

**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 Guide

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**Academic Program
and Course
Description Guide**

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.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies

T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Academic Program Description Form

University Name: Al-Farabi University College.

Faculty/Institute: Al-Farabi University College.

Scientific Department: ...Petroleum Engineering Department

Academic or Professional Program Name: BSc. in Petroleum Engineering

Final Certificate Name: Bsc in Petroleum Engineering

Academic System: Yearly

Description Preparation Date: 1-9-2023

File Completion Date: 7-4-2024

Signature:

Head of Department Name:

د. خالد الفارابي
Date: 07/04/2024

Signature:

Scientific Associate Name:

Dr. Adnan AL Azzawi

Date: 07.04.2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 07/04/2024

Signature: Dr. Khalidah AL-Qayim Kambur



Approval of the Dean

د. أحمد العبدون
Prof. Dr. Ahmed Algan

Concepts and terminology:

Academic Program Description:

VISION

The vision of the Department of Petroleum Engineering is to become the leader in petroleum engineering education in Iraq creating the most respected, prestigious, and qualified graduates.

MISSION

The Mission of the Petroleum Engineering Program is to provide the necessary skills at the undergraduate level to discover and develop new techniques and processes for the efficient and economical extraction of oil and gas resources consistent with human health, ethics, safety and environmental needs. Also, to encourage our students for continuing education to serve the country in developing conventional and unconventional hydrocarbon resources.

OBJECTIVES

Graduates of the Petroleum Engineering Program will exhibit proficiency and excellence in the following attributes:

- Skills to use modern engineering tools and techniques to identify and solve technical problems associated with the production and management of oil and gas resources.
- Able to appreciate and function within economic, environmental, societal and ethical constraints.
- Able to create, assimilate, synthesize and communicate knowledge effectively of scientific and engineering principles and the application of these principles in solving petroleum and natural gas engineering problems using modern tools.
- Able to work effectively in multi-disciplinary teams in diverse environments and exhibit effective communication skills.
- Able to adapt to change through life-long learning.

Adopted Graduate Outcomes

1a- An ability to distinguish, identify, define, formulate, and solve engineering problems by applying principles of engineering, science and mathematics.

2a- An ability to perceive the continual necessity for professional knowledge growth and how to find access, assemble and apply it properly.

3a- An ability to skillfully communicate orally with a gathering of people and in writing with various managerial levels.

4a- A ability to work adequately on teams and to set up objectives, plan activities , meet due dates, and manage risk and uncertainty.

5a- An ability to perceive ethical and professional responsibilities in engineering cases and make brilliant judgments taking into account the sequences in worldwide financial

Course Description:

Over the years, students from around the country have pursued their engineering degree with us, taking advantage of the opportunity to learn one-on-one from outstanding faculty. Our faculty create innovative and rigorous research opportunities for undergraduate students. With faculty members who have worked around the world, a petroleum engineering education here means you are prepared for continued education, public service, and life-long learning. Petroleum engineering is of vital importance to Iraq's future, so we prepare Petroleum engineers involved in all facets of oil exploration and development, from identifying and characterizing the reservoir through drilling and completion to production. Petroleum engineers also find new ways to extract oil and gas from older wells. We offer courses that prepare students for careers in petroleum and energy-resource fields. Courses in petroleum engineering deal with drilling, production, reservoir engineering formation evaluation, computer simulation and enhanced oil recovery together with the Basic Engineering Courses. The curriculum prepares graduates to meet the demands of modern technology while emphasizing, whenever possible, the special problems encountered in Iraqi petroleum fields. You'll have the opportunity to joining the student chapter of the Society of Petroleum Engineers (SPE) namely, Al Farabi SPE Student chapter. Our chapter is actively involved in inviting academic faculty and industry professionals to present short courses , workshops and to talk about future career in this profession. Students graduating from the petroleum engineering program will be well prepared to serve the industry and themselves, through their technical knowledge, ethical considerations, participation in professional societies and desire for life-long learning.

2.1.2 Statement of PEOs.

Program Vision:

The vision of the Department of Petroleum Engineering is to become the leader in petroleum engineering education in Iraq creating the most respected, prestigious, and qualified graduates.

Program Mission:

The Mission of the Petroleum Engineering Program is to provide the necessary skills at the undergraduate level to discover develop new techniques and processes for the efficient and economical extraction of oil and gas resources consistent with human health, ethics, safety and environmental needs. Also, to encourage our students for continuing education to serve the country in developing conventional and unconventional hydrocarbon resources.

Program Objectives:

Graduates of the Petroleum Engineering Program will exhibit proficiency and excellence in the following attributes:

- Skills to use modern engineering tools and techniques to identify and solve technical problems associated with the production and management of oil and gas resources.
- Able to appreciate and function within economic, environmental, societal and ethical constraints.
- Able to create, assimilate, synthesize and communicate knowledge effectively of scientific and engineering principles and the application of these principles in solving petroleum and natural gas engineering problems using modern tools.
- Able to work effectively in multi-disciplinary teams in diverse environments and exhibit effective communication skills.
- Able to adapt to change through life-long learning.

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:

List all courses in the program by term starting with the first term of the first year and ending with the last term of the final year.			Indicate Whether Course is Required , Elective or a Selected Elective by an R, an E or an SE. ¹	Offered: Year and Semester or Quarter	Maximum Section Enrollment for the Last Two Terms the Course was Offered ²
Course					
Dept.	Code	Title			
Petr.	PE100	General Geology	R	year	153
Petr.	GE102	Mathematics I	R	year	153
Petr.	GE104	Computer Programming, I	R	year	153
Petr.	GE106	Engineering Drawing and Descriptive Geometry	R	year	
Petr.	GE108	Statics and Dynamics	R	year	153
Petr.	GE110	English Language I	R	year	153
Petr.	GE114	Physics	R	year	153
Petr.	GE101	Analytical Chemistry	R	Semester	153
Petr.	GE112	Arabic	R	year	153
Petr.		Human Rights	R	year	153
Petr.	PE200	Structural and Petroleum Geology	R	year	98
Petr.	GE202	Mathematics II	R	year	98
Petr.	GE204	Computer Programming II	R	year	98
Petr.	PE206	Fundamentals of Petroleum	R	year	98

		Engineering			
Petr.	GE208	Fluid Mechanics	R	year	98
Petr.	GE210	English Language I	R	year	98
Petr.	PE201	Petroleum Properties	R	Semester	98
Petr.	PE203	Eng. Thermodynamics	R	Semester	98
Petr.	GE203	Strength of Materials	R	Semester	98
Petr.	GE212	Human Rights	R	year	98
Petr.	PE300	Petroleum Reservoir Eng. I	R	year	110
Petr.	PE302	Petroleum Drilling Eng. I	R	year	110
Petr.	PE304	Petroleum Production Eng. I	R	year	110
Petr.	PE306	Well Logging	R	year	110
Petr.	PE308	Petroleum Engineering Economics	R	year	110
Petr.	GE302	Engineering Mathematics	R	year	110
Petr.	GE310	Technical English	R	year	110
Petr.	PE301	Geophysics	R	Semester	110
Petr.	GE303	Engineering Statistics	R	Semester	110
Petr.	PE400	Petroleum Reservoir Eng. II	R	year	49
Petr.	PE402	Petroleum Drilling Eng. II	R	year	49

Petr.	PE404	Petroleum Production Eng. II	R	year	49
Petr.	PE406	Secondary Oil Recovery	R	year	49
Petr.	PE408	Numerical Methods and Reservoir Simulation	R	year	49
Petr.	PE410	Engineering Project	R	year	49
Petr.	PE401	Gas Technology	R	Semester	49
Petr.	PE403	Optimization	R	Semester	49
Petr.	PE405	Integrated Reservoir Management	R	year	49
Petr.		English Language IV	R	year	49

Learning Outcomes:

- 1.** An ability to distinguish, identify, define and formulate engineering problems at the field by applying principles of petroleum engineering with the suitable solutions depending on the theoretical background.
- 2.** An ability to perceive the continual necessity for professional knowledge growth and how to find access, assemble and apply it properly.
- 3.** An ability to prepare a final report about field operations constituting the challenges and the main data obtained.
- 4.** An ability to work adequately on teams at the locations and to set up objectives, plan activities, meet due dates, and manage risk and uncertainty.
- 5.** An ability to perceive ethical and professional responsibilities in engineering cases and make brilliant judgments.
- 6.** An ability to control the instantaneous events in the oil field during drilling operations, production stage and in field management.

Teaching and learning strategies:

Faculty members used the modern instruments to develop the convey of the information to the undergraduate students, these strategies include the modern screen supported by the videos to explore the operation occur in the fields. In addition, students are arrangements into groups to arrange a presentation for more enthusiastic and active class.

1. Program Vision

The vision of the Department of Petroleum Engineering is to become the leader in petroleum engineering education in Iraq creating the most respected, prestigious, and qualified graduates

2. Program Mission

The Mission of the Petroleum Engineering Program is to provide the necessary skills at the undergraduate level to develop new techniques and processes for the efficient and economical extraction of oil and gas resources consistent with human health, ethics, safety and environmental needs. Also, to encourage our students for continuing education to serve the country in developing conventional and unconventional hydrocarbon resources.

3. Program Objectives

- **Skills to use modern engineering tools and techniques to identify and solve technical problems associated with the production and management of oil and gas resources.**
- **Able to appreciate and function within economic, environmental, societal and ethical constraints.**
- **Able to create, assimilate, synthesize and communicate knowledge effectively of scientific and engineering principles and the application of these principles in solving petroleum and natural gas engineering problems using modern tools.**
- **Able to work effectively in multi-disciplinary teams in**

diverse environments and exhibit effective communication skills.

- **Able to adapt to change through life-long learning.**

4. Program Accreditation

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

5. Other external influences

Is there a sponsor for the program?

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	39	236		
College Requirements				
Department Requirements				

Summer Training	1			
Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours
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FIRST YEAR			1 st Semester Hours/Week			2 nd Semester Hours/Week		
Code	Subject	Units	Theo.	Tuto.	Lab.	Theo.	Tuto.	Lab.
PE100	General Geology	8	3	-	2	3	-	2
GE102	Mathematics I	6	3	1	-	3	1	-
GE104	Computer Programming I	2	2	-	2	2	-	2
GE106	Engineering Drawing and Descriptive Geometry	4	1	-	3	1	-	3
GE108	Statics and Dynamics	4	2	1	-	2	1	-
GE110	English Language I	2	1	-	-	1	-	-
GE114	Physics	4	2	-	-	2	-	-
GE101	Analytical Chemistry	3	2	-	2	-	-	-
GE103	Electrical Technology	3	-	-	-	2	-	2
GE112	Arabic	2	1	1	-	1	1	-
Total		38	17	3	9	17	3	9
Total hours per week			29			29		

SECOND YEAR			1 st Semester Hours/Week			2 nd Semester Hours/Week		
Code	Subject	Units	Theo.	Tuto.	Lab.	Theo.	Tuto.	Lab.
PE200	Structural and Petroleum Geology	6	2	-	2	2	-	2
GE202	Mathematics II	6	3	1	-	3	1	-
GE204	Computer Programming II	2	1	-	2	1	-	2
PE206	Fundamentals of Petroleum Engineering	4	2	1	-	2	1	-
GE208	Fluid Mechanics	5	2	2	-	2	2	2
GE210	English Language II	2	1	-	-	1	-	-
PE201	Petroleum Properties	2	1	-	3	-	-	-

PE203	Eng. Thermodynamics	3	3	1	-	-	-	-
GE203	Strength of Materials	3	-	-	-	2	1	2
GE212	Human Rights	2	1	1	-	1	1	-
Total		35	16	6	7	14	6	8
Total hours per week			29			28		

THIRD YEAR			1 st Semester Hours/Week			2 nd Semester Hours/Week		
Code	Subject	Units	Theo.	Tuto.	Lab.	Theo.	Tuto.	Lab.
PE300	Petroleum Reservoir Eng. I	8	3	1	2	3	1	2
PE302	Petroleum Drilling Eng. I	8	3	1	2	3	1	2
PE304	Petroleum Production Eng. I	4	2	1	-	2	1	-
PE306	Well Logging	6	3	1	-	3	1	-
PE308	Petroleum Engineering Economics	4	2	-	-	2	-	-
GE302	Engineering Mathematics	6	3	1	-	3	1	-
GE310	English Language III	2	1	-	-	1	-	-
PE301	Geophysics	2	2	1	-	-	-	-
GE303	Engineering Statistics	2	-	-	-	2	1	-
Total		42	19	6	4	19	6	4
Total hours per week			29			29		

FOURTH YEAR			1 st Semester Hours/Week			2 nd Semester Hours/Week		
Code	Subject	Units	Theo.	Tuto.	Lab.	Theo.	Tuto.	Lab.
PE400	Petroleum Reservoir Eng. II	6	3	2	-	3	2	-
PE402	Petroleum Drilling Eng. II	6	3	2	-	3	2	-
PE404	Petroleum Production Eng. II	6	3	2	-	3	2	-
PE406	Secondary Oil Recovery	6	3	-	-	3	-	-

PE408	Numerical Methods and Reservoir Simulation	6	2	-	2	2	-	2
PE410	Engineering Project	4	1	-	2	1	-	2
PE401	Gas Technology	3	3	-	-	-	-	-
PE403	Optimization	3	-	-	-	3	-	-
PE405	Integrated Reservoir Management	3	1	1	-	1	1	1
	English Language IV	2	1	-	-	1	-	-
Total		45	20	7	4	20	7	5
Total hours per week			31			32		

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	An ability to distinguish, identify, define, formulate, and solve engineering problems by applying principles of engineering, science and mathematics.
Skills	
Learning Outcomes 2	An ability to perceive the continual necessity for professional knowledge growth and how to find access, assemble and apply it properly.
Learning Outcomes 3	An ability to skillfully communicate orally with a gathering of people and in writing with various managerial levels.
Ethics	
Learning Outcomes 4	A ability to work adequately on teams and to set up objectives, plan activities, meet due dates, and manage risk and uncertainty.
Learning Outcomes 5	An ability to perceive ethical and professional responsibilities in engineering cases and make brilliant judgments taking into account the sequences in worldwide financial

9. Teaching and Learning Strategies

Teaching and learning strategies and methods adopted in the implementation of the program in general.

10. Evaluation methods

Students are evaluated by direct discussion, written exams, oral exam, reports and monthly exams

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
أ.د علي محسن المشاط	PhD-petroleum engineering-1976	هندسة الحفر			✓	
أ.د زهير داود احمد وهيب الشيخ	PhD-Geology-1970	جيوفيزياء الارض			✓	
أ.د محمد باقر خضر السنيلي	PhD-Petroleum engineering-1972	هندسة المكامن			✓	
أ.د مزاحم عزيز باصي غراني	PhD-Geology-1978	Geology			✓	
أ.د فالح حسن محمد	PhD-petroleum engineering-	هندسة الحفر				✓
أ.م.د عدنان عباس العزاوي	PhD-Mechanical Engineering-1976	ميكانيك			✓	
أ.م.د امجد عبدالقادر محمد	PhD-Geology-1988	الجيولوجيا			✓	
م.د شامل ابراهيم محمد البصام	PhD-petroleum engineering-1981	هندسة المكامن			✓	

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
م.د احمد جبير محمود	PhD- petroleum engineering- 2008	هندسة المكامن			✓	
م.د شلال نايف مهدي	PhD- petroleum engineering- 1991	هندسة الحفر			✓	
د.عبدالله جلال محمد	PhD- Drilling engineering	هندسة الحفر				✓
م.م غسان هشام جاني	MSc.- Petroleum engineering	هندسة المكامن				✓
د. تيسير غانم زكي	PhD- Geology- 2019	علم الارض			✓	
أ.م ضياء الدين عبدالوهاب شهاب	MSc- geology	علم الارض			✓	
م.م محمد كصاب شامخ ضمّد	MSc- petroleum engineering- 2001	النمذجة المكمنية			✓	
م.م ليلي صديق محمد عبدالله	MSc- petroleum engineering- 2013	هندسة الانتاج			✓	
م.م اكرم جبار عبدالحسين	MSc- Computer Engineering	هندسة حاسبات			✓	
م.م ايمن فوزي زوين	M.Sc.- Chemical Engineering	هندسة كيميائية			✓	

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
م.م حسين علي مصباح حمد	MSc- Mechanical Engineering	هندسة الميكانيك			✓	
م.م ريام عبدالكريم حسن	MSc- Geology- 2018	علم الارض			✓	
م.م داليا باسل عبد	MSc – chemical engineering- 2016	هندسة كيميائية			✓	
م.م طيبة نايف جاسم	MSc – chemical engineering- 2016	هندسة كيميائية			✓	
م.م مروة حسن ابراهيم	MSc – chemical engineering- 2016	هندسة كيميائية			✓	
م.م احمد امين خضير	MSc- petroleum engineering- 2020	هندسة الحفر			✓	
م.م ازهر عايد مرزه	MSc – Mechanical engineering- 2020	تكييف وتبريد			✓	

Professional Development

Mentoring new faculty members

New faculty is exposed to concentrate following and guiding by instructing them on the uniform manner and the ideal manner of convey information and how dealing with students, evaluation them and how to control the class discussions.

Professional development of faculty members

Faculty members always exposed to continuous dealing with the latest technological method of teaching and learning strategies. They constantly join the training programs arranged by the ministry of education and higher education.

12. Acceptance Criterion

The enrollment of the petroleum program is central through ministry of higher education and scientific research by admitting the students graduated from the scientific Baccaalaureate branch.

13. The most important sources of information about the program

Phone No. 07712365333

Facebook: <https://web.facebook.com/alfarabiuc.edu.iq>

Website: www.alfarabiuc.edu.iq

E-mail: info@alfarabiuc.edu.iq

14. Program Development Plan

- a. Create a communicative group for the academic staff with a head of the educational program in order to discuss and solve all the challenges that face the development of the educational system.*
- b. facilitate the educational labs. With latest technological equipment .
facilitate the educational institution with a network to enhance the E- Learning processes.*
- c. Attract an academic staff from authentic universities to raise the level of the*

learning quality.

d. *Support the lectures with recording videos created by the instructor to be available for the review purposes for the students.*

e. *Provide the library with rich references that convey the student with the latest scientific approaches*

Program Skills Outline

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	PE100	General Geology	Basic			✓					✓				✓
	GE102	Mathematics I	Basic	✓						✓					
	GE104	Computer Programming I	Basic	✓	✓		✓			✓	✓		✓		
	GE106	Engineering Drawing and Descriptive Geometry	Basic	✓	✓							✓			✓
	GE108	Statics and Dynamics	Basic		✓							✓		✓	

	GE110	English Language I	Basic	✓	✓		✓			✓			✓	
	GE114	Physics	Basic				✓				✓			
	GE101	Analytical Chemistry	Basic	✓	✓				✓			✓		
	GE103	Electrical Technology	Basic							✓				
	GE112	Arabic	Basic		✓		✓				✓	✓	✓	✓
Second	PE200	Structural and Petroleum Geology	Basic	✓	✓	✓			✓					
	GE202	Mathematics II	Basic	✓	✓						✓			
	GE204	Computer Programming II	Basic	✓	✓		✓							
	PE206	Fundamentals of Petroleum Engineering	Basic		✓		✓		✓		✓			
	GE208	Fluid Mechanics	Basic	✓		✓	✓							

	GE210	English Language II	Basic	✓		✓								
	PE201	Petroleum Properties	Basic	✓	✓	✓		✓						
	PE203	Eng. Thermodynamics	Basic	✓	✓	✓			✓		✓	✓		
	GE203	Strength of Materials	Basic			✓								
	GE212	Human Rights	Basic		✓					✓				
Third	PE300	Petroleum Reservoir Eng. I			✓			✓		✓				
	PE302	Petroleum Drilling Eng. I	✓		✓	✓					✓			
	PE304	Petroleum Production Eng. I	✓	✓		✓								
	PE306	Well Logging	✓						✓					

	PE308	Petroleum Engineering Economics	✓	✓					✓					
	GE302	Engineering Mathematics	✓		✓					✓				
	GE310	English Language III	✓		✓				✓			✓	✓	
	PE301	Geophysics	✓		✓		✓				✓			
	PE300	Petroleum Reservoir Eng. I	✓			✓	✓		✓			✓		✓
Fourth	PE400	Petroleum Reservoir Eng. II	✓		✓				✓	✓				
	PE402	Petroleum Drilling Eng. II	✓	✓										
	PE404	Petroleum Production Eng. II	✓	✓	✓	✓					✓			
	PE406	Secondary Oil Recovery	✓											

	PE408	Numerical Methods and Reservoir Simulation	✓			✓			✓	✓				
	PE410	Engineering Project	✓	✓			✓				✓			
	PE401	Gas Technology	✓	✓		✓			✓		✓	✓		
	PE403	Optimization												
	PE405	Integrated Reservoir Management	✓	✓	✓		✓				✓		✓	
		English Language IV	✓				✓					✓	✓	

