content of the course (catalog description)

This course covers almost all the fundamental and basic ideas of mud engineering including an extensive literature survey on the drilling fluid. It presents the calculation of drilling properties with two ways theoretical and experimental in the laboratory.

Drilling hydraulics plays an essential role while drilling activities continue to operate. To understand and properly design the hydraulic system, it is important to discuss hydrostatic pressure, types of fluid flow, criteria for type of flow, and types of fluids commonly used in the various operations at the drilling industry. In addition, it covers the type of fluids, pressure losses in the surface connections, pipes, annulus, and the bit; jet bit nozzle size selection; surge pressures due to vertical pipe movement; optimization of bit hydraulics and carrying capacity of drilling fluid.

This course focuses the types of casing, different components of casing and landing procedures including the manufacturing of casing, rig side operations, handling procedure, casing design, and selection criteria. Finally, the current practice and the future trend of the casing for the oil industry are discussed.

b. Pre-requisites or co-requisites: Pre-requisite: Engineering Mathematics + Drilling Engineering

c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program. PE402 is a *required* course.

6. Specific goals for the course:

a. Specific outcomes of instruction:

1. Introduction of Drilling Engineering
2. Classification of drilling operations
3. Drilling Fluid.
4. Properties and functions of drilling fluid
5. Types and properties of clay in water.
6. Types of drilling fluids.
7. Drilling hazards dependent on mud control
8. Drilling mud calculations
9. Drilling methods (cable tool drilling, rotary drilling), basic component of rotary drilling equipment.
10. Drilling string and accessories
11. Types of bits
12. Drilling Hydraulics
13. Casing of oil wells, Functions of casing, types of casing, strings, parameters of casing design, selection of casing and bit types, design of string, graphical design of casing.

14. Cementing of oil wells, classification and properties of cements, classification of cementing operations, cementing equipment, methods and calculations of cementing
15. Hydraulics of primary cementing operations.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Grading Plan:	
Homework	5%
Attendance	3%
Participation	2%
Weekly quizzes	5%
Midterm	15%
Final	40%
Project	5%
Lab.	15%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURE MEASUREMENTS
The student will have sufficient skills to manage successful drilling operations, diagnose drilling problems, and deal with them according to international standards	Assessment will be by problems presented in homework, quizzes, and Exam.
Providing a skilled staff to the scientific community that can effectively contribute to develop and tackle the relevant engineering problems.	The teaching is performed theoretically based on theoretical concepts of Drilling Engineering and laboratory testing.

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. Drilling Fluid.
      ii. Drilling Hydraulics
      iii. Casing of oil wells,
   b. Engineering Design process
      i. Casing design.
      ii. Drilling mud design.

ABET Course Syllabi for Petroleum Reservoir Engineering I

1. Course number and name: PE300, Petroleum Reservoir Engineering I
2. Credits and contact hours: 8 Credits and (Monday) 8:30 AM – 2:30 PM
3. Instructor's Name: Prof. Dr. Emad Suliman Noufal
4. Textbook: Reservoir Engineering Handbook by Tarek Ahmed
   - Fundamentals of Reservoir Engineering by L.P. Dake
   - Reservoir engineering practice, Ezekwe
   - Electronic references, Internet sites
5. Specific Course Information:
   a. Brief description of the content of the course (catalog description):
   This course introduces the students to: This course covers the fundamentals of reservoir engineering which include the description and measurements of the reservoir Rocks & Fluids properties, and learning of laboratory measurement of these properties.

   b. Pre-requisites or co-requisites: General geology - Petroleum Properties – Fundamentals of Petroleum Engineering.
   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: is a required course.
6. Specific goals for the course:
   a. Specific outcomes of instruction:
      1- Learning Techniques to calculate reservoir fluid properties.
      2- Learning details of reservoir rock properties.
      3- Practices and experimental solutions for some of reservoir engineering.

   b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Grading Plan:	
Homework	5%
Attendance	5%
Participation	5%
Weekly quizzes	20%
Midterm	15%
Final	45%
Project	5%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURE MEASUREMENTS

1. Applying different correlations to determine properties of reservoir Rocks & fluids. 2. Understand role of rocks and fluids properties in calculations of reservoir engineering. 3. Understand how to calculate oil reserves properties.	• Quizzes • Monthly exams • Homework • Final exam

7. Brief list of topics to be covered.
   a. Fundamental Units
      i Reservoir rock properties.

      ii. Reservoir fluid properties.

      iii. laboratory determination of reservoir Rock & Fluids properties.

   b. Engineering Design process
      i. Using graphs to determine reservoir fluid properties.
      ii. Plotting graphs to represent petrophysical rock properties as functions of fluid saturations.

ABET Course Syllabi for Petroleum Engineering Economic

1. Course number and name: PE308/ Petroleum Engineering Economic
2. Credits and contact hours: 2 credit(Tues day 10:30-12:30)
3. Instructor's Name: Dr.Abdulhussien N.Alattabi
4. Textbook:
   - Petroleum Economics and Engineering-3d edition- Edited By Hussein K. Abdel-Aal, Mohammed A. Alsahlawi.
   - Petroleum Engineering Handbook Larry W. Lake, Editor-in-Chief
5. Specific Course Information:
   a. Brief description of the content of the course (catalog description).
   The student will learn the significant of the economy for leading the country and oil prices also he will learn about the effects on it. analysis of engineering projects, risk analysis, production decline curve and the Evaluation of future production of oil and gas well sand, expenditure and net present value .
   b. Pre-requisites or co-requisites: Mathematics I & II + Statistics
   The student must have prior knowledge about the oil reserve and the cost of production through the operations required in exploration and development, Petroleum Reservoirs as well as the types of Traps, the types of oil and its different densities (API) and its comparison with international prices.
   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program.PE-201 is required course.

6. Specific goals for the course:

a. Specific outcomes of instruction:

1.Knowledge and understanding: Knowledge and understanding: Oil and gas reserve and International supply and demand of petroleum,

2.Subject-specific skills Methods of engineering decision/ depreciation amortization, taxation, inflation, sensitivity analysis of engineering projects.

3-Assessment methods: The assessment method are divided into three parts; quizzes, monthly exams, and final exams.

4-Thinking Skills:. Economic analysis and evaluations - to encourage student's participation and interaction and fostering atmosphere of tolerance and respect –to develop economic Knowledge of petroleum engineer.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Grading Plan:	
Homework	5%
Attendance	2%
Participation	3%
Weekly quizzes	10%
Monthly	20%
Final	60%
lab	No
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURE MEASUREMENTS
1-Types of Contracts, oi reserve,Rime value of money, decisions. 2. Make plans and their execution program. 3. Planning, follow-up, and supervision of the plans..	Assessment of student by his ability of calculating the rate of return, and the decision for choosing, the contract.
Students will be able to prepare effectively for classes.	Assessment of home work and designing of oil traps and structural contour maps

7. Brief list of topics to be covered.

a. Fundamental Units

i. Evaluating and producing property.

ii. Type of interest, Time value of Money.
iii. Rate of Return and decision fore contracting.
iv. Net present value.

ABET Course Syllabi for Technical English

1. Course number and name: GE310/ Technical English
2. Credits and contact hours: 2 credit(sunday 8:30-10:30)
3. Instructor's Name: Dr.Abdulhussien N.Alattabi
4. Textbook:

   Petroleum Engineering Teachers Book Л.М. Болсуновской, Р.Н. Абрамовой, И.А. Матвеенко.

   Technical English , David Bonam
5. Specific Course Information:
   a. Learning the vocabulary and Grammars for different subjects of petroleum engineering , focus on developing academic / professional language proficiency and developing the communicative language between the students.
   b. Pre-requisites or co-requisites: Grammars for different subjects of petroleum engineering , developing academic / professional language proficiency and

   developing the communicative language between the students, The student must have prior knowledge about the Learning English of 1st and 2nd year.
   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program is required cours.GE-110 and GE-210.
6. Specific goals for the course:
   a. Specific outcomes of instruction:

   The student will have sufficient skills to communicate and technically and academically with professors and professional workplace.

   b. Explicitly indicate which of the student outcomes listed in Criterion 3 or

   any other outcomes are addressed by the course.

Grading Plan:	
Homework	5%
Attendance	2%
Participation	3%
Weekly quizzes	10%
Monthly	20%
Final	60%
lab	No
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURE MEASUREMENTS
Knowledge and understanding: Learning the vocabulary and Grammars for different subjects of petroleum engineering , focus on developing academic / professional language proficiency and developing the communicative language between the students .	Assessment of student by his ability for learning technical English specialized in their works as petroleum engineer. - Academic honesty in duties and not use cheating. To have overlook about the new technologies which linked with course subjects
Students will be able to prepare effectively for classes.	Homeworks -quizzes - monthly exams, -and final exams.

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. Health, safety and Environment(HSE), Oil Companies and Oil Exploration Methods.
      ii. Reservoir Rock Properties, Types Of Wells, Drilling, Casing, cementing and oil Refinery.
      iii. Impact of Chemical Elements on Human Organism
      iv. The Economy of Petroleum Industry.

ABET Course Syllabi for Geophysics

1. Course number and name: PE301 Geophysics
2. Credits and contact hours: 2 Credits and (Tuesday) 12:30 AM – 2:30 PM.
3. Instructor's Name: Dr. Murtadha D.Abdullah
4. Textbook: Aminzadeh, F., & Dasgupta, S. N. (2013). Geophysics for petroleum engineers. Newnes.
5. Specific Course Information:

a. Brief description of the content of the course (catalog description)

This course introduces the students to introductory definitions and basic concepts from various geophysical methods, Upon completion of the study period for this course, the student will have the ability to know the concepts and applications of geophysical methods in...Exploring oil reservoirs, knowing the type of hydrocarbons present in those reservoirs, and identifying the geological structures that compose them including those reservoirs.

b. Pre-requisites or co-requisites

Pre-requisite: PE206 Fundamentals of Petroleum Engineering

c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program.

PE301 Geophysics is a required course in the Petroleum Engineering program.

6. Specific goals for the course:
a. Specific outcomes of instruction:

1. Understand the fundamental principles and concepts of geophysics and its applications in the petroleum industry.
2. Demonstrate proficiency in seismic data acquisition, processing, and interpretation techniques.
3. Analyze well logs and evaluate reservoir properties using well log interpretation techniques.
4. Apply gravity and magnetic methods to geological mapping and hydrocarbon exploration.
5. Apply advanced geophysical techniques, such as electromagnetic methods and 3D seismic imaging, in reservoir characterization.
6. Integrate geophysical knowledge with other subsurface data to make informed decisions in reservoir management.
7. Develop critical thinking and problem-solving skills through geophysical case studies and projects.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

COURSE OUTCOMES	COURSE MEASUREMENTS
Students will gain a comprehensive understanding of geophysical principles and methods used in subsurface exploration and imaging.	Will include exams, quizzes, and assignments to evaluate students' comprehension of geophysical principles, data acquisition methods, and interpretation techniques.
Students will be able to apply geophysical techniques to interpret subsurface structures, identify geological features, and assess potential hydrocarbon or mineral resources.	Will include exams, quizzes, and assignments.

Grading Plan:	
Homework	5%
Attendance	5%
Participation	5%

Weekly quizzes	5%
Midterm	20%
Final	60%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

7. Brief list of topics to be covered.

a. Fundamental Units

i. Seismic Exploration.

ii. Electromagnetic Methods.

iii. Gravity and Magnetic Methods.

b. Engineering Design process

i. Engineering Notebooks.

ABET Course Syllabi for Engineering Mathematics

1. Course number and name: GE302: Engineering Mathematics
2. Credits and contact hours: 6 Credits and (Tuesday) 8:30 AM – 2:30 PM
3. Instructor's Name: Asst. Lect. Muayad Abdulhasan Galtae
4. Textbook:
   - mathematics engineering.
   - Engineering mathematics (DASS)
5. Specific Course Information:
   a. Brief description of the content of the course (catalog description)
   The course aims to study and understand methods of differentiation for first- and second-order equations, as well as higher-order equations, and apply these solutions to practical problems so that the student can prepare the appropriate equation for the problem facing him at the work site, in addition to studying special equations such as the Laplace equation and the Tyler series. Enabling the student to use different numerical methods to solve practical and theoretical problems
   b. Pre-requisites or co-requisites: Mathematics I & II
   Ordinary of differential equations and its applications, Study special functions (Laplace , Legendre , Gama and beta)
   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program.GE302 is a required course
6. Specific goals for the course:
   a. Specific outcomes of instruction:

1- Study numerical methods and how to use it.
2- The ability to solve mathematical equations.
3- The ability to understand problems and use suitable equation to solve it.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or

Grading Plan:	
Homework	5%
Attendance	2%
Participation	3%
Weekly quizzes	5%

ABET Course Syllabi for Petroleum Production Engineering I

1. Course number and name: PE 304 Petroleum Production Eng.I
2. Credits and contact hours: 4 Credits and (Tuesday) 10:30 AM – 12:30 AM.
3. Instructor's Name: Dr. Dheiaa Alfarge
4. Textbook: Economides, et al, Petroleum Production Systems, Prentice Hall, 1994.

Other handouts will be posted on Blackboard to supplement this text.

5. Specific Course Information:

a. Brief description of the content of the course (catalog description)

This Course Specification provides a concise summary of the

A- Formation evaluation. Developing and refining the geological model of the field.

B- Well log analysis and interpretation. Core analysis. Well correlation.

C- Mapping of reservoir rock properties.

D- Estimation of oil and gas reserves. Reserves audits by Russian and Western standards.

E- Geologic evaluation and recommendations for development targets.

F- Geological data preparation for the purposes of field development planning.

b. Pre-requisites or co-requisites

Pre-requisite: Fundamentals of petroleum engineering and fluid properties

c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program.

PE 304 Petroleum Production Eng.1 is a required course in the Petroleum Engineering program.

6. Specific goals for the course:

a. Specific outcomes of instruction:

The development of a hydrocarbon reservoir requires a large number of wells to be drilled and completed to allow the structure to be depleted. The drilling and completion operations are crucial to the long-term viability of the well in meeting its specified objectives. The design and completion of both production and injection wells must:

- Provide optimum production/injection performance.
- Ensure safety (both pressure and fluid containments).

• Maximize the integrity and reliability of the completion over the envisaged life of the completed well.
• Minimize the total costs per unit volume of fluid produced or injected, i.e. minimize the total costs of initial completion, maintaining production and remedial measures.
• Other criteria e.g. control sand production depending upon the particular reservoir characteristics or development constraints.
The completion design involves four principal decision areas, that together provide a conceptual design.
• Specification of the bottom hole completion technique.
• Selection of the production conduit.
• Assessment of completion string facilities.
• Evaluation of well performance / productivity-injectivity.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Grading Plan:	
Homework	20%
Attendance	5%
Participation	5%
Weekly quizzes	5%
Midterm	15%
Final	50%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURSE MEASUREMENTS
-Simulation skills - Field data screening - Government reports	1-Quizes 2- Exams

7. Brief list of topics to be covered.

a. Fundamental Units

i. Introduction to Production.

ii. Flow regimes.

iii. Well completion.

iv. Well hardware.

v. Separators.

vi. Transportations.

vii. Gathering systems.

ABET Course Syllabi for Drilling Engineering II

1. Course number and name: PE402: Drilling Engineering II
2. Credits and contact hours: 6 Credits and (Saturday) 8:30 AM – 2:30 PM
3. Instructor's Name: Raed Hameed Allawi
4. Textbook:
   - Well Engineering and construction, Hussain Rabia.
   - Fundamentals of Sustainable Drilling Engineering/ M. Enamul Hossain, PhD Abdulaziz Abdullah Al-Majed, PhD 2015
   - Applied Drilling Engineering, A.T.Bourgoyne & F.S. Young JR. SPE text book series , vol.2.
   - Drilling Engineering Workbook, Baker Hughes, 1995.
   - Petroleum engineering handbook, Drilling and well completions, C.Gatlin.

5. Specific Course Information:
   a. Brief description of the content of the course (catalog description)

   This course discusses control and monitoring systems in general. It covers how a well can be controlled in a sequential and safe way in addition to its different control devices used in any well control and monitoring system. It covers the whole range of real-time monitoring systems and discusses the current practices in the industry and the future trend of the well control and monitoring system in general.

   This important course discusses the fundamental concepts related to horizontal and directional drilling including well survey, other forms of directional drilling technologies such as horizontal wells, extended reach wells, multilateral wells, slim hole drilling, and coiled tubing drilling. Future trends in directional drilling are also discussed on a separate subsection in addition to the current trend of the directional drilling technology.

   b. Pre-requisites or co-requisites: Pre-requisite: Engineering Mathematics + Drilling Engineering-I

   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program. PE402 is a *required* course.

6. Specific goals for the course:
   a. Specific outcomes of instruction:

      1-Well control
      2-Well Control Equipment
      3-Well design

4-Directional Drilling

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Grading Plan:	
Homework	5%
Attendance	5%
Participation	5%
Weekly quizzes	5%
Midterm	15%
Final	60%
Project	5%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURE MEASUREMENTS
The student will have sufficient skills to manage successful drilling operations, diagnose drilling problems, and deal with them according to international standards	Assessment will be by problems presented in homework, quizzes, and Exam.
Providing a skilled staff to the scientific community that can effectively contribute to develop and tackle the relevant engineering problems.	The teaching is performed theoretically based on theoretical concepts of Drilling Engineering

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. Well Control
      ii. Directional drilling
      iii. Well bath
   b. Engineering Design process
      i. Well design
      ii. Well operation

ABET Course Syllabi for Petroleum Production Engineering II

1. Course number and name: PE404: Petroleum Production Engineering II

2. Credits and contact hours:6 Credit and (Sunday) 8:30 AM- 2:30 PM.
3. Instructor's Name: Asst. Pof. Admon Mtaneus Salloum.
4. Textbook:
   - Production Optimization Using Nodal Analysis, H. Dale Beggs.
   - Reservoir Engineering Second Edition- Ahmad Tarek.
   -Well Performance Manual, Schlumberger
5. Specific Course Information:
   a. Brief description of the content of the course (catalog description)
   This course introduces the students to:
      1- Petroleum Production System and Oil well Performance.
      2- Mathematical and physical principles for pressure drop calculations.
      3- Flow pattern and Classification in vertical and horizontal wells.
      4- Derivation and Solutions of Diffusivity Equation, The Ei function solution, Application.
      5- Analysis the behavior of reservoir by using many methods of well Testing such as multi - rates test, build - up test, draw - down test.
      6-Increases oil production rate by Gas lift technology
   b. Pre-requisites or co-requisites: Petroleum Reservoir Engineering -1+ Petroleum Production Engineering-1
   c. Indicate whether a required, elective, or selected elective: required
6. Specific outcomes of instruction:
      1-provides graduating production engineers with some basic knowledge about production systems (outcome 01)
      2-Presents the practical reservoir engineering equations that are designed to predict the performance of vertical oil wells(outcome 02)
      3-Application of horizontal multiphase flow gradient curve for the flowing to determine the necessary flowing well - head pressure(outcome 03)
      4-Minimize the total costs per unit volume of fluid produced or injected
      5-Evaluation of well performance / productivity-injectivity (outcome 04)
      6- Increasing oil production rate byGas lift technology(outcome 05)
      7-Encouraging teamwork and self-confidence to accomplish tasks better(outcome 06) .

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or
any other outcomes are addressed by the course: outcome 01, outcome 02
outcome 04,outcome 05.

Grading Plan:	
Homework	3%
Attendance	5%
Participation	2%
Weekly quizzes	10%

Midterm	20%
Final	60%
Project	-
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURE MEASUREMENTS
knowledge about production systems and equations that are designed to predict the performance of vertical oil wells	Assessment will be by problems presented in homework, quizzes, and Exam.
5-Students will be able to prepare effectively for classes and Predicting the flow pattern and Derivation and Solutions of Diffusivity Equation	Assessment will be by problems presented in homework, quizzes, and Exam.

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. Oil Well Performance
      ii. Mathematical and physical principles for pressure drop
      iii. Derivation and Solutions of Diffusivity Equation , The Ei function solution, Application of Horner Solution
   b. Engineering Design process
      i. Predict future IPR
      ii Increases oil production rate byGas lift technology.

ABET Course Syllabi for Secondary Oil Recovery

1. Course number and name:PE406: Secondary Oil Recovery
2. Credits and contact hours:6 Credit and (Monday) 8:30 AM- 2:30 PM
3. Instructor's Name:Asst. Prof. Admon Mtaneus Salloum.

Textbook:

- Reservoir Engineering Handbook/ Tarek AhmedSecond Edition
- Enhanced Oil Recovery, by Paul Willhite (Author), Don Green (Author)

5. Specific Course Information:
   a. Brief description of the content of the course (catalog description)
   This course introduces the students to:
      1- Principles of water flooding.
      2- Determining the optimum time to start water flooding
      3- Selecting the proper pattern that will provide the injection fluid with the maximum possible contact with the crude oil system.

4- principals of the displacement efficiency.
5- Vertical areal sweep efficiency
6- EOR methods

b. Pre-requisites or co-requisites: Pre-requisite: Petroleum Production Engineering-2 + Reservoir Engineering-1

c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: required.

6. Specific goals for the course:

a. Specific outcomes of instruction:

Understanding Principles of water flooding. Assessment will be by problems presented in homework, quizzes, and Exam.

1- (outcome 01)
2- Determining the optimum time to start water flooding (outcome 02)
3- Selecting the proper pattern that will provide the injection fluid with the maximum possible contact with the crude oil system. (outcome 03)
4- Understanding the principals of the areal displacement efficiency. (outcome 04)
5- Understanding vertical sweep efficiency
6- Understanding EOR methods. (outcome 05)

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course: outcome 01, outcome 03, outcome 04, outcome 05

Grading Plan:	
Homework	3%
Attendance	5%
Participation	2%
Weekly quizzes	10%
Midterm	20%
Final	60%
Project	-
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURE MEASUREMENTS
Knowledge and understanding: The SOR course aims to develop the capabilities of students to understand the production using water flooding or immiscible gas injection A Subject-specific skills: The program provides the capability to choose the best	Assessment will be by problems presented in homework, quizzes, and Exam

scenario that maximizes the profit and perhaps meets the operator's desirable goal is selected	
Assessment methods: The assessment method is divided into three parts; quizzes, monthly exams, and final exams. C Thinking Skills: Providing a skilled staff to the scientific community that can effectively contribute to develop and tackle the relevant engineering problems. D Teaching and learning methods: The teaching is performed theoretically based upon theoretical concepts of SOR	Assessment will be by problems presented in homework, quizzes, and Exam

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. Principles of water flooding
      ii. principals of the displacement efficiency.
      iii. EOR methods
   b. Engineering Design process
      i. Design water flooding processes.
      ii. selecting and design proper EOR method

ABET Course Syllabi for Gas Technology Engineering

1. Course number and name:PE401: Gas Technology

2. Credits and contact hours:3 Credit and (Saturday) 8:30 AM- 11:30 PM.
3. Instructor's Name: Asst. Prof. Admon Mtaneus Salloum.
4. Textbook:

   - Natural Gas Production Engineering, Chi U. Ikoku

   -Advanced Natural Gas Engineering, Xiuli Wang, Michael Economides

   -Gas Production Operations, H. Dale Beggs
5. Specific Course Information:
   a. Brief description of the content of the course (catalog description)
   This course introduces the students to:
      1- Natural gas resources, its composition and Phase Behavior.
      2- Flow of Natural Gas in Porous media and Basic flow equation Flow of natural gas.
      3-Introduction to natural gas processing
   b. Pre-requisites or co-requisites

Pre-requisite: Eng. Thermodynamics. + Reservoir Engineering -1

c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program:(PE203 + PE300) are a required cources.

6. Specific goals for the course:

a. Specific outcomes of instruction:

1.Knowledge of Natural gas resources. (outcome 01)
2.2. Ability to relate volumes of gas existing in the reservoir to reservoir pressure, because the flow capacity of a well depends on the reservoir pressure.(outcome 02)
3.3.Applying the equations to relate volume and pressure of natural gas flow through production system. (outcome 03)
4.4. Ability to calculate Cas flow through restriction. (outcome 04)
5. Knowledge of the fundamentals of natural gas processing. (outcome 05)
6. Encouraging teamwork and self-confidence to accomplish tasks better (outcome 06).

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course: outcome 01, outcome 03, outcome 04, outcome 05.

Grading Plan:	
Homework	3%
Attendance	5%
Participation	2%
Weekly quizzes	10%
Midterm	20%
Final	60%
Project	-
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURE MEASUREMENTS
Knowledge of Natural gas resources b. The ability to relate volumes of gas existing in the reservoir to reservoir pressure, because the flow capacity of a well depends on the reservoir pressure.	Assessment will be by problems presented in homework, quizzes, and Exam.
c. Fundamentals of natural gas processing	Assessment will be by problems presented in homework, quizzes, and Exam

7. Brief list of topics to be covered.
   a. Fundamental Units
      i. Cas composition and Phase Behavior.
      ii. Flow of Natural Gas in Porous media and Basic flow equation
      iii. natural gas processing

   b. Engineering Design process
      i. Prepare technological program for production from Cas well.
      ii. Prepare technological program for natural gas processing.

ABET Course Syllabi for Numerical Methods and Reservoir Simulation

1. Course number and name: PE408: Numerical Methods and Reservoir Simulation
2. Credits and contact hours: 6 Credits and (Sunday/Monday) 8:30 AM – 2:30 PM
3. Instructor's Name: Asst. Prof. Dr. Ahmed N. Nimir Al-Subeeh
4. Textbook:
   - Numerical Methods for Engineers and Scientists Second Edition- Joe D. Hoffman- ISBN: 0-8247-0443-6.
   - Petroleum Reservoir Simulation A Basic Approach by Abou-Kassem J. H., Farouq Ali S. M. and Islam M. R.

5. Specific Course Information:

   a. Brief description of the content of the course (catalog description):

   This course includes derivations of basic equations and underlying principles used in developing reservoir simulators. It covers the development of a simple governing equation, partial differential equations for single-phase and multiphase flow in porous media. Finite difference approximations are used to solve the equations. Input data requirements and applications of simulation models for history matching and prediction of field performance are discussed. A spreadsheet, i.e. Microsoft Excel and FORTRAN 90-95 programming Language are used for many of the examples and exercises.

   b. Pre-requisites or co-requisites

   Pre-requisite: Engineering Mathematics + Petroleum Reservoir Engineering + Petroleum Production Engineering.

   c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: PE408 is a *required* course.

6. Specific goals for the course:

   a. Specific outcomes of instruction:
      1. Learning the theories and philosophy of the reservoir simulation (outcome 01).
      2. Learning how to derive, formulate, and solve the partial differential equations that governing the flow in porous media (outcome 01).

3. Ability to continuous knowledge and Learning new approaches to solve numerically the partial differential equations that governing the flow in porous media (outcome 06).
4. To be able to design a simulator for a reservoir problems (outcome 02).
5. Develop the ability to work in time (outcome 07).

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course: outcome 01, outcome 02, outcome 06, outcome 07.

Grading Plan:	
Homework	5%
Attendance	2%
Participation	3%
Weekly quizzes	5%
Midterm	15%
Final	40%
Project	5%
LAB	15%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

COURSE OUTCOMES	COURSE MEASUREMENTS
A1. Applying the finite difference approximations to solve partial differential equations. A2. Applying different methods to solve systems of linear equations.	Assessment will be by problems presented in homework, quizzes, and tests.
Applying reservoir simulation techniques to predict future behavior of petroleum reservoirs.	Assessment will be by problems presented in homework, quizzes and tests.

ABET Course Syllabi for Petroleum Reservoir Eng. II

1. Course number and name: PE400 Petroleum Reservoir Eng.2
2. Credits and contact hours: 6 Credits and
3. Instructor's Name: Prof. Dr. Emad Suliman Noufal
4. Textbook:
   1.Reservoir Engineering Handbook by Tarek Ahmed
   2.Applied Petroleum Reservoir Engineering by Craft B.C. and Hawkins, M.F.
5. Specific Course Information:
   a. Brief description of the content of the course (catalog description)

This course introduces the students to: The fundamentals of reservoir engineering which include the description and characterization of the oil and gas reservoirs, calculation of fluid inplace and the recoverable reserves, theory and calculation of fluid flow in porous media, and the influence of aquifer on reservoir performance.

b. Pre-requisites or co-requisites: Pre-requisite: Reservoir Engineering I

c. Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: is a required course program.

6. Specific goals for the course:

a. Specific outcomes of instruction:

1.Applying different techniques to find the pressure distribution in oil and gas reservoirs.

2.Predicting performances of oil and gas reservoirs.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

COURSE OUTCOMES	COURSE MEASUREMENTS
1. Understanding reservoir flow regimes.	Assessment will be by problems presented in homework, quizzes, and tests.
2. Learning techniques to derive and solve equations of fluid flow in porous media.	Assessment will be by problems presented in homework, quizzes, and tests.

Grading Plan:	
Homework	5%
Attendance	3%
Participation	2%
Weekly quizzes	5%
Midterm	20%
Final	60%
Project	5%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

7. Brief list of topics to be covered.

a. Fundamental Units
   i. Reservoir Properties.
   ii. Characterization Techniques.
   iii. Characterization Techniques.
b. Engineering Design process
   i. Engineering Notebooks.

CV

APPENDIX B – FACULTY VITAE

Name: Firas Faeq K. Hussain

Date of birthday: 1/8/1982

Religion: Muslim

Marital Status Married: Married

No. of Children: 2

Position: Dean of College of Engineering

Specialization: Laser & optoelectronics

Scientific degree: PhD

Work Address: College of Engineering/ ALAYEN IRAQI UNIVERDITY AUIQ

Work Phone: +964-7811107640

Mobile/ +964-7811107640

Personal Email: firas.faiq@gmail.com

university Email: firas.f@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	Al-Nahrain Uni.	Engineering	202-2003
M.Sc.	Al-Nahrain Uni.	Engineering	2006
Ph.D.	Cairo Uni.	NILES	2016

Second- Career:

No.	Career	Workplace	From-To
1	Follow-Up Engineer	CTL Company	2004-2008

Third- University Teaching:

No.	University	The Institute/College	From-To
1	Lecturer	Al-Muthanna Uni./ College of Science	2008-2016
2	Director of Research & Development Department	Al-Muthanna Uni.	2016-2018
3	Director of Scientific Affairs Department	Al-Muthanna Uni.	2018-2021
4	Lecturer	Al-Muthanna Uni./ College of Science	2021-2023
5	Dean of college of Engineering	ALAYEN IRAQI UNIVERSITY AUIQ	2023

Fourth-Courses Which You Teach:

No.	Department	Subject	Year
	Physics Department	Laser Physics	2008-2023
	Physics Department	Vacuum Tech.	2008-2009
	Physics Department	Detectors	2008-2009
	Physics Department	Numerical Analysis	2009-2010
	Physics Department	Fiber Optics	2016-2017
	Physics Department	English Language	2016-2023

Fifth- Thesis which was supervised by:

No.	Thesis Title	Department	Year

Sixth- Conferences which you participated:

No.	Conferences Title	Year	Place	Type of Participation

Seventh- Scientific Activities:

Within The College	Outside the college

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year
1	Dispersion characteristics of asymmetric channel plasmon polariton waveguides	IEEE Journal of Quantum Electronics	2014
2	Efficient polarization filter design based on plasmonic photonic crystal fiber	Journal of Lightwave Technology	2015
3	Ultracompact polarization rotator based on liquid crystal channel on silicon	Journal of Lightwave Technology	2017
4	Theoretical investigation for the relation (supermassive black hole mass)–(spiral arm pitch angle): a correlation for	IOP Conference Series: Materials Science and Engineering	2019

	galaxies with classical bulges		
5	Dispersion characteristics of asymmetric multistep titanium nitride channel plasmon waveguide	ACM Digital Library	2019
6	Extinction Cross-Section Modeling of Metallic Nanoparticles	Iraqi Journal of Science	2020
7	Analysis of circular plasmonic photonic crystal fiber for filter applications	AIP Conference Proceedings	2020
8	Hybrid-Approach-Based Feature Selection for Magnetic Reverberation Imaging Brain Tumor Classification	Journal of Southwest Jiaotong University	2020
9	A Review of Plasmonic Photonic Crystal Fiber.	MJPS	2020
10	Modeling of Mach-Zehnder modulator using ferroelectric materials at 1.55 μm optical transmission	Materials Today: Proceedings	2021
11	Analysis of Efficient polarization filter based on double trenched channel plasmon polariton waveguides	Solid State Communications	2022
12	Modeling of asymmetric Rib SOI waveguide for optical communications applications	AIP Conference Proceedings	2022
13	Modelling of asymmetric channel plasmonic polariton waveguides	Journal of Engineering and Applied Science	2023

Ninth- Membership

*IEEE

*Iraqi Academic

*Iraqi Engineers

Tenth, Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year
1	Best Postgraduate research	College of Science, Al-Muthanna Uni.	2019
2	E-Learning Award	Al-Muthanna Uni.	2021
3	Best Undergraduate research	College of Science, Al-Muthanna Uni.	2023

Eleventh, Scientific literature

No.	Scientific literature title	Year of the publication

Twelfth- Languages:

- Arabic
- English

CV

Name: Najeh Yousef Essa Alali

Date of birthday: 24/5/1975

Religion: Islam

Marital Status Married: married

No. of Children: 2

Position: Dean Assistant for scientific affairs

Specialization: petroleum engineering

Scientific degree: Phd

Work Address: Al-Ayen University/petroleum eng. college

Work Phone:

Mobile: 07817134043

Personal Email: najehalali2016@gmail.com

university Email: dr.najehalali@alayen.edu.iq

First, Scientific Certification:

Degree Science	University	College	Date
B.Sc.	Albaath	Chemical and Petroleum eng.	1999
M.Sc.	Amir kabeer	Metallurgy and Petroleum eng.	2004
Ph.D.	Sharif	Chemical and Petroleum eng.	2009

CV

No.	Career	Workplace	From-To
1	Reservoir engineer	Syrien petroleum company	27/8/2009 to 31/8/2012
2	Faculty member	Syrian University	1/9/2012 to 31/8/2017
3	Head of drilling department	Syrian University	1/9/2017 to 17/2/2018
4	Faculty member	Al-Ayen university	18/2/2018 to 21/2/2018
5	Dean Assistant for scientific Affairs	Al-Ayen university	22/2/2018 to 12/10/2021
6	Dean of petroleum eng.	Al-Ayen university	13/10/2021 to 11/1/2023
7	Dean Assistant for scientific Affairs	Al-Ayen university	12/1/2023 up to now

Second- Career:

Third- University Teaching:

No.	University	The Institute/College	From-To
1	Syrian private	Petroleum engineering	1/9/2012 to 17/2/2018
2	Al-Ayen	Petroleum engineering	18/2/2018 up to now

Fourth- Courses Which You Teach:

No.	Department	Subject	Year
1	Syrian private/petroleum college	Modeling Simulation Deviated, directional and horizontal drilling	2012-2013
2	Syrian private/petroleum college	Modeling Simulation Deviated, directional and horizontal drilling	2013-2014
3	Syrian private/petroleum college	Modeling Simulation Deviated, directional and horizontal drilling	2014-2015
4	Syrian private/petroleum college	Modeling Simulation Deviated, directional and horizontal drilling	2015-2016

5	Syrian private/petroleum college	Modeling Simulation Deviated, directional and horizontal drilling	2017-2018
6	Al-Ayen / petroleum engineering college	English1 English2 Petroleum properties Fundamental of oil	2018-2019
7	Al-Ayen / petroleum engineering college	Technical English Petroleum properties Drilling-1	2019-2020
8	Al-Ayen / petroleum engineering college	Drilling-1 Drilling-2	2020-2021
9	Al-Ayen / petroleum engineering college	Secondary oil recovery Drilling-2	2021-2022
10	Al-Ayen / petroleum engineering college	Drilling-2	2022-2023

11	Al-Ayen / petroleum engineering college	Petroleum properties	2023-2024

Fifth- Thesis which was supervised by:

No.	Thesis Title	Department	Year

Sixth- Conferences which you participated:

No.	Conferences Title	Year	Place	Type of Participation

Seventh- Scientific Activities:

Within The College	Outside the college
1- manufacturing of Sybolt viscosity measurement apparatus 2023	
2- manufacturing of penetration measurement of bitumen and gease	

apparatus 2023	
3- manufacturing of ful automatic drilling Rig 2023	

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year

Ninth- Membership

*

*

Tenth, Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year

Eleventh, Scientific literature

No.	Scientific literature title	Year of the publication

Twelfth- Languages:

- Arabic: Native
- English: good
- Persian: Fluent

CV

Name: ASAAD SHAKIR HAMEED

Date of birthday: 1978/06/18

Religion: Muslim

Marital Status Married: Married

No. of Children: 4

Position: Deputy Dean for Administrative Affairs of the Engineering Colleg

Specialization: Mathematics / Modelling

Scientific degree: Ph.D

Work Address: Engineering College at Al-Ayen Iraqi University, Thi-Qar, Iraq.

Work Phone:

Mobile/ +9647836525561

Personal Email: asaadutem@yahoo.com

university Email: asaad.shakir@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	University of Thi-Qar, Iraq	College of Education for Pure Sciences	2001
M.Sc.	University of Tishreen, Syria	College of Science	2012
Ph.D.	UTeM, Malaysia	FTMK	2021

Second- Career:

CV

No.	Career	Workplace	From-To
1	Quality Assurance and Academic Performance Unit;	Mazaya University College, Thi-Qar, Iraq	Oct. 2022 – June. 2023
2	Director of Contracts and Academic Cooperation; and		
3	Scientific conferences and workshops organizer.		
4	Assisting the Faculty of Information and Communication Technology UTeM in teaching and learning activities for 6 hours per week under the Zamalah Scheme.	Universiti Teknikal Malaysia Melaka (UTeM)	Sept. 2018 - Feb. 2021
5	Lecturer at Open Educational College	Ministry of Education, Iraq	Sept. 2014 – Sept. 2016
6	Teacher at General Directorate of Thi-Qar Education		Apr. 2002 – Nov. 2023
7	Deputy principal of a secondary school		Oct. 2003 – Oct. 2010

Third- University Teaching:

No.	University	The Institute/College	From-To
1	Ministry of Education, Iraq	Lecturer at Open Educational College	Sept. 2014 – Sept. 2016

2	UTeM	FTMK	Sept. 2018 - Feb. 2021

Fourth- Courses Which You Teach:

No.	Department	Subject	Year
1	Mathematics	Mathematics	Sept. 2014 – Sept. 2016
2	Information and Communication Technology	Statistic	Sept. 2018 - Feb. 2021

Fifth- Thesis which was supervised by:

No.	Thesis Title	Department	Year
	-	-	-

Sixth- Conferences which you participated:

No.	Conferences Title	Year	Place	Type of Participation
1	The Natural Science the Recent Developments of the Era	2020	Türkiye	Scientific Committee
2	Pedestrian and Objects Detection by Using Learning Complexity-Aware Cascades	2021	Türkiye	Author
3	Al-Kadhum 2nd International Conference on Modern Applications of Information and Communication	2023	Iraq	Author

	Technology			
	Linguistic and literary diversity in light of comparative studies	2023	Iraq	Preparatory Commission

Seventh- Scientific Activities:

Within The College	Outside the college
	Academic English Programme of the session 2016-2017 in Universiti Teknikal Malaysia Melaka (UTeM)
	Workshop titled Publication in High Impact Journals on 24 November 2018 at University of Malaya (UM)
	Workshop titled "Multi-Criteria Decision-Making Techniques at Faculty of Computer Science and Information Technology, UPM, 25 &26 Jan. 2019, Malaysia
	Passing the Human Resources Development Training Program (Human Resources Specialist) from 20-24/2022 by National Quality Institute. Egypt

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year
1	Review Paper in Vehicle Routing Problem and Future	International Journal of Applied Engineering	2017

	Research Trend	Research	
2	Improved Discrete Differential Evolution Algorithm in Solving Quadratic Assignment Problem for best Solutions	INTERNATIONAL JOURNAL OF ADVANCED COMPUTER SCIENCE AND APPLICATIONS	2018
3	A comparative study between the branch and cut algorithm and ant colony algorithm to solve the electric meter reader problem in rural areas	Opcion	2018
4	Review on the Methods to Solve Combinatorial Optimization Problems Particularly: Quadratic Assignment Model	International Journal of Engineering & Technology	2018
5	An Efficient Crossover Operator for Quadratic Assignment Problem Based on Discrete Differential Evolution Algorithm	International Journal of Advanced Science and Technology	2019
6	Enhancing solutions of capacity vehicle routing problem based on an improvement ant colony system algorithm	Journal of Advanced Research in Dynamical and Control Systems	2019
7	Using Machine Learning Technologies to Classify and Predict Heart Disease	International Journal of Advanced Computer Science and	2020

		Applications	
8	MULTI-OBJECTIVES ANT COLONY SYSTEM FOR SOLVING MULTIOBJECTIVES CAPACITATED VEHICLE ROUTING PROBLEM	Journal of Theoretical and Applied Information Technology.	2020
9	A new hybrid approach based on discrete differential evolution algorithm to enhancement solutions of quadratic assignment problem	International Journal of Industrial Engineering Computations	2020
10	An efficient improvement of ant colony system algorithm for handling capacity vehicle routing problem	International Journal of Industrial Engineering Computations	2020
11	A Hybrid Method Integrating a Discrete Differential Evolution Algorithm with Tabu Search Algorithm for the Quadratic Assignment Problem: A New Approach for Locating Hospital Departments	Mathematical Problems in Engineering	2021
12	A HYBRID METHOD INTEGRATING A RANK-BASED ANT SYSTEM ALGORITHM WITH INSERT AND SWAP ALGORITHM FOR THE CAPACITATED VEHICLE ROUTING PROBLEM	Journal of Theoretical and Applied Information Technology	2021

	SOLUTION		
13	Using Machine Learning Technologies to Classify and Predict Heart Disease	International Journal of Advanced Computer Science and Applications	2021
14	Transfer Learning to Detect COVID-19 Automatically from X-Ray Images Using Convolutional Neural Networks	International Journal of Biomedical Imaging	2021
15	Experimental Study of Hybrid Genetic Algorithms for the Maximum Scatter Travelling Salesman Problem	International Journal of Advanced Computer Science and Applications	2021
16	KL-MOB: automated COVID-19 recognition using a novel approach based on image enhancement and a modified MobileNet CNN	Peer J Computer Science	2021
17	Hybrid Genetic Algorithms for the Asymmetric Distance-Constrained Vehicle Routing Problem	Mathematical Problems in Engineering	2021
18	Implementation of the enhanced ant colony system algorithm to solve reliable communication network design	Eastern-European Journal of Enterprise Technologies	2022
19	Networks Cyber Security Model by Using Machine	NTELLIGENT SYSTEMS AND	2022

	Learning Techniques	APPLICATIONS IN ENGINEERING	
20	Analytical Model for Thermoelastic Damping in In-Plane Vibrations of Circular Cross-Sectional Micro/Nanorings with Dual-Phase-Lag Heat Conduction	Journal of Vibration Engineering & Technologies	2023
21	Couple stress-based thermoelastic damping in microrings with rectangular cross-section according to Moore–Gibson–Thompson heat equation	Archives of Civil and Mechanical Engineering,	2023
22	Harmony Search Algorithm for Solving Combinatorial Optimization Problems: Bibliometric Analysis.	Mathematical Modelling of Engineering Problems	2023
23	Impact on Higher Education and College Students in Dijlah University after COVID through E-learning	Computer-Aided Design and Applications	2023
24	An Enhanced Ant Colony System Algorithm Based on Subpaths for Solving the Capacitated Vehicle Routing Problem	Symmetry	2023
25	Superconvergence of conforming and nonconforming finite element	AIP Conference Proceedings	2023

	approximation for elliptic problems by L2-projection		
26	Fuzzy-Based Clustering for Larger-Scale Deep Learning in Autonomous Systems Based on Fusion Data	Journal of Intelligent Systems and Internet of Things	2023
27	Intelligent Load Identification of Household-Smart Meters Using Multilevel Decision Tree and Data Fusion Techniques	Journal of Intelligent Systems and Internet of Things	2023
28	A novel class of adaptive observers for dynamic nonlinear uncertain systems	Expert Systems	2023
29	Appling the Roulette Wheel Selection Approach to Address the Issues of Premature Convergence and Stagnation in the Discrete Differential Evolution Algorithm	Applied Computational Intelligence and Soft Computing	2023

Ninth- Membership

Editorial Board Member and Recently Paper Reviewer

1. International Research Journal of Management, IT and Social Sciences.
2. Journal of Applied Mathematics and Computation.
3. ACTA SCIENTIFIC COMPUTER SCIENCES.
4. International Journal of Electrical and Computer Engineering (IJECE).
5. International Conference on Artificial Intelligence and Data Sciences.

6. Scientific Reports.
7. Computer Systems Science and Engineering.
8. Computers, Materials and Continua.
9. Iraqi Journal for Computer Science and Mathematics.
10. Engineering Applications of Artificial Intelligence.

Tenth- Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year
1	Obtained first place for 2022 and 2023 in Scientific Research, specializing in Mathematics in the Iraqi Ministry of Education	AD Scientific Index	2022 and 2023

Eleventh, Scientific literature

No.	Review scientific journals	Number of documents reviews
1	Engineering Applications of Artificial Intelligence.	4
2	Computer Systems Science and Engineering.	2
3	Computers, Materials and Continua.	3
4	Scientific Reports.	2
5	Iraqi Journal for Computer Science and Mathematics	2
6	Acta Scientific Computer Sciences	1

7	International Conference on Artificial Intelligence and Data Sciences	1
8	International Journal of Electrical and Computer Engineering (IJECE)	1

Twelfth, Languages:

- Arabic
- English

CV

Name: Emad Suliman Noufal

Date of birthday: 4.06.1960

Religion: Christian

Marital Status Married: Married

No. of Children: 3

Position: -

Specialization: Petroleum Engineering

Scientific degree: PH.D Prof.

Work Address: Alayen University - Nile Street

Work Phone: -

Mobile: 07863502891

Personal Email: isnoufal@gmail.com

university Email: emad.noufal@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	Al-Baath University	Chemical &Petroleum Engineering	1978-1983
M.Sc.	-	-	-
Ph.D.	Akademy of Oil&Gas (E.M.Gubkin), Moscow, Russia	Faculty of Development &Explotation Oils Reservoirs.	1985-1991

Second- Career:

No.	Career	Workplace	From-To
1	Teaching Assistant	Al-Baath University	1985-1991
2	Teacher	Al-Baath University	1991-1998

3	Assistsnt Prof.	Al-Baath University	1998-2005
4	Professor	Al-Baath University	2005 until now

Third- University Teaching:

No.	University	The Institute/College	From-To
1	Al-Baath University	Chemical &Petroleum Eng.	1991-2023
2	SPU	Petroleum Eng.	2007-2023
3	Al-Furat University	Petrochemical Eng.	2007-2010

Fourth- Courses Which You Teach:

No.	Department	Subject	Year
1	Petroleum Engineering	Reservoir Fluids Hydraulic	1991-2023
2	Petroleum Engineering	Physics of Petroleum and Gas Stratums (1+2).	2005-2023
3	Petroleum Engineering	Reservoir Engineering (1+2)	2012-2023

Fifth- Thesis which was supervised by:

No.	Thesis Title	Department	Year
1	Master's degree entitled: Improving oil production from reservoir layers using chemical methods. - 1999. Engineer Musab Al-Baridi. Co-supervisor with Professor Dr. Ahmed Al-Sheikh Hammoud.	Petroleum Engineering	1999
2	Master's degree entitled: The study of Secondary Methods to Increase the Recovery Factor of Massive Layer in Al-Swaydia Field.	Petroleum Engineering	2002
3	Master's degree entitled: "An Analytical Study of the Investment of the Producing Layers in the Qamqam, Balas, and Abu Rabah Gas Fields." Eng. Ayman Shaqouf. Co-supervisor	Petroleum Engineering	2008

	with Professor Dr. George Abdel-Ahad.		
4	PhD entitled: Using the Chemical Injection System (ASP) to increase the displacement factor in some Syrian fields. Engineer Musab Al-Baridi. Supervisor, with Dr. Attia Attia from Egypt	Petroleum Engineering	2010
5	PhD entitled: Using CO2 and natural gas to increase the oil yield factor in the Sazba field. Engineer Ayman Shaqouf, supervisor, with Professor Dr. Ahlam Emad	Petroleum Engineering	2014

Sixth- Conferences which you participated:

No.	Conferences Title	Year	Place	Type of Participation
1	The First International Gas Conference -- A laboratory study of natural gas injection with the aim of increasing the displacement factor in one of the Syrian fields.	10-12/5/2005	Al-Baath University - homs- Syria	Research
2	The first engineering conference at the with a scientific research entitled “Study of the effect of capillary phenomena on the oil yield factor of carbonate layers in some wells in Syrian fields” .	16-18 December 2002	University of Aden -Yemen	Research
3	Participation in the Fifth Egyptian-Syrian Conference, with a scientific research entitled: “Study of the mutual influence between heavy stratified oil, surfactants and CO2, with the aim of obtaining the best physical properties of the studied system".	2003	Suez Canal University - Egypt	Research
4	he Forty-Fourth Science Week - Dental clinics’ air is polluted with mercury in the city of Homs.	11-5/22/2004	Al-Baath University - Homs - Syria	Research
5	The First International Gas Conference - a	10-	Al-Baath	Research

	laboratory study of natural gas injection with the aim of increasing the displacement factor in one of the Syrian fields.	12/5/2005	University - Homs - Syria	
6	The Sixth Syrian-Egyptian Conference - Homs. The rate of change of the temperature field and flow from the surface of the solar energy storage reactor by the Ca(OH) dissociation reaction.	8-10/11/2005	Al-Baath University - Homs - Syria	Research
7	Prospects of scientific research and technological development in the Arab world. Study of the absolute permeability of liquid for cylindrical samples in stratified conditions.	2006	,Damascus - Syria	Research
8	Participation in the fifth gathering of conferences on the horizons of scientific research and technological development in the Arab world, under the slogan of scientific creativity and civilizational development. With a scientific research entitled: “A laboratory study of natural gas injection with the aim of increasing the displacement factor in one of the Syrian fields.	October 26-30, 2008	Fas - Morocco	Research
9	The Eighth Syrian-Egyptian Conference - Homs. Laboratory study of factors affecting phasic behavior (oil/ASP).	13-15/11/2009	Al-Baath University - Homs - Syria	Research

Seventh- Scientific Activities:

Within The College	Outside the college
Course :"Reservoir Engineering-1 " Course :" Reservoir Engineering-2"	Graduation Projects (Yearly) ,From 1991 unil 20123 in Al-Baath & Al-Furat & Private Syrian Universities.
Graduation Projects .	Practical activiteis in Core&PVT analisis Lab. by contracts with comanies as SHell ,Petro-canada, Golfsands, Ina ....itc

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year
-	-	-	-

CV

Ninth- Membership

- Member of Engineering association in Homs, Syria.
- Member of Teacher s association of Al-Baath Univ., Homs, Syria.
- License of Practicing Engineering profession issued by Al-Baath Univ.
- The Syrian Scientific Society for Informatics.

Tenth- Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year
-	-	-	-

Eleventh- Scientific literature

No.	Scientific literature title	Year of the publication
1	Underground Fluids Hydrolic	1994-1995
2	Physics of Layers-1 (Practical Part)	1995-1996

Twelfth, Languages:

- Arabic
- English
- Russian

CV

Name: Assist. Prof. Dr. Ahmed N. Nimir Al-Subeeh

Date of birthday: 9 – 1- 1967

Religion: Islam

Marital Status Married: Yes

No. of Children: 6

Position: University Lecturer

Specialization: Reservoir Engineering – Simulation by Computer

Scientific degree: Assistant Professor

Work Address: college of engineering - Alayen Iraqi University

Work Phone:

Mobile/ +964 07801392900

Personal Email: ahmed_nimir@yahoo.com

university Email: ahmad.najem@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	Baghdad	Engineering	1990
M.Sc.	Baghdad	Engineering	1995
Ph.D.	Baghdad	Engineering	2001

No.	Career	Workplace	From-To

1	Engine design laboratory manager	Basrah University – Eng. Col.	1990 - 1991
2	Executive Engineer for RS 1 and RS 4	South Oil Company	1990 - 1990
3	Execution engineer for the new Basra salt mill	General Company for Geological Survey and Mining	1990 - 1991
4	Manager of Internet and Computer	Basrah University – Eng. Col.	2001 - 2007
5	Head of Computer Science Dept.	Shatt Alarab college	2004 - 2018
6	Assistant Dean for Administrative Affairs	Shatt Alarab college	2018 - 2022

Second- Career:

Third, University Teaching:

No.	University	The Institute/College	From-To
1	University Lecturer	Basrah University	1990 - 1991
2	University Lecturer	Technology University	1996 - 1998
3	University Lecturer	Pet. Institute - Baghdad	1996 - 1998
4	University Lecturer	Basrah University	2000 - 2014
5	University Lecturer	Shatt Alarab college	2001 - 2022
6	University Lecturer	Alayen University	2023 -

CV

Fourth- Courses Which You Teach:

No.	Department	Subject	Year
1	Chemical Engineering	Unit Operations LAB	1990 - 1991
2	Mechanical Engineering	Auto CAD and Machines Design	1990 - 1991
3	Mechanical Engineering	Mechanical Engineering Drawing	1990 - 1992
4	Mechanical – Baghdad Inst.	Computer Science and Languages	1995 - 1997
5	Chemical School	Engineering Drawing	1996 - 1998
6	Computer Science	Simulation and Quee Theory	2005 - 2022
7	Computer Science	Programming Languages	2001 - 2018
8	Petroleum Engineering	Reservoir Engineering	2009 - 2012
9	Petroleum Engineering	Numerical methods and simulation	

Seventh- Scientific Activities:

1	مسؤول برنامج تدريب العاملين	كلية شط العرب الجامعة
2	اشراف وادارة وصيانة المختبرات	كلية شط العرب الجامعة – علوم الحاسبات
3	مسؤول برنامج التدريب	كلية شط العرب الجامعة

	الالكتروني	
كلية شط العرب الجامعة	مسؤول شعبة اعتماد المختبرات	4
المركز الوطني - مصر	دورة تطوير مهارات الكوادر العليا - تركيا	5
المركز الوطني - مصر	دورة ادارة الازمات والتخطيط - تركيا	6
المركز الوطني - مصر	دورة منظومة التعليم وبناء الشراكات	7
المركز الوطني - مصر	- العراقTOTتدريب المدربين	8
وزارة التعليم العالي – التعليم الاهلي	مؤتمر التعليم الأهلي في بيروت	9
وزارة التعليم – التعليم الاهلي	مجلس التعليم الاهلي - مشاركة	10
وزارة الشباب والرياضة	مهرجان السيادة العلمي الرابع - مشاركة	12
وزارة الشباب والرياضة	مهرجان السيادة العلمي الخامس - مشاركة	13
وزارة الشباب والرياضة	مهرجان السيادة العلمي السادس - مشاركة	14
وزارة الشباب والرياضة	المخيم الكشفي في الديوانية	15
كلية شط العرب الجامعة	تنظيم البطولة الرياضية لعلوم الحاسبات	16
كلية شط العرب الجامعة	تصميم قاعدة بيانات للجنة الأمتحانية	17

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

CV

No.	Research Title	Place of Publication	Year
1	A Programming Package to Convert The Engineering Projects Designed by CAD Programs Into Manufacturing Instructions on CNC Machines	مجلة ابحاث البصرة	3 – 11 - 2009
2	A New Simulator for Dynamic Local Grid Refinement for Reservoir Simulation	مجلة البصرة للعلوم والهندسة	28 – 5 - 2009
3	A New Hybrid Grid Simulator for Multi Phase Flow in Oil Reservoirs	مجلة ابحاث البصرة	14 – 10 - 2009
4	The Effects of Shape of Cells in Simulation Networks Basic Concepts and Derivation	مجلة البصرة للعلوم والهندسة	3 – 11 - 2009
5	Integrated Software Package for Simulation - Simulator - Grapher - 2D and 3D Surfer Representation	Periodicals of Engineering and Natural Sciences, ISSN: 2303-4521 Vol. 7 No. 3 1439-1458 pp: 2019	2019
6	Simulating an Induction Motor Multi-operating Point Speed Control Using PI Controller with Neural Network	Periodicals of Engineering and Natural Sciences, ISSN: 2303-4521	2019
7	Genetic Algorithm Applied to History Matching of Reservoir	Indonesian Journal of Electrical Engineering	2019

	Simulation –Iraqi Field Data	and Computer Science, ISSN: 2502-4760, 2502-4752	
8	History Matching – Inverse Problem Using Continuous Genetic Algorithms Applied to Field Data	Indonesian Journal of Electrical Engineering and Computer Science, ISSN: 2502-4760, 2502-4752	2019

Ninth- Membership

* SPE Member.

* Iraqi Engineers Syndicate – Consultant Engineer

Tenth- Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year

Twelfth- Languages:

- Arabic
- English

CV

Name: Admon Mtaneus Saloum

Date of birthday: 14/8/1961

Religion:christian

Marital Status: Married

No. of Children: 4

Position: --

Specialization: Oil and gas production

Scientific degree: PHD

Work Address: Alayen university

Work Phone: 009647863502887

Mobile: 009647863502887

Personal Email: Admonsalloum1963@gmail.com

university Email: admon.salloum@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	Al-baath	Petroleum	1984
M.Sc.			
Ph.D.	Kopkena	production	1994

CV

Second- Career:

No.	Career	Workplace	From-To
1	Teaching	Al-Baath Unv.	1984-2010
2	Head of petroleum engineering	SPU	2010-2017
3	Dean petroleum facoulty	SPU	2017-2020
4	President SPU	SPU	2020-2023
5			

Third- University Teaching:

No.	University	The Institute/College	From-To
1-	Al-baath + SPU	Petroleum college	1984-2023

Fourth- Courses Which You Teach:

No.	Department	Subject	Year
	Petroleum	Production oil and Gas	1984-2023

Fifth- Thesis which was supervised by:

No.	Thesis Title	Department	Year

Sixth- Conferences which you participated:

No.	Conferences Title	Year	Place	Type of Participation

Seventh- Scientific Activities:

Within The College	Outside the college

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year
1	Study the effect of free gas on the outstanding work of the	Al-Baath University Journal(2008) Syria	2008

	pump piston		
2	Determine the value of the marginal viscosity in order to avoid interruption of pumping columns .	Al-Baath University Journal(2010) Syria	2010
3	Scales treatment in oilfield water injection system.	Al-Baath University Journal, (2007) Syria	2007
4	The Influence of magnetic acid treatment on the corrosion rate of stimulation system.	Al-Baath University Journal, (2008) Syria	2008
5	Avoidance Slowing movement sucker rods throw lifting viscose oil by beam pump at SAZBA fields	Al-Baath University Journal, (2010) Syria	2010
6	Improve the rheological properties of Syrian heavy crude oil using some of the local industrial waste	Al-Baath University Journal, (2014) Syria	2014
7	Study the effect of the magnetic field on the reverse emulsion‘s behavior of Syrian heavy oil.	Al-Baath University Journal, (2016) Syria	2016

Eleventh- Scientific literature

No.	Scientific literature title	Year of the publication
1	Natural gas production	2009

Twelfth- Languages:

CV

- Arabic
- English

Name: Dheiaa Alfarge

Date of birthday: 01-07-1989

Religion: Islam

Marital Status Married: Married

No. of Children: 7

Position: Lecturer

Specialization: Petroleum Engineering

Scientific degree: PhD

Work Address: Lecturer at College of Petroleum Engineering, Al-Ayen University, Thi-Qar, 64001, Iraq.

Work Phone:

Mobile: +9647811943646

Personal Email: dalfarge@gmail.com

university Email: dheiaa@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	University of Baghdad	College of Engineering	2011
M.Sc.	Missouri University of	College of Engineering	2016

	Science and Technology, USA		
Ph.D.	Missouri University of Science and Technology, USA	College of Engineering	2018

Second- Career:

No.	Career	Workplace	From-To
1	Assistant Chief Petroleum Engineer	Oil Products Distribution Company, Najaf, Iraq	09.2018-Current
2	Assistant Professor	petroleum engineering department, Izmir Katip Celebi University, Izmir, Turkey	09.2019-03.2020
3	Adjunct Professor	University of Alayen	12.2020-Current
4	Adjunct Professor	University of Karbala,	10.2018-Current

		Karbala, Iraq	
5	Research Advisory Board Member	SRP-Center.iq	04.2019-Current

Third- University Teaching:

No.	University	The Institute/College	From-To
1	University of Karbala	College of Engineering	10.2018-Current
2	University of Alayen	College of Engineering	12.2020-Current
3	Izmir Katip Celebi University	College of Engineering	09.2019-03.2020

Fourth- Courses Which You Teach:

No.	Department	Subject	Year
1	Petroleum Engineering	Integrated Reservoir Management	2023
2	Petroleum Engineering	Technical English	2024
3	Petroleum Engineering	Enhanced Oil Recovery I	2023

4	Petroleum Engineering	Enhanced Oil Recovery II	2023
5	Petroleum Engineering	Oil Production Systems III	2023
6	Petroleum Engineering	Reservoir Simulation	2023
7	Petroleum Engineering	Introduction to Petroleum Engineering	2020
8	Petroleum Engineering	Rock and Fluid Properties	2020

Fifth- Thesis which was supervised by:

No.	Thesis Title	Department	Year

Sixth- Conferences which you participated:

No.	Conferences Title	Year	Place	Type of Participation
1	SPE Improved Oil Recovery Conference	2018	Tulsa, OK, April-2018	Presenter
2	SPE Canada Unconventional	2018	Calgary	Presenter

	Resources Conference			
3	Abu Dhabi International Petroleum Exhibition & Conference	2017	Abu Dhabi	Presenter
4	SPE Kuwait Oil & Gas Show and Conference	2017	Kuwait	Presenter
5	Carbon Management Technology Conference	2017	Houston	Presenter

Seventh- Scientific Activities:

Within The College	Outside the college

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year

	Please find them via the following links: • Researchgate Profile https://www.researchgate.net/profile/Dheiaa-Alfarge • Google scholar Profile https://scholar.google.com/citations?user=3E9TeGwAAAAJ&hl=en • Scopus Profile https://www.scopus.com/authid/detail.uri?authorId=57194622687 • Publons Profile https://publons.com/researcher/3977992/dheiaa-alfarge/		

Ninth- Membership

* Society of Petroleum Engineers (SPE)

* Iraqi Engineers Union (IEU)

Tenth- Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year
1	*The Recipient of the Best Authored Book in Engineering 2020*	MOHSER	2020

2	*The Recipient of the College of Engineering and Computing PhD Scholar*	Missouri S& T	2018
3	*Outstanding PhD Student Award in Petroleum Engineering*	Missouri S& T	2018
4	*Outstanding Contribution in Reviewing*	Elsevier	2018

Eleventh- Scientific literature

No.	Scientific literature title	Year of the publication

Twelfth- Languages:

- Arabic
- English

CV

Name:Abdulhussien Neamah Shnawa Alattabi

Date of birthday: 2/7/1954

Religion: Islam

Marital Status Married: Yes

No. of Children:7

Position: University Lecturer

Specialization: Petroleum Geology

Scientific degree: Doctor

Work Address:College of Engineering-Alayen Iraqi University

Work Phone:

Mobile/+9647816330932

Personal Email: alabdul363@gmail.com

university Email: abdulhussain@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	Al Mousel	Sciences	1981
M.Sc.	Albasrah	Sciences	2009
Ph.D.	Baghdad	Sciences	2015

No.	Career	Workplace	From-To
1	Field Geologist	Southern Iraqi oil company-Fields	1990-1995

2	Director of Geological Developed Oil Fields	Southern Iraqi Oil Company-Geological department	1995-2002
3-	Senior Chief Geologist	Geological study department-Oil field management-Basrah oil Company	2002-2017

Second, Career:

Third- University Teaching:

No.	University	The Institute/College	From-To
1	Alayen Iraqi University	College of Engineering-petroleum engineering department Engineering	2017-2024
2	Dhiqar university	College of Engineering-gas &oil Engineering department	2020-2023

Fourth- Courses Which You Teach:

No.	Department	Subject	Year
1	Petroleum Engineering	General geology	2017-2019
2	Petroleum Engineering	Fundamental of petroleum engineering	2018-2019
3	Structural and petroleum	Petroleum	2018-2023

	geology	engineering	
4	Well logging	Petroleum Engineering	2019-2022
5	Drilling Engineering	Petroleum Engineering	2020-2022
6	Structural Geology&Petroleum Geology	Gas&oil Engineering Department-College of Engineering-Diqar University	2021-2022
7	Well logging	Gas&oil Engineering Department-College of Engineering-Dhiqar University	2020-2022
8	Economic of petroleum Engineering	Petroleum Engineering Department	2021-2023
9	Technical English	Petroleum Engineering Department	2023
10	Supervisor of Projects for 4th years students	Petroleum Engineering Department	2021-2023
11	Supervisor of Projects for 4th years students	Gas&oil Engineering Department-College of Engineering-Dhiqar University	2020-2022

Fifth- Thesis which was supervised by:

No.	Thesis Title	Department	Year

Sixth- Conferences which you participated:

CV

No.	Conferences Title	Year	Place	Type of Participation
1	1st International Scientific Iraqi conference Of Alayen University	2019	Dhiqar	Member of preparatory commeti and member of scientific commeti of conference& research
2	2nd1 International Scientific Iraqi conference Of Alayen University	2020	Dhiqar-alayen university	Researcher
3	5th Iraq oil&Gas Conference	2020	Baghdad-Ministry of Oil	Researcher
4	3d1 International Scientific Iraqi conference Of Alayen University	2021	Dhiqar-alayen university	Researcher
5	4th International Scientific Iraqi conference Of Alayen University	2022	Dhiqar-alayen university	Researcher
6	6th International of oil and gas	2022	Baghdad - Babylon Hotel	Researcher
7	7th International conference of oil and gas	2023	Basrah	Researcher

Seventh- Scientific Activities:

Within The College	Outside the college
Work shope of drilling problem - alayen university	Work Shope of drilling problems and how to correlate with well looging results
Holding a training course under the	Sharing with Dr.Amer AlKhafaj

title (National Classification of Universities)	college of scinces -Unoversity of Babylon for nake study of lower fars formation in Karbala and Babylon.
	Working shope problems of drilling wells, geological and psf drilling mud properties preventation of problems and solutions-Bagdad university

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year
1	Oil-polluted groundwater in central and west Iraq as indicator of potential new hydrocarbon plays.	Petroleum Science and Technology.ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/lpet2	2020
2	Application of well Logs in Sand Production Prediction of Gavan Formation in South Azadeganiran (Majnun of Iraq) Field	Article Info Volume 83 Page Number: 13585 - 13594 Publication Issue: May - June 2020	2020
3	*Subsurface Weathering Zone Determination Using Down-Hole Seismic Surveys, Majnoon Oil Field, Southern Iraq*	Iraqi Geological Journal Journal homepage: https://www.igj-iraq.org Received: 7 October 2021	2021

4	Determination of Bearing capacity of the soil using cross-Hole Seismic survey for a water Treatment plant,Thi Qar,Southern Iraq.	Geological Journal 2022,55 (2C),81-92 https://www.igj-iraq.org/ Received: 17 February 2022 Accepted: 11 June 2022 Published: 30 September 2022	2022
5	Investigation and study of Hydraulic fracturing and the efficiency of this in the oil reservoirs naturally fractured and caven.	Conf. Series: Materials Science and Engineering 928 (2020) 022155 IOP Publishing doi:10.1088/1757-899X/928/2/02215	2020
6	On the Dynamics of a Viscoelastic Fluid-Conveying Nanotube	Fluid Dynamics and Material Processing DOI:10.32604/Fdmp.2022.019921 Tech Science Press	2022

Ninth- Membership

* Member of the Iraqi Geologists association

*Member of International Sociality of Petroleum Engineers(SPE).

*Member of Iraqi association of Petroleum Geologist.

* President of the Petroleum Geologists Association for Basra, Maysan, and Dhi Qar Governorates.

*Faculity advisor of Alayen-Student Chapter(SPE-Alayen Student Chapter)

Tenth, Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year

1	Certificate for Seismic Prospecting	Research center for Continuing Education of Gubkin Russian university	2001
2	In Recognition of my Participation in the 1st International Scientific Conference of Alayen University	Alayen university	2019
3	A certificate of thanks and appreciation for the efforts made in teaching and research.	Alayen University	2022

Eleventh- Scientific literature

No.	Scientific literature title	Year of the publication

Twelfth, Languages:

- Arabi
- English

CV

Name: Ismail Abdul- Husain

Date of birthday: May 1965

Religion: Muslims

Marital Status: Married

No. of Children:

Position: Lecturer

Specialization: Physics

Scientific degree: Assistant Professor

Work Address:

Work Phone:

Mobile/+964 7800591054

Personal Email: ismailrradhy@gmail.com

university Email: ismael.radhi@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc. of Science in Physics	Salahaddin University	College of Education	1987
M.Sc. of Science in Physics	University of Baghdad	College of Science	1992
Ph.D. Philosophy in Physics	University of Baghdad	College of Education	

Second- Career:

CV

No.	Career	Workplace	From-To
1	Director General of the Employment and Training office in Kirkuk Governorate	The Ministry of Labour and Social Affairs	2003
2	General Manager and Chairman of the Board of Directors	Investment Commission in Thi Qar Governorate	2008
3	Consultant to the Parliamentary Committee on Economic and Investment	Iraqi Parliament	2018
4	General Coordinator of the National Project for Youth Employment	The Ministry of Planning	2020
5	Team leader- led the US State office contract for the Iraqi Ministry of Labor	RasCare Co.	2005
7	Team leader- led the Al-Salihi group contract with OPIC Banc To lend to the Iraqi private sector in the Kurdistan region	GMC Co	2006
8	CEO	Akkad residential	2011

		coplex Co	

Thir- University Teaching:

No.	University	The Institute/College	From-To

Fourth- Courses Which You Teach:

No.	Department	Subject	Year

Fifth- Thesis which was supervised by:

No.	Thesis Title	Department	Year

Sixth- Conferences which you participated:

No.	Conferences Title	Year	Place	Type of Participation

CV

Seventh- Scientific Activities:

Within The College	Outside the college

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year
	Nuclear reactors researches	Nuclear reactors researches ,published in the Journal of the European Academy for Sustainable Development EURACA “Decree	

Ninth- Membership

* Iraqi Physicists Association

* Iraqi Investors Union

*the National Private Sector Rehabilitation Committee

CV

Tenth- Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year

Eleventh- Scientific literature

No.	Scientific literature title	Year of the publication

Twelfth, Languages:

- Arabic
- English

CV

Name: Lecturer Dr. Murtadha Doghiam Abdullah Al-Zaidi

Date of birthday: 1 – 1- 1973

Religion: Islam

Marital Status Married: Yes

No. of Children: 8

Position: University Lecturer

Specialization: Petroleum Geology

Scientific degree: lecturer

Work Address: college of engineering - Alayen Iraqi University

Work Phone:

Mobile/ +964 07830199755

Personal Email:

university Email: murtadha.abdullah@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	Baghdad	Science	1997
M.Sc.	Baghdad	Science	2013
Ph.D.	Baghdad	Science	2018

No.	Career	Workplace	From-To

CV

1	Manger of management	Al Raffidian company / Ministry of water Resources	2001 –Now
2	Lecturer	Science College /Thi-Qar University	2018-2021
3	Lecturer	College of Engineering college/Al-Ayen University	2021-Now
4			
5			
6			

Teaching Subjects :Petroleum Geology ,General Geology ,Oil Maturation ,Fundamental of Petroleum ,Economics , Geophysics

Courses Which You Teach:

No.	Department	Subject	Year
1	Geology department	Petroleum Geology	2018 - 2021
2	Geology department	Oil Maturation	2018-2020
3	Petroleum Engineering	General Geology	2021 - Now
4	Petroleum Engineering	Fundamental of Petroleum	2021 - Now
5	Petroleum Engineering	Economics	2022 -

			Now
6	Petroleum Engineering	Geophysics	2022 - Now

Scientific Activities:

1	رئاسة لجان مختلفة / مشاريع ذي قار	شركة الرافدين
2	مدير ادارة وحسابات / مشاريع ذي قار	شركة الرافدين
3	تنظيم مهرجان النفط الاول	كلية العلوم /جامعة بغداد
4	تنظيم مهرجان النفط الثاني	كلية العلوم /جامعة بغداد
5	المؤتمر العلمي الوطني الثالث / مقرر جلسة	جامعة العين/العراق
6	دورة طرائق تدريس	جامعة ذي قار/العراق
7	دورة سلامة اللغة العربية	جامعة ذي قار/ العراق
8	المؤتمر الجيولوجي الاول العلمي للصحراء العراقية	جامعة الانبار /العراق
9	المؤتمر الجيولوجي الثاني العلمي للصحراء العراقية	جامعة الانبار /العراق
10	المؤتمر الجيولوجي الثالث العلمي للصحراء العراقية	جامعة الانبار /العراق

11	المؤتمر الدولي الاول للبحوث المتقدمة للعلوم الصرفة والتطبيقية	جامعة المثنى / العراق
12	زيارة دار الايتام ضمن برنامج الاعمال التطوعية	محافظة ذي قار
13	زيارة دار المسنين ضمن برنامج الاعمال التطوعية	محافظة ذي قار
14	رئيس لجنة تدقيق نتائج الامتحانات النهائية	جامعة العين العراقية
15	عضو لجنة امتحانية	جامعة العين العراقية
16	رئيس لجنة غيابات الطلبة	جامعة العين العراقية
17	ممثل الهيئة التدريسية في مجلس الكلية	جامعة العين العراقية
18	اشراف على بحوث التخرج ثلاث سنوات متتابعة	جامعة العين العراقية

Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year
1	Geochemical Correlation of Mishrif Formation in AL-Nasiriyah Oil Field/ South of Iraq	Iraqi Journal of Science	2014
2	Thermal Maturity History and Petroleum Generation modeling for selected Oil fields Southern Iraq	Iraqi Journal of Science	2018
3	Building a 3D petrophysical	Iraqi Journal of	2019

	model for Mishrif formation in Nasiriyah oil field, southern Iraq	Science	
4	Sedimentological properties of the sand dunes and valley sediments in Al-Muthanna, Southern Iraq	The Iraqi Geological Journal	2021
5	Subsurface Weathering Zone Determination Using Down-Hole Seismic Surveys, Majnoon Oil Field, Southern Iraq	The Iraqi Geological Journal	2022
6	Total Petroleum System Study Of Nahr Umr Oil field Southern Iraq	International Symposium on Multidisciplinary Studies and Innovative Technologies (ISMSIT)	2022
7	Geochemical and heavy minerals investigation to identity provenance of dunes and valley sediments, at Al-Muthanna, southern Iraq	Modeling Earth Systems and Environment	2023

Membership

* Iraqi Geology Syndicate – member

CV

Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year

Languages:

- Arabic
- English

CV

Name: M.Sc. Mohannad Qasim Al Mullah

Date of birthday: 15 – 3- 1991

Religion: Islam

Marital Status Married: Yes

No. of Children: 2

Position: University Lecturer

Specialization: Civil Engineering – Structural Engineering

Scientific degree: Master degree

Work Address: college of engineering - Alayen Iraqi University

Work Phone:

Mobile/ +964 07828031271

Personal Email: Mohannad.qasem@alayen.edu.iq

university Email:

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	Mazaya University College	Engineering	2018
M.Sc.	Mazandaran	Engineering	2023

Second- Career:

No.	Career	Workplace	From-To
1	Implementation Engineer	Al Nasiriyah	2018-2019
2	Site manager Engineer	Iron Factory in Nasiriyah	2018-2019

3	Implementation Engineer	Residential complexes Nasiriyah	2021-2023

Third- University Teaching:

No.	University	The Institute/College	From-To

Fourth- Courses Which You Teach:

No.	Department	Subject	Year

Seventh- Scientific Activities:

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year
1	Investigation of the Effect of strengthening with Glass fiber reinforcement polymer on bond behavior of different sizes of deformed bar in low strength concrete		2022-2023

Ninth- Membership

Tenth, Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year

Twelfth- Languages:

- Arabic
- English

CV

Name: Ahmed Ameen Hussein

Date of birthday:1/1/1995

Religion: Muslim

Marital Status Married:no

No. of Children: no

Position: Teaching and administrative in the student registration unit

Specialization: Petroleum/Drilling Engineering

Scientific degree: Master's

Work Address:alayen university

Work Phone:+964 780 820 5577

Mobile/

Personal Email: Hamd09375@gmail.com

university Email: Ahmed.Ameen@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	Saratov State University	Oil and gas engineering	2020
M.Sc.	Kuban State University of Technology	Petroleum/Drilling Engineering	2022
Ph.D.			

CV

No.	Career	Workplace	From-To

Second- Career:

Third- University Teaching:

No.	University	The Institute/College	From-To

Fourth- Courses Which You Teach:

No.	Department	Subject	Year

Fifth- Thesis which was supervised by:

No.	Thesis Title	Department	Year

Sixth- Conferences which you participated:

No.	Conferences Title	Year	Place	Type of Participation

Seventh- Scientific Activities:

Within The College	Outside the college

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year
1-	Identification of productive formations in the terrigenous section based on gas logging results (southeast of the Stepnovsky complex swell)		2020

2-	"Technological solutions to prevent complications during the construction of a prospecting and appraisal well using the example of the Taimbinskaya area."		2022

Ninth- Membership

*

*

Tenth- Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year

Eleventh- Scientific literature

No.	Scientific literature title	Year of the publication

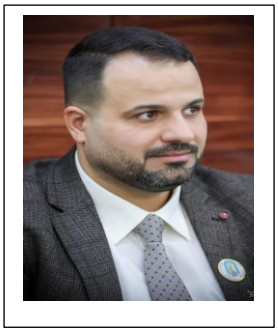
Twelfth- Languages:

- Arabic

CV

- English
- Russian

CV



Name: Lecturer Muataz Salman Hassan

Date of birthday: 21-10-1983

Religion:

Marital Status Married: yes

No. of Children: 3

Position: University Lecturer

Specialization: Mechanical Engineering/Laser Science

Scientific degree: Lecturer

Work Address: Collegr of Engineering – Alayen Iraqi University

Work Phone:

Mobile/07808355307

Personal Email: muatazsalman1983@gmail.com

university Email: muataz@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	Technology University	Production and metallurgy engineering	2005-2006
M.Sc.	Baghdad	Engineering	2014-2015

Second- Career:

CV

No.	Career	Workplace	From-To
	Ministry of Construction, Housing, Municipalities and Public	Engineer	2007-2009
	Inter Sus Humanitarian Organization	Engineer	2009-2010
	Millennium Humanitarian Organization	Engineer	2010-2011
	ACTED Humanitarian Organization	Engineer	2011-2012
	Millennium Humanitarian Organization	Engineer	2012-2013
	Malaysian Petronas Company	Engineer	2013-2015

Third- University Teaching:

No.	University	The Institute/College	From-To
	Imam Al-Kadhim College	Engineering Department	2015-2017

Fourth- Courses Which You Teach:

No.	Department	Subject	Year
	Petroleum Engineering	Engineering drawing	2017-2018

	Petroleum Engineering	the computer	2018-2024
	Petroleum Engineering	Physics	2018-2023

Fifth- Thesis which was supervised by:

No.	Thesis Title	Department	Year
	-	-	-

Sixth- Conferences which you participated:

No.	Conferences Title	Year	Place	Type of Participation
	-	-	-	-

Seventh- Scientific Activities:

Within The College	Outside the college
-	-

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year

	-	-	-

Ninth- Membership

Tenth- Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year
	-	-	-

Eleventh- Scientific literature

No.	Scientific literature title	Year of the publication
	-	-

Twelfth, Languages:

- Arabic
- English

CV

Name: Muaed Abdulhussein Ghalta

Date of birthday: 10/12/1986

Religion: muslim

Marital Status: Yes

No. of Children:

Position: lecturer

Specialization:

Scientific degree:

Work Address:

Work Phone:

Mobile/ 07808269547

Personal Email: muayad538@gmail.com

university Email: muayad@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc. . In Petrochemical Technology Engineering	Southern Technical University	Southern Technical University	2010
M.Sc. In chemical Engineering	University of Mazandaran	University of Mazandaran	2020
Ph.D. . Student in Chemical and Petroleum Engineering	Tabriz University	Tabriz University	2023

CV

No.	Career	Workplace	From-To

Second- Career:

Third, University Teaching:

No.	University	The Institute/College	From-To
1	Al-Ayen university	n engineering technical college	2021
2	Al-Ayen university	petroleum engineering	2023

Fourth- Courses Which You Teach:

No.	Department	Subject	Year

Fifth- Thesis which was supervised by:

No.	Thesis Title	Department	Year

Sixth- Conferences which you participated:

No.	Conferences Title	Year	Place	Type of Participation

Seventh- Scientific Activities:

Within The College	Outside the college

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year

Ninth, Membership

*

*

Tenth- Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year

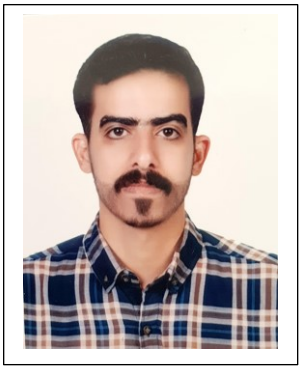
Elevent- Scientific literature

No.	Scientific literature title	Year of the publication

Twelfth, Languages:

- Arabic
- English

CV



Name: MSc. Ali Jaafar Ghafil Al-Ogaili

Date of birthday: 21 – 4- 1990

Religion: Islam

Marital Status Married: Yes

No. of Children: 3

Position: University Lecturer

Specialization: Chemical Engineering – Water Treatment

Scientific degree: Assistant Teacher

Work Address: college of engineering - Alayen Iraqi University

Work Phone:

Mobile/ +964 07827851906

Personal Email: alighafel@alayen.edu.iq

university Email:

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	Basrah	Engineering	2012
M.Sc.	Mazandaran	Engineering	2022
Ph.D.	Babol Noshirvani	Engineering	Still in Study Not graduated yet

CV

Second- Career:

Third- University Teaching:

No.	University	The Institute/College	From-To
6	University Lecturer	Alayen University	2023 -Till now

Fourth- Courses Which You Teach:

No.	Department	Subject	Year
7	Biomedical Engineering	Biochemistry	2023_Till Now
8	Petroleum Engineering	Applied Mathematics	2023_Till Now
9	Petroleum Engineering	Chemistry	2023_Till Now

Seventh- Scientific Activities:

1	مسؤول ممثلية الدفاع المدني	كلية الهندسة/جامعة العين العراقية
2	اشراف وادارة مختبرات الكيمياء	كلية الهندسة/جامعة العين العراقية
3	عضو لجنة ارشاد و اشراف تربوي/مرحله ثانيه	كلية الهندسة/جامعة العين العراقية
4	مقرر لجنة الاعتمادية	كلية الهندسة/جامعة العين العراقية
5	رئيس لجنة متابعة الغيابات	قسم هندسة الطب الحياتي/كلية الهندسة/جامعة العين العراقية

6	امين مجلس القسم	قسم هندسة النفط/كلية الهندسة/جامعة العين العراقية
7	عضو لجنه امتحانيه	قسم هندسة الطب الحياتي/كلية الهندسة/جامعة العين العراقية
8	عضو لجنه علميه	قسم هندسة الطب الحياتي/كلية الهندسة/جامعة العين العراقية
9	مقرر مجلس القسم	قسم هندسة النفط/كلية الهندسة/جامعة العين العراقية
10	لجنة متابعة الغيابات/المرحلة الثانية	كلية الهندسة/جامعة العين العراقية
12	لجنة الأرشاد والاشراف التربوي/مرحله اولى	قسم هندسة النفط/كلية الهندسة/جامعة العين العراقية
13	عضو في اللجنة الامتحانيه/المرحلة الأولى هندسة النفط	كلية الهندسة/جامعة العين العراقية

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year
1	Ti3C2Tx/ZIF-67 hybrid nanocomposite as a highly effective adsorbent for Pb (II) removal from water: Synthesis and DFT calculations	Scopus Q1/Elsevier Applied Surface Science Volume 643 ,15 January 2024, 158642	3 – 11 - 2023

Ninth, Membership

* Iraqi Engineers Syndicate – Consultant Engineer

Tenth- Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year

Twelfth, Languages:

- Arabic
- English
- Persian

CV

Name: Rawaa Muhsin Lafta Ali

Photo

Date of birthday: 5-3-1997

Religion: Islam

Marital Status Married: yes

No. of Children: 0

Position: University Lecturer

Specialization: business management

Scientific degree: assistant teacher

Work Address: college of engineering - Alayen Iraqi University

Work Phone:

Mobile/

Personal Email: rawaamuhsin@gmail.com

university Email:roa@alayen.edu.iq

First- Scientific Certification:

Degree Science	University	College	Date
B.Sc.	sumer	management and economy	2018
M.Sc.	sumer	business management	2022
Ph.D.			

CV

No.	Career	Workplace	From-To

Second- Career:

Third- University Teaching:

No.	University	The Institute/College	From-To

Fourth- Courses Which You Teach:

No.	Department	Subject	Year

Fifth- Thesis which was supervised by:

CV

No.	Thesis Title	Department	Year

Sixth- Conferences which you participated:

No.	Conferences Title	Year	Place	Type of Participation
1	مؤتمر جامعة سومر	2022	جامعة سومر	نشر بحث
2	مؤتمر الجمعية العلمية للاكاديمين	2023	البصرة	نشر مقال

Seventh- Scientific Activities:

Within The College	Outside the college

Eighth- Research Projects in The field of Specializations to The Environment and Society or The Development of Education:

No.	Research Title	Place of Publication	Year
1	The impact of entrepreneurial leadership on the innovative	مؤتمر جامعة سومر	2022

	behavior of employees.		

Ninth- Membership

*

*

Tenth- Awards and Certificates of Appreciation:

No.	Name of Awards and Certificates	Donor	Year

Eleventh- Scientific literature

No.	Scientific literature title	Year of the publication

Twelfth- Languages:

- Arabic
- English

APPENDIX C – EQUIPMENT

1- Computer programming

INTRODUCTION

The Computer Programming Laboratory is one of the laboratories affiliated with the Petroleum Engineering Department, as it includes (35) computers, and students implement the FORTRAN 90 program in the field of programming and design, such as MATLAB and other computer applications. The laboratory contains a data show device, which facilitates the performance of the practical aspect and reflects positively on the students and increases their understanding of the experiments. The laboratory's capacity is (45) students.

EQUIPMENT AND INSTRUMENTS

1- Lab Top
2- UPS
3- Computer truck
4- Mouse

EXPERIMENTS

1-FORTRAN 90: Introduction to Fortran
2- How to write a Fortran program
3-Variables
4-Input and Output
5-Conditional IF statement
6-Loops
7-Matrices
8-Starting with MATLAB
9-Variables
10-Input and Output
11-Matrices
12-Functions
13-Numerical integration, IF statement

14-Loops

2-Drilling Engineering laboratory

INTRODUCTION:

Drilling Fluids Engineering Laboratory is the main key for the success of well production. Therefore, we have to draw an efficient program regarding the type of mud as well as the predicted lithology and the different drilling phases scheduled. Consequently, achievement of drilling fluid properties, under various conditions, are accurately measured in this laboratory includes physical and chemical parameters, such as, drilling fluid density, pH, resistivity, sand content, rheology, API filtration, HT-HP filtration, lubricity, and Bentonite quality evaluation. This laboratory is equipped with apparatuses to determine drilling fluid properties at atmospheric and high pressure high temperature conditions by direct measurements. These properties include rheological, filtration, density, thermal stability, lubricity, resistivity, pH, etc.

EQUIPMENT AND INSTRUMENTS:

1. MUD BALANCE
2. LPTI FILTER PRESS
3. GARRETT GAS TRAIN
4. MARSH FUNNEL
5. RHEOMETER
6. RETORT KIT
7. WATER TREATMENT SYSTEM
8. FUME HOOD

EXPERIMENTS:

1. Drilling Mud Tests

2. Mud Weight Test
3. Mud Viscosity Test
4. Ph Test
5. Mud Rheology Test
6. Filtration Test
7. Sand Content Test
8. Resistivity Test
9. Emulsion Test
10. Control of Mud Weight

3- Strength of Materials LAB

INTRODUCTION

After completing all the experiments, students can understand the principles of strength of materials and how to deal with them according to plans. They can also identify hard and brittle materials, coefficient of longitudinal expansion or (Thermal expansion) , and perform tensile and compression testing, bending and deflection testing, and impact testing. They will learn about Young's modulus Engineering stress according to modern equipment in this laboratory.

EQUIPMENT AND INSTRUMENTS

1- Impact Testing Machine
2- General Machine for bending
3- Compression testing machine
4- Universal Testing Machine

EXPERIMENTS

1- Tensile Test
2- Compression Test
3- Bending and Deflection
4- Mechanical Shock Testing Basics

4- FLUID MECHANICS AND WATER RESOURCES LABORATORY

INTRODUCTION

The Fluid Mechanics and Water Resources Laboratory contains modern instruments and apparatuses for teaching and research purposes. Some of the instruments and equipment can well be utilized for industrial use with minor modifications. The laboratory is supervised by experienced teaching staff and technicians with services meeting the highest of international standards.

EQUIPMENT AND INSTRUMENTS

1- Reynolds Number Unit Machine.

2- Centrifugal pump Machine.

3- Pressure drop in piping systems Machine.

4- Series and Parallel configuration of pumps Machine.

5- Orifice meter Machine.

6- Ventura meter Machine.

7- Bernoulli principle Demonstration Machine

EXPERIMENTS

1- Pressure drop in piping systems .
2-Series and Parallel configutation of pumps .
3-Orifice meter unit .
4-Ventura meter unit .
5-Bernoulli principle demonstration .

6-Reynolds Number Unit .
7-Centrifugal pump .

5-PETROLEUM RESERVIOR ENGINEERING

INTRODUCTION

Oil Reservoir Engineering Laboratory: This laboratory aims to teach students how to study the properties of reservoir rocks, as it involves taking a sample of the rock core and cutting it into samples suitable for the equipment in the laboratory, then cleaning the rock core using specialized equipment and making measurements on it to find out the properties of the rock, where it is measured (Permeability, porosity, saturation, wettability, surface tension, as well as the gas-oil ratio. The reservoir engineering laboratory is also one of the laboratories that can be used by graduate students to conduct experiments for the purpose of research because it contains specialized equipment such as a water flooding device.

EQUIPMENT AND INSTRUMENTS

5- Core
6- Box of tools
7- Computer
8- Crude oil samples
9- Chemicals such as (methanol, toluene)

EXPERIMENTS

1. Core cutting machine
2. Core plugging machine
3. Cleaning core by dean stark extraction
4. Cleaning core by soxhlet extractor

5. Gas-oil ratio measurement
6. Measurement porosity by helium porosimeter
7. Measurement permeability by gas perimeter
8. Manual core saturator
9. Pendant drop contact angle and ift
10. Measurement porosity by liquid

6- Petroleum Properties Laboratory

INTRODUCTION

The Petroleum Properties Lab is a crucial component of the second-stage curriculum in petroleum engineering. This laboratory is designed to provide students with hands-on experience in exploring the fundamental characteristics of crude oil and its derivatives. Through a series of experiments, students are involve into the classification, specifications, and unique attributes of crude oil. Additionally, the lab aims to familiarize students with various oil derivatives, emphasizing their practical applications and benefits.

In this dynamic learning environment, students engage in experiments that go beyond theoretical knowledge, enabling them to assess the validity and scope of use for different petroleum products. The Petroleum Properties Lab serves as a vital bridge between theoretical understanding and real-world application, equipping students with the practical skills necessary for success in the field of petroleum engineering.

EQUIPMENT AND INSTRUMENTS

1- Thermometer

2- Viscometer
3- Sand and Clamp
4- Separating Funnel
5- Dispenser
6- Cylinder
7- Volumetric Flask
8- Conical Flask
9- Beaker
10- Dropper
11- Glass Bottle
12- Round Bottom
13- Spatula
14- Pump
15- Burner
16- Glass Watch
17- Hydrometer
18- Pipette

EXPERIMENTS

1- Softening Point of Asphalts and Tar
2- Flash Point of Oil Products
3- Cloud and Pour Point
4- Density and Specific Gravity
5- Ash Content
6- Distillation of Petroleum Products
7- Penetration Number
8- Water Content
9- Reid Vapor Pressure
10- Saybolt Viscosity
11- Kinematics Viscosity of Transparent and Opaque Liquids

7-ENGINEERING DRAWING LAP BY USING THE AUTOCADE PROGRAM

INTRODUCTION

AutoCAD is a computer-aided design software developed by the company Autodesk (hence the name AutoCAD). It allows you to draw and edit digital 2D and 3D designs more quickly and easily than you could by hand. The files can also be easily saved and stored in the cloud, so they be accessed anywhere at anytime. The main objective of the AutoCAD is:

To teach the students the ability to read and implement technical design drawing which is the most important requirement of all technical people in any profession. Drawings prepared in one country may be utilized in any other country irrespective of the language spoken. Hence, engineering drawing is called the universal language of engineers. Any language to be communicative should follow certain rules so that it conveys the same meaning to everyone.

EQUIPMENT AND INSTRUMENTS

1- Lab Top

2- UPS

3- Computer truck

4- Mouse

EXPERIMENTS

Experiment No. (1)

Course Description and Introduction to engineering drawing Instruments and Accessories.

Experiment No. (2)

Lines, Dimensions, Scale: Explaining and Practicing on different types of lines and their application.

Experiment No. (3)

Geometrical Shapes and related Calculations: Explaining and Practicing (Basic geometrical shapes).

Experiment No. (4)

Projection: Shapes and Standards for drawing projections.

Experiment No. (5)

Projections: application of lines, scales, and shapes in projections.

Experiment No. (6)

Drawing orders.

Experiment No. (7)

Modifications orders.

Experiment No. (8)

Projection: Application of Cross-section.

8-COMPUTER LABORATORY

INTRODUCTION

The Computer Laboratory serves as an interactive hub for students to grasp essential computing principles through practical applications. Engaging hands-on activities, conducted within and beyond the lab, empower students to acquire computer skills using state-of-the-art technology. Instructors guide students in understanding, implementing, and troubleshooting various applications, fostering a holistic approach to computer literacy.

EQUIPMENT AND INSTRUMENTS

1. Projector
2. Portable computers
3. Computer mice
4. Computer chargers

EXPERIMENTS

1. Introduction to computers.
2. Computer parts (hardware & software).
3. Review the main purpose of MS word :
   - An overview of the interface features

- Creating documents
- Setting the printing options
- Formatting text, styles, and paragraphs
- Creating Lists and Constructing Advanced Tables

4. Creating bulleted and numbered lists
   - Creating tables
   - Editing and formatting tables
   - Creating Professional Documents
   - Word-referencing features
   - Creating and updating the TOC
   - Using citations to build a bibliography
   - Adding citation sources.
5. Generating the bibliography
   - Editing the citation style
   - Working with master documents or subdocuments
   - Customizing page layouts
   - Inserting a cover page quick part
   - Converting text into columns
   - Inserting and modifying section breaks
   - Adding section breaks
   - Headers and footers

- Inserting page numbers
- Choosing a different first page
- Numbering from a specific page number
- Different header and footer sections

6. Review the basics of MS PowerPoint
   - Custom animation
   - Add photos, videos and sound effects
7. Introduction to Microsoft Excel
   - identify the main parts of the Excel window.
   - Identify the purpose of the commands on the menu
   - Work with the buttons on the toolbar
8. Explain the purpose of options available for printing spreadsheet.
   - Enter and format text and numbers into cells.
   - Successfully move from one cell to another containing formulas and text.
   - Copy, Cut and Paste text and formulas
9. Working with Charts
   - Creating Charts
   - Selecting Chart Elements
   - Changing the Chart Type
   - Changing the Chart Data

9- Reservoir Simulation Lap

INTRODUCTION

This course includes derivations of basic equations and underlying principles used in developing reservoir simulators. It covers the development of a simple governing equation, partial differential equations for single-phase and multiphase flow in porous media. Finite difference approximations are used to solve the equations. Input data requirements and applications of simulation models for history matching and prediction of field performance are discussed. FORTRAN Language and programming is used for many of the examples and exercises.

EQUIPMENT AND INSTRUMENTS

1- LabTop
2- UPS
3- Computer truck
4- Mouse

APPENDIX D – INSTITUTIONAL SUMMARY

1. The Institution

a. Name and address of the institution:

Alayen Iraqi University
Thi Qar/ Iraq
+964 7800060302

b. Name and title of the chief executive officer of the institution:

Prof. Dr. Shafik S. Shafik, Chancellor

c. Name and title of the person submitting the Self-Study Report:

Ast. Prof. Dr. Ahmed N. Nimir Al-Subeeh
Petroleum Engineering College.

d. Name the organizations by which the institution is now accredited, and the dates of the initial and most recent accreditation evaluations:

The Alayen Iraqi University is not accredited before.

2. Type of Control

Privet Control

3. Educational Unit

a. College/ Department Overview:

The College of Petroleum Engineering / Alayen Iraqi University was established in 2017. It is concerned with the graduation of many qualified engineers in the fields of technical engineering as well as petroleum

engineering in order to serve the general orientations of the state and society, as well as the preparation of scientific research in all engineering fields to support development plans and ages.

The College has an important role in serving the community through the services provided by the Advisory Office of the College and the training and development courses for engineers and technicians in the college of Thi Qar province. It relies on the use of mathematics, empirical, scientific, economic, social and knowledge manuals for the invention, Improved structures, machines, tools, systems, components, materials, and processes.

The study of petroleum engineering and their investment is of great importance for many countries specially for Iraq because it is considered one of the most important petroleum production and industry country. Petroleum can be regarded as the main stone supporting our economy of the country.

b. Organizational Chart

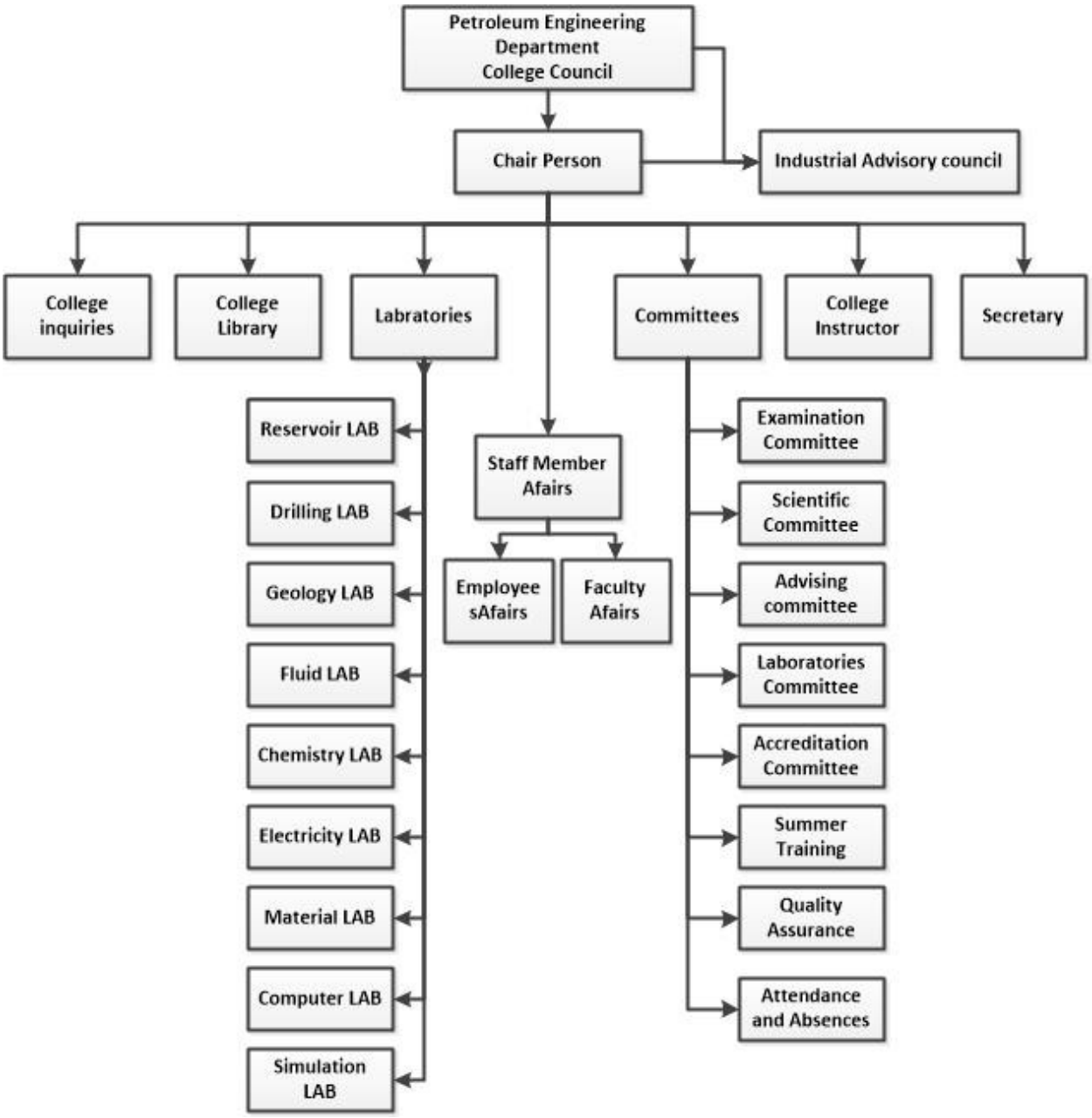


Fig. D-1: Organizational chart showing the location of DWE among the college of engineering

c. Administrative Head

Prof. Firas Faeq Kazem, Dean of the College of Engineering.

d. Information Regarding Administrators

Asst. Prof. Dr. Najeh Yousef Alali, , Assistant Dean for Scientific Affairs

Dr. Asaad Shakir Hameed, Asst. Dean for Administrative Affairs

4. Academic Support Units

All teaching staff are from Petroleum Engineering College and some courses are taught by faculty from other colleges in the Alayen Iraqi University as well as some exterior lecturers.

5. Non-academic Support Units

- College Library.

- College Computing Facilities.

- University Career Services.

- College Student Services.

6. Credit Unit

It is assumed that one semester or quarter credit normally represents one class hour or three laboratory hours per week. One academic year normally represents at least 28 weeks of classes, exclusive of final examinations.

7. Tables

Table D-1: Program Enrollment - Petroleum Engineering Program

	Academic Year	Typ e	Enrollment Year					Total for Undergrad	Total for Graduate	Degrees Awarded		
			1st	2nd	3rd	4th	5th			Bachelors	Masters	Doctorates
Current Year	2021-2022	FT										
		PT										
1	2020-2021	FT										
		PT										
2	2019-2020	FT										
		PT										
3	2018-2019	FT										
		PT										
4	2017- 2018	FT										
		PT										

last term enrollment figures (numbers) for the current and preceding four academic years and undergraduate and graduate degrees conferred during each of those years.

FT--full time PT--part time

Year1: 2018-2019

Table D-2: Personal - Petroleum Engineering Program

	Number		Full Time
	FT	PT	Equivalent FTE2
Administrative 2			
Faculty (permanent staff) 3			
Other Faculty (excluding student assistants)			
Student Teaching Assistants 4			
Technical Staff			
Administrative Staff			
Others 5			

1. Data on this table should be for the term immediately preceding the visit.
2. Persons holding joint administrative/faculty positions or other combined assignments should be allocated to each category according to the fraction of the appointment assigned to that category.
3. For faculty members, 1 FTE equals what your institution defines as a full-time load.
4. For student teaching assistants, 1 FTE equals 20 hours per week of work (or service). For undergraduate and graduate students, 1 FTE equals 15 semester credit-hours (or 24 quarter credit-hours) per term of institutional course work, meaning all courses - science, humanities and social sciences, etc.
5. Specify any other category considered appropriate, or leave blank.

Attesting Signature

By signing below, I attest to the following:

That *Petroleum Engineering Program* has conducted an honest assessment of compliance and has provided a complete and accurate disclosure of timely information regarding compliance with the *National Criteria for Accrediting Engineering Programs* to include the General Criteria and any applicable Program Criteria, and the *National Council Accreditation Policies and Procedures.*

_____

Dean's Name

_____ _____

Signature Date