

**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**



Academic Program and Course Description

2024


Introduction:


The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

Academic Program Description Form

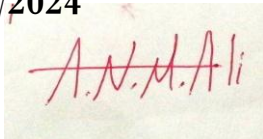
University Name: **University of Technology**
Faculty/Institute: **Oil and Gas Engineering Department**
Scientific Department: **Petroleum Engineering**
Academic or Professional Program Name: **Petroleum Engineering**
Final Certificate Name: **B.Sc. in Petroleum Engineering**
Academic System: **Courses (Semesters)**
Description Preparation Date: **20/ 3/2024**

Signature: 
Head of Department Name:
Asst. Prod. Dr. Emad A. Fakher
Date: 25/3/2024

Signature: 
Scientific Associate Name:
Prof. Dr. Najem A. Al-Rubaiey
Date: 25/3/2024

The file is checked by: **Dr. Anwar Nadhom Mohammed Ali**
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Date: 26/3/2024

Signature:



Approval of the Dean

Prof. Dr. Fadhil Sarhan Kadhim

27/3/2024

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate

description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

1. Program Vision

The gas and petroleum engineering department is the main source for preparing qualified graduates to develop the oil and gas industries in Iraq. The Gas and petroleum engineering department seeks to achieve leadership and excellence

in its field of specialization locally and regionally.

2. Program Mission

Upgrading the theoretical and applied educational concepts for gas and petroleum graduates to keep pace with the global petroleum revolution through the development of scientific research fields and educational means to develop the capabilities of graduates and their active participation in building the gas and petroleum sector in Iraq.

3. Program Objectives

1. To provide a comprehensive education in biology that stresses scientific reasoning and problem solving across the spectrum of disciplines within biology
2. To prepare students for a wide variety of post-baccalaureate paths, including graduate school, professional training programs, or entry level jobs in any area of biology
3. To provide extensive hands-on training in electronic technology, statistical analysis, laboratory skills, and field techniques
4. To provide thorough training in written and oral communication of scientific information
5. To enrich students with opportunities for alternative education in the area of biology through undergraduate research, internships, and study-abroad

4. Program Accreditation

Does the program have program accreditation? And from which agency?

N.A.

5. Other external influences

Is there a sponsor for the program?

N.A.

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	13 (for All Stages)	612 (Sum of 13 courses)	19.03 (612/3216)	Basic
College Requirements	17 (for All Stages)	945 (Sum of 17 courses)	29.38 (945/3216)	Basic
Department Requirements	32 (for All Stages)	1749 (Sum of 32 courses)	54.38 (1749/3216)	Basic
Summer Training	1 (1 month)	N. A.	N.A.	N.A.
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First Year/ Semester I	ENLA111	English Language	48	
First Year/ Semester I	PRPE112	Principle to Petroleum Engineering	63	

First Year/ Semester I	CALC113	Calculus I	78	
First Year/ Semester I	EMSM114	Engineering Mechanics and Strength of Material	93	
First Year/ Semester I	COPR115	Computer Programming I	63	
First Year/ Semester I	WORK116	Workshops		90
First Year/ Semester I	GEGE117	General Geology I	63	
First Year/ Semester II	CHEM121	Chemistry	93	
First Year/ Semester II	GEGE122	General Geology II	63	
First Year/ Semester II	CALC123	Calculus II	78	
First Year/ Semester II	ENPR124	Engineering Practices	63	
First Year/ Semester II	ENET125	Engineering Ethics	48	
First Year/ Semester II	WORK116	Workshops		90
First Year/ Semester II	HURD126	Human Rights and Democracy	48	
Second Year/ Semester I	PE221	Ordinary Differential Equations	60	
Second Year/ Semester I	PE222	Structural Geology	40	
Second Year/ Semester I	PE231	Fluid Mechanic (I)	30	30
Second Year/ Semester I	PE241	Crude oil properties	10	30
Second Year/ Semester I	PE234	Statistics and Probability	40	
Second Year/ Semester I	PE232	Thermodynamic	40	
Second Year/ Semester I	PE223	Computer Programming (3D AutoCAD)	10	30
Second Year/ Semester I	PE211	Human Rights	10	
Second Year/ Semester II	PE224	Partial Differential Equations	60	
Second Year/ Semester II	PE225	Petroleum Geology	40	
Second Year/ Semester II	PE233	Fluid Mechanic (II)	30	30
Second Year/ Semester II	PE242	Reservoir Petrophysics	40	
Second Year/ Semester II	PE235	Strength of Material	30	30
Second Year/ Semester II	PE212	English Language (II)	30	
Second Year/ Semester II	PE226	Computer Programming (Matlab)	30	30
Second Year/ Semester II	PE213	Democracy	10	
Third Year / Semester I	PE341	Drilling I	60	
Third Year / Semester I	PE342	Well logging	45	
Third Year / Semester I	PE343	Drilling mud I	15	30
Third Year / Semester I	PE344	Well completion and stimulation	45	
Third Year / Semester I	PE321	Geophysics	45	
Third Year / Semester I	PE345	Reservoir Fluid	45	30

Third Year / Semester I	PE346	Gas Reservoirs	45	
Third Year / Semester I	PE347	Rock mechanics	30	
Third Year / Semester II	PE348	Drilling II	60	
Third Year / Semester II	PE349	Formation evaluation	45	30
Third Year / Semester II	PE3410	Drilling mud II	15	30
Third Year / Semester II	PE331	Hazard and Safety	30	
Third Year / Semester II	PE3411	Artificial Lift and well performance	45	
Third Year / Semester II	PE3412	Gas and Oil Transportation	30	
Third Year / Semester II	PE3413	Field Measurement and Surface Production	30	30
Third Year / Semester II	PE332	Numerical Analysis	30	
Fourth Year / Semester I	PE441	Petroleum Reservoir Engineering	60	
Fourth Year / Semester I	PE442	Drilling Engineering	60	
Fourth Year / Semester I	PE443	Engineering Project	30	
Fourth Year / Semester I	PE444	Well Testing	45	
Fourth Year / Semester I	PE445	Integrated Field Development and Management I	45	
Fourth Year / Semester I	PE431	optimization	30	
Fourth Year / Semester I	PE446	Reservoir Simulation	60	
Fourth Year / Semester I	PE447	Risk analysis	30	
Fourth Year / Semester II	PE448	Directional drilling	60	30
Fourth Year / Semester II	PE449	Engineering project	30	
Fourth Year / Semester II	PE4410	Well monitoring and workover	45	
Fourth Year / Semester II	PE432	Engineering management	30	
Fourth Year / Semester II	PE4411	Integrated Field Development and Management II	45	
Fourth Year / Semester II	PE4412	Petroleum Economics	30	
Fourth Year / Semester II	PE4413	Natural Gas Engineering	60	
Fourth Year / Semester II	PE4414	Enhanced Oil Recovery	45	

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	An ability to apply distinguish, identify, define, formulate, and solve engineering problems by applying principles of engineering, science and mathematics
Learning Outcomes 2	An ability to create and carry out proper measurement and tests with quality assurance, analyze and interpret results, and utilize

	engineering judgment to make inferences.
Skills	
Learning Outcomes 3	An ability to produce engineering designs that meet desired needs within certain constraints by applying both analysis and synthesis in the design process.
Learning Outcomes 4	An ability to perceive the continual necessity for professional knowledge growth and how to find, assess, assemble and apply it properly.
Learning Outcomes 5	An ability to skillfully communicate orally with a gathering of people and in writing with various managerial levels
Ethics	
Learning Outcomes 6	An ability to perceive ethical and professional responsibilities in engineering cases and make brilliant judgments taking into account the consequences in worldwide financial, ecological and societal considerations
Learning Outcomes 7	An ability to work adequately on teams and to set up objectives, plan activities, meet due dates, and manage risk and uncertainty

9. Teaching and Learning Strategies

1. Lectures.
- 2- Discussion.
- 3- Presentations and Listening.
- 4- Encourage students to team working.
- 5- Encouraging students to submit reports on problem and solutions related to the curriculum.

10. Evaluation methods

- Quizzes
- Assignments
- Midterm
- lab Exam
- lab Report
- project
- Evaluation
- Final Exam

11. Faculty

Faculty Members

Academic Rank	Specialization	Special Requirements/Skil	Number of the teaching staff
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			Is (if applicable)			
	General	Special			Staff	Lecturer
Prof . Dr.		☐			1	
Prof . Dr.	☐				2	
Prof . Dr.		☐				1
Asst. Prof . Dr.		☐			1	
Asst. Prof . Dr.	☐				4	
Asst. Prof . Dr.		☐				2
Asst. Prof .	☐				2	
Lecturer		☐			2	
Lecturer	☐				5	
Asst. Lecturer		☐			7	
Asst. Lecturer	☐				7	
Asst. Lecturer	☐					1

Professional Development

Mentoring new faculty members

- Their interactions with experts in the field who possess teaching expertise.
- assisting them with workshops and instructional classes

Professional development of faculty members

Urging them to participate in international conferences by publishing research in reputable journals – Urging them to partner with reputable international universities to learn about modern teaching techniques

12. Acceptance Criterion

students are accepted through the central admission of the Ministry of Higher Education

13. The most important sources of information about the program

- Elements of Petroleum Geology (2nd edition): Academic Press, Toronto,
- Ahmed T. Reservoir Engineering Handbook, 2010.
- The properties of petroleum fluids, William D. McCain, Penwell 1992
- Pressure transient testing, John Lee, John Rollins, John Spivey. SPE Textbook service, Vol. 9
- Bourgoyne, Adam T., Keith K. Millheim, Martin E. Chenevert, and Farrile S. Young. "Applied drilling engineering."
- Rabia, Hussain. Well engineering & construction. London: Entrac Consulting Limited.

14. Program Development Plan

- Updating laboratories and adding new experiments**
- Adding new software programs for each core courses**

Program Skills Outline

				Required program Learning outcomes													
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics					
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4		
First Year/ Semester I	ENLA111	English Language	Basic						0				0				
First Year/ Semester I	PRPE112	Principle to Petroleum Engineering	Basic	0	0									0			
First Year/ Semester I	CALC113	Calculus I	Basic	0				0									
First Year/ Semester I	EMSM114	Engineering Mechanics and Strength of Material	Basic	0				0						0			
First Year/ Semester I	COPR115	Computer Programming I	Basic	0	0												
First Year/ Semester I	WORK116	Workshops	Basic											0			
First Year/ Semester I	GEGE117	General Geology I	Basic					0					0	0			
First Year/ Semester II	CHEM121	Chemistry	Basic	0				0									
First Year/ Semester II	GEGE122	General Geology II	Basic	0				0									
First Year/ Semester II	CALC123	Calculus II	Basic	0				0									

First Year/ Semester II	ENPR124	Engineering Practices	Basic	0	0							0		
First Year/ Semester II	ENET125	Engineering Ethics	Basic								0			
First Year/ Semester II	WORK116	Workshops	Basic									0		
First Year/ Semester II	HURD126	Human Rights and Democracy	Basic					0				0		
Second Year/ Semester I	PE221	Ordinary Differential Equations	Basic	0				0						
Second Year/ Semester I	PE222	Structural Geology	Basic	0				0						
Second Year/ Semester I	PE231	Fluid Mechanic (I)	Basic	0										
Second Year/ Semester I	PE241	Crude oil properties	Basic	0							0			
Second Year/ Semester I	PE234	Statistics and Probability	Basic	0				0			0			
Second Year/ Semester I	PE232	Thermodynamic	Basic	0				0						
Second Year/ Semester I	PE223	Computer Programming (3D AutoCAD)	Basic	0				0						
Second Year/ Semester I	PE211	Human Rights	Basic						0			0		
Second Year/ Semester II	PE224	Partial Differential Equations	Basic	0				0						

Second Year/ Semester II	PE225	Petroleum Geology	Basic	0				0							
Second Year/ Semester II	PE233	Fluid Mechanic (II)	Basic	0				0							
Second Year/ Semester II	PE242	Reservoir Petrophysics	Basic	0				0	0			0			
Second Year/ Semester II	PE235	Strength of Material	Basic	0				0				0			
Second Year/ Semester II	PE212	English Language (II)	Basic					0			0				
Second Year/ Semester II	PE226	Computer Programming (Matlab)	Basic	0				0							
Second Year/ Semester II	PE213	Democracy	Basic					0				0			
Third Year / Semester I	PE341	Drilling I	Basic	0				0							
Third Year / Semester I	PE342	Well logging	Basic					0			0	0			
Third Year / Semester I	PE343	Drilling mud I	Basic						0						
Third Year / Semester I	PE344	Well completion and stimulation	Basic	0											
Third Year / Semester I	PE321	Geophysics	Basic	0				0	0			0			
Third Year / Semester I	PE345	Reservoir Fluid	Basic	0											
Third Year / Semester I	PE346	Gas Reservoirs	Basic	0	0			0	0						

Third Year / Semester I	PE347	Rock mechanics	Basic	0				0							
Third Year / Semester II	PE348	Drilling II	Basic	0	0										
Third Year / Semester II	PE349	Formation evaluation	Basic	0	0										
Third Year / Semester II	PE3410	Drilling mud II	Basic	0				0	0						
Third Year / Semester II	PE331	Hazard and Safety	Basic						0	0					
Third Year / Semester II	PE3411	Artificial Lift and well performance	Basic	0											
Third Year / Semester II	PE3412	Gas and Oil Transportation	Basic	0							0				
Third Year / Semester II	PE3413	Field Measurement and Surface Production	Basic	0	0										
Third Year / Semester II	PE332	Numerical Analysis	Basic	0	0										
Fourth Year / Semester I	PE441	Petroleum Reservoir Engineering	Basic	0											
Fourth Year / Semester I	PE442	Drilling Engineering	Basic		0								0		
Fourth Year / Semester I	PE443	Engineering Project	Basic	0	0								0		
Fourth Year / Semester I	PE444	Well Testing	Basic	0											

Fourth Year / Semester I	PE445	Integrated Field Development and Management I	Basic	0	0			0				0	0		
Fourth Year / Semester I	PE431	optimization	Basic	0				0	0						
Fourth Year / Semester I	PE446	Reservoir Simulation	Basic	0											
Fourth Year / Semester I	PE447	Risk analysis	Basic	0											
Fourth Year / Semester II	PE448	Directional drilling	Basic		0								0		
Fourth Year / Semester II	PE449	Engineering project	Basic	0	0								0		
Fourth Year / Semester II	PE4410	Well monitoring and workover	Basic	0											
Fourth Year / Semester II	PE432	Engineering management	Basic	0	0				0				0		
Fourth Year / Semester II	PE4411	Integrated Field Development and Management II	Basic	0	0			0				0	0		
Fourth Year / Semester II	PE4412	Petroleum Economics	Basic						0			0	0		
Fourth Year / Semester II	PE4413	Natural Gas Engineering	Basic	0											
Fourth Year / Semester II	PE4414	Enhanced Oil Recovery	Basic	0				0							

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

1. Course Name:						
2. Course Code:						
3. Semester / Year:						
4. Description Preparation Date:						
5. Available Attendance Forms:						
6. Number of Credit Hours (Total) / Number of Units (Total)						
7. Course administrator's name (mention all, if more than one name)						
Name:						
Email:						
8. Course Objectives						
Course Objectives				<ul style="list-style-type: none"> • • • 		
9. Teaching and Learning Strategies						
Strategy						
10. Course Structure						
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method	

11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					