



**ALAYEN IRAQI UNIVERSITY**

**COLLEGE OF  
PETROLEM ENGINEERING**

**STUDENT BOOK**

## **FOREWORD**

We are pleased that you have chosen ALAYEN IRAQI UNIVERSITY and the COLLEGE of PETROLEUM ENGINEERING. We have prepared this handbook to help you in your undergraduate study. It is also possible to reach the same and detailed information at the COLLEGE'S web page:

[https://alayen.edu.iq/university\\_ads/details/2](https://alayen.edu.iq/university_ads/details/2)

In this handbook, you will find useful information about the aim of the COLLEGE and the courses you will take during your study, including prerequisite courses. This information will help you to know which courses to be taken in each semester. Besides, there are information about summer practice, academic regulations and interactive registrations. In the last part of the handbook, you can find a brief explanation of Society of Petroleum Engineers (SPE) ALAYEN - ENGINEERING Student Section. By being a SPE member, you may gain information about petroleum and natural gas engineering and share experiences. If you have questions that are not answered in this handbook, you may contact your adviser for further information.

We hope that your ALAYAN - ENGINEERING life brings you success and happiness.

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## **I. 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.

## **II. 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.

### **A. MISSION OF THE COLLEGE:**

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.

### **B. OBJECTIVES OF THE COLLEGE:**

The objectives of the COLEGE OF PETROLEUM ENGINEERING are:

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.

### C. UNDERGRADUATE CURRICULUM

In the first two year period of the undergraduate study, fundamental engineering courses are taken. In the following two years, courses related with petroleum and natural gas engineering are mostly thought.

The details of the courses can be found at the university catalogue at the following address:

[https://alayen.edu.iq/university\\_ads/details/2](https://alayen.edu.iq/university_ads/details/2)

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 <sup>2</sup>
		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	
<b>First Year (Second Semester)</b>							
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	
<b>Second Year (First Semester)</b>							
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	R		2 – 3 (✓)			2019-2020	154

Petroleum Engineering							
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
<b>Second Year (Second Semester)</b>							
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
<b>Third Year (First Semester)</b>							
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	R		3 – 4 (√)			2020-2021	95

Mathematics							
Technical English	R			2 – 2		2020-2021	95
Geophysics	R	2 – 3				2020-2021	95
<b>Third Year (Second Semester)</b>							
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
Engineering Statistics	R		2 – 3 (✓)			2020-2021	95
<b>Fourth Year (First Semester)</b>							
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
<b>Fourth Year (Second Semester)</b>							



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
Optimization	R		3 – 3			2021-2022	211
Integrated Reservoir Management	R		2 – 3 (✓)			2021-2022	211
<b>TOTALS-<del>ABET</del> BASIC-LEVEL REQUIREMENTS</b>							
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						

**D. SUMMER PRACTICE PROGRAM, (PETE 300 and PETE 400)**

A total of eight weeks of summer practice is obligatory to fulfil the requirements for the B.Sc. degree in Petroleum and Natural Gas Engineering. Drilling, production and reservoir operations are observed in the summer practice. A report of summer practice should be presented to the department at the end of training period. The standards of the summer practice reports are given at the following address:

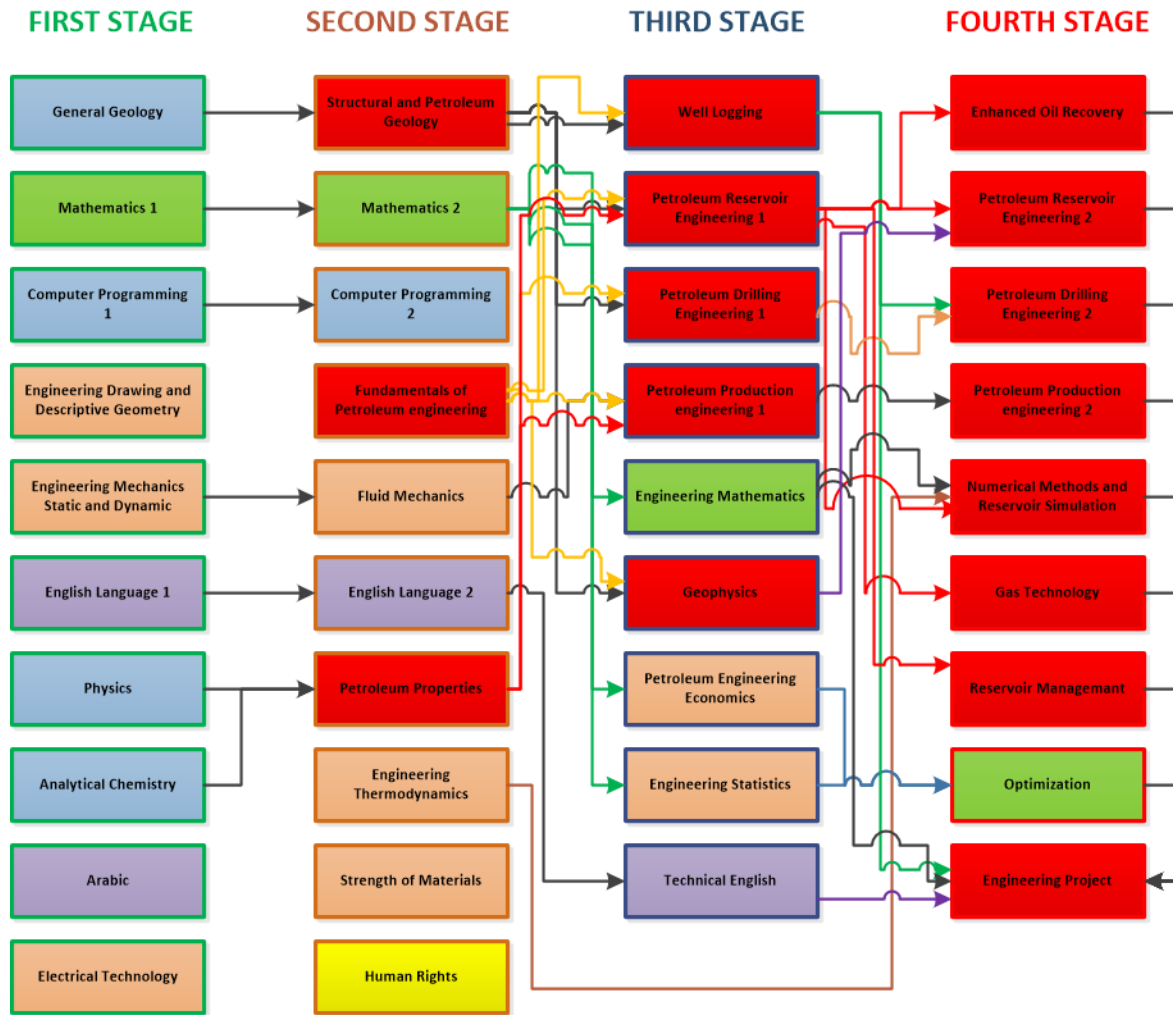
[https://alayen.edu.iq/university\\_ads/details/2](https://alayen.edu.iq/university_ads/details/2)

**E. PREREQUISITE COURSES**

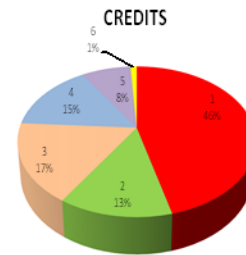
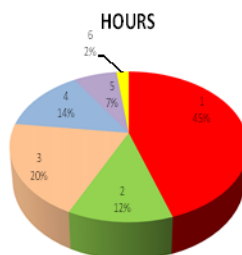
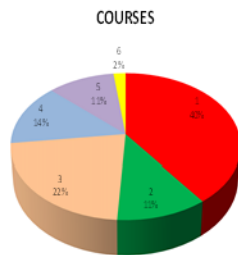
A prerequisite course is a course, which a student must pass before being allowed to take another course. Prerequisite courses are proposed to the Faculty Committee by the COLLEGE offering the courses and are confirmed after approval by that Committee. The list of the prerequisite courses in the program of Petroleum Engineering is given below.

<b>Course</b>	<b>Semester</b>	<b>Prerequisite (Grade)</b>

## DEPARTMENT OF PETROLEUM AND NATURAL GAS ENGINEERING COURSE PREREQUISITE FLOWCHARTH



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



## F.GRADES

For each course taken, the student is given one of the following grades by the course teacher. The letter grades, coefficients and percentage equivalents are given below.

PERCENTAGE	COURSEGRADE	COEFFICIENT
90-100	EXCELLENT	4
80-89	VERY GOOD	3.5
70-79	GOOD	3.0
60-69	MEDIUM	2.5
50-59	FAIR	2
49 and below	FAIL	1

The student's standing is calculated in the form of a Grade Point Average (G.P.A.) and Cumulative Grade Point Average (C.G.P.A.) and is announced at the end of each semester by the Registrar's Office.

The total credit points for a course are obtained by multiplying the coefficient of the final grade by the credit hours. In order to obtain the G.P.A. for any given semester, the total credit points are divided by the total credit hours. The C.G.P.A. is calculated by taking into account all the courses taken by a student from the beginning of entrance to the University

The status according to Grade Point Average (G.P.A.) and Cumulative Grade Point Average(C.G.P.A.) are given below:

C.G.P.A and G.P.A. > 2.00	⇒	SUCCESSFUL STUDENT
3.00 < G.P.A. < 3.49	⇒	HONOUR STUDENT
G.P.A. > 3.50	⇒	HIGH HONOUR STUDENT

G.P.A. < 2.00  $\implies$  UNSUCCESSFUL STUDENT

C.G.P.A. < 1.80  $\implies$  SUSPENSION

2 CONSECUTIVE SEMESTERS WITH SUSPENSION  
WILL RESULT WITH DISMISSAL  
CHANGED TO

**14 SEMESTER MAXIMUM PERIOD OF STUDY**

FOR GRADUATION C.G.P.A. > 2.00

## **G. REGULATIONS**

The following addresses should be visited for the Academic Rules and Regulations.

1. Academic Rules and Regulations Concerning Undergraduate Period of Study, Examinations and Assessment

[https://alayen.edu.iq/university\\_ads/details/2](https://alayen.edu.iq/university_ads/details/2)

2. Academic Rules and Regulations Concerning Graduate Period of Study, Examinations and Assessment

[https://alayen.edu.iq/university\\_ads/details/2](https://alayen.edu.iq/university_ads/details/2)

3. Academic Rules and Regulations Vocational School of Higher Education Period of Study, Examinations and Assessment

[https://alayen.edu.iq/university\\_ads/details/2](https://alayen.edu.iq/university_ads/details/2)

4. Directive for Undergraduate Double Major Programs

[https://alayen.edu.iq/university\\_ads/details/2](https://alayen.edu.iq/university_ads/details/2)

5. Directive for Undergraduate Minor Program

[https://alayen.edu.iq/university\\_ads/details/2](https://alayen.edu.iq/university_ads/details/2)

## H. INTERACTIVE REGISTRATION

- Students are supposed to renew their registration each semester within the registration period announced in the Academic Calendar. Registration renewal is composed of during the processes below:

1. Tuition fee payment
2. Interactive registration
3. Advisor approval

In case of one of these processes is incomplete, the student will stay in “not-registered” status.

- [https://alayen.edu.iq/university\\_ads/details/2](https://alayen.edu.iq/university_ads/details/2)
- Students can use the PC rooms announced by Registrar’s office for their registration.
- New students, irregular students and those who are uncertain about their programs should consult their Advisors before attempting to register.
- Beginning from 2017-2018 fall semester, students who have not completed their registration in the “registrations and advisor approvals” period will not be able to register in the add-drop period. These not-registered students can apply to the Administrative Committee of the relevant unit until the last day of the Add-drop period (they should also indicate and prove their excuse) for a registration renewal. Those whose excuses are accepted by the Administrative Committee allowed to renew their registration; and others, whose excuses are not accepted, will stay not-registered and lose their student status.
- Students who register during the Registration Period, completing the Approval procedures can make changes with their registration during the Add/Drop period, which is also announced in the Academic Calendar. Changes made during Add/Drop period must be approved by the Advisor. Add/Drop is final and students cannot make changes in their programs after “Approval”.

## **I. SOCIETY OF PETROLEUM ENGINEERS (SPE) METU STUDENT SECTION:**

Society of Petroleum Engineers (SPE) is the international technical and professional association for engineers and the management of energy resources produced through the wellbore. It collects, distributes, and exchanges information on techniques and operations to nearly 49,500 members in 125 countries through a broad range of activities, including section meetings, publications, continuing education programs, and technical meetings and exhibitions.

Mission of SPE is to provide the means for collection, and exchange of technical information concerning the development of oil and gas resources, subsurface fluid flow production of other materials through wellbores for the public benefit to provide opportunities through its programs for interested (and qualified) individuals to maintain and upgrade their individual technical competence.

SPE has a section in Turkey as the part of South and Central Europe Region. SPE sponsors student chapters all over the world with 102 student chapters in 36 countries. There are two student chapters in Turkey, Istanbul Technical University and Middle East Technical University SPE Student Chapters. If you become a SPE METU Student Section member, you may be aware of all knowledge and experience through SPE conferences and exhibitions, workshops, journals and books, short courses, and section meetings.