

# University of Baghdad

## جامعة بغداد



### *First Cycle – Bachelor's Degree (B.Sc.) - Petroleum Engineering*

بكالوريوس - هندسة نفط

---



---

### Table of Contents

1. Overview
  2. Undergraduate Modules 2023-2024
  3. Contact
-

## 1. Overview

This catalogue is about the courses (modules) given by the program of petroleum Engineering in University of Baghdad to gain the Bachelor of Science degree. The program delivers (48) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظرة عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج هندسة النفط في جامعة بغداد للحصول على درجة بكالوريوس العلوم. يقدم البرنامج (48) مادة دراسية، مع (٦٠٠٠) إجمالي ساعات حمل الطالب و ٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على نظام بولونيا.

## 2. Undergraduate Courses 2023-2024

### Module 1

Code	Course/Module Title	ECTS	Semester
PENG 416	Reservoir Characterization	6	7 <sup>th</sup>
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	87
Description			
<p>The module of Reservoir characterization focuses on the practical application of engineering principles and techniques to the characterization and management of oil and gas reservoirs. It builds upon the fundamental knowledge gained in reservoir engineering and delves deeper into the hands-on aspects of reservoir evaluation and management.</p> <p>The module of Applied Reservoir Engineering equips students with practical skills and knowledge necessary for evaluating reservoirs, optimizing production, and making informed decisions in the oil and gas industry. Through a combination of theoretical concepts, case studies, and hands-on exercises, students develop proficiency in applying reservoir engineering principles to real-world scenarios.</p>			

**Module 2**

<b>Code</b>	<b>Course/Module Title</b>	<b>ECTS</b>	<b>Semester</b>
PENG 415	Drilling Engineering III	6	7 <sup>th</sup>
<b>Class (hr/w)</b>	<b>Lect/Lab./Prac./Tutor</b>	<b>SSWL (hr/sem)</b>	<b>USWL (hr/w)</b>
3	1	63	87
<b>Description</b>			
<p>Drilling engineering is a module within the petroleum engineering department that focuses on the techniques, principles, and applications of drilling wells in non-vertical directions. This module explores the various aspects involved in planning, executing, and managing directional drilling operations in the oil and gas industry.</p> <p>The "Directional Drilling Engineering" module equips students with the necessary knowledge and skills to design and execute directional drilling operations effectively. It enables them to understand the complexities associated with drilling wells in non-vertical directions and prepares them for careers in drilling engineering or related fields within the petroleum industry.</p>			

**Module 3**

<b>Code</b>	<b>Course/Module Title</b>	<b>ECTS</b>	<b>Semester</b>
PENG 414	Integrated Reservoir Management	4	7 <sup>th</sup>
<b>Class (hr/w)</b>	<b>Lect/Lab./Prac./Tutor</b>	<b>SSWL (hr/sem)</b>	<b>USWL (hr/w)</b>
3	1	63	37
<b>Description</b>			
<p>Integrated Reservoir Management module introduces the fundamentals of reservoir management for petroleum, reservoir, and all subsurface engineers and specialists. It explains what reservoir management means and the tools they use, data/info they require, strategies &amp; techniques they utilize and objectives they seek and their significances. It involves establishing a purpose or strategy and developing a plan, implementing and monitoring the plan, and evaluating the results. Integration of all these are essential for successful reservoir management. It is dynamic and ongoing. While a comprehensive plan for reservoir management is highly desirable, every reservoir may not warrant such a detailed plan because of cost effectiveness. The key to success is to have a management plan (whether so comprehensive or not) and implement it from day one.</p>			

#### Module 4

Code	Course/Module Title	ECTS	Semester
PENG 413	Well Test and Stimulation	4	7 <sup>th</sup>
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>The Well Test module in petroleum engineering focuses on the evaluation and analysis of well performance through well testing techniques. Well testing is a crucial method used to gather data and assess reservoir characteristics, such as flow rates, pressure behavior, and reservoir properties. It involves conducting controlled flow and pressure measurements in wells to obtain valuable information about the reservoir and its productivity.</p> <p>The Well Test module is crucial for petroleum engineers as it equips them with the knowledge and skills to assess reservoir potential, optimize well performance, and make informed decisions regarding production strategies. Well test analysis helps determine reservoir parameters, evaluate well productivity, identify formation damage, and validate reservoir models. The module also emphasizes the significance of data quality, accuracy, and integrity in well testing, ensuring reliable results for reservoir characterization and production forecasting.</p> <p>Stimulation</p>			

#### Module 5

Code	Course/Module Title	ECTS	Semester
PENG 412	Numerical Methods and Reservoir Simulation	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	3	94	56
Description			
<p>The module focuses on the application of numerical techniques and computational tools to solve engineering problems encountered in the oil and gas industry. It provides students with the necessary mathematical and computational skills to analyze and solve complex engineering problems related to reservoir engineering, drilling, production, and other aspects of petroleum engineering.</p> <p>The "Applied Numerical Methods" module equips students with the necessary computational skills to analyze and solve complex engineering problems encountered in the petroleum industry. It enhances their ability to apply numerical techniques, develop computational models, and make informed engineering decisions.</p>			

**Module 6**

<b>Code</b>	<b>Course/Module Title</b>	<b>ECTS</b>	<b>Semester</b>
CENG 411	Engineering Project I	4	7 <sup>th</sup>
<b>Class (hr/w)</b>	<b>Lect/Lab./Prac./Tutor</b>	<b>SSWL (hr/sem)</b>	<b>USWL (hr/w)</b>
	4	63	37
<b>Description</b>			
<p>The Engineering Project module in Petroleum Engineering is designed to provide students with the knowledge and skills they have their academic program to a real-world problem. Students are typically required to work in teams on an industry-based project, which may involve working with a company or organization to address a specific issue or challenge related to the petroleum industry.</p> <p>During the module, students will be expected to evaluate and analyze data, develop solutions, and present their findings to industry professionals. goal is to provide students with an understanding of the complexities of the petroleum industry and the challenges that engineers face when working in this field.</p> <p>To be successful in this module, students will need to have a solid understanding of the fundamental concepts of petroleum engineering, including drilling, production, reservoir engineering, and field development. They should also have strong communication teamwork, and analytical skills, as they will be required to work collaboratively on a complex project that requires the integration of multiple disciplines and perspectives.</p>			

**Second Semester  
Module 1**

Code	Course/Module Title	ECTS	Semester
PENG426	Applied Reservoir Engineering	6	8 <sup>th</sup>
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	2	78	72
Description			
<p>Applied reservoir engineering module focuses on the practical aspects of reservoir engineering and it covers reservoir engineering principles, different methods to assess the field performances and methods to develop different types of fields.</p> <p>Applied reservoir Engineering provides students with the necessary knowledge and skills to analyze reservoir behavior, predict performance, and make informed decisions related to reservoir development and management. It serves as a foundation for more advanced reservoir engineering modules and prepares students for practical applications in the oil and gas industry.</p>			

**Module 2**

Code	Course/Module Title	ECTS	Semester
PENG 425	Secondary and Enhanced Oil Recovery	5	8 <sup>th</sup>
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	2	78	47
Description			
<p>Secondary and Enhanced Oil Recovery (EOR) is a module that focuses on advanced techniques used to maximize the recovery of oil from reservoirs. In conventional primary and secondary recovery methods, only a fraction of the oil in a reservoir can be extracted. EOR techniques are employed to increase the pro Students learn about the advantages, limitations, and selection criteria for different EOR methods based on reservoir properties, fluid characteristics, and economic factors. They also gain insights into the environmental and sustainability aspects of EOR operations.</p> <p>Overall, the Enhanced Oil Recovery module equips students with the knowledge and skills to evaluate, design, and implement advanced techniques to maximize oil recovery from reservoirs, contributing to efficient and sustainable petroleum production and extraction efficiency by altering the reservoir conditions and fluid behavior.</p>			

### Module 3

Code	Course/Module Title	ECTS	Semester
PENG 424	Production Optimization	5	7 <sup>th</sup>
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	62
Description			
<p>The Production Optimization module is designed to provide students with a deep understanding of the principles, techniques, and tools used to optimize production in the oil and gas industry. It focuses on increasing productivity in the production system and improving overall performance throughout the production process.</p> <p>By completing the Production Optimization module, students will acquire the knowledge and skills required to optimize production system, improve well performance, and ensure making the finished product more efficient in its stages.</p>			

### Module 4

Code	Course/Module Title	ECTS	Semester
PENG 423	Directional Drilling and Drilling Optimization	6	7 <sup>th</sup>
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	87
Description			
<p>Directional drilling and drilling optimization are two important modules within petroleum engineering. Directional drilling involves drilling wells in a curved or non-vertical manner to reach hydrocarbon reservoirs, while drilling optimization seeks to improve the efficiency and productivity of the drilling process.</p> <p>Directional drilling utilizes specialized equipment and techniques, including measurement-while-drilling (MWD) tools and rotary steerable systems, to precisely steer the drill bit through the subsurface. This allows for reaching reservoirs that may not be accessible through vertical drilling, reducing the number of wells needed to extract hydrocarbons, and minimizing surface disturbance.</p> <p>Drilling optimization, on the other hand, involves using various technologies and methodologies to improve drilling performance in terms of cost, time, and safety. This includes proper selection of drilling bits, fluids, and technologies for specific geological formations, real-time monitoring control of drilling parameters, and data analytics for continuous improvement.</p>			

## Module 5

Code	Course/Module Title	ECTS	Semester
PENG 422	Optimization	4	7 <sup>th</sup>
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>The Optimization module in petroleum engineering department focuses on the application of optimization techniques to improve various processes and decision-making in the oil and gas industry. It emphasizes the use of mathematical and computational methods to optimize the performance, efficiency, and profitability of petroleum operations.</p> <p>The Optimization module equips petroleum engineering students with the skills and knowledge to analyze complex systems, identify optimization opportunities, and develop efficient strategies to improve operational performance and decision-making in the oil and gas industry.</p>			

## Module 6

Code	Course/Module Title	ECTS	Semester
CENG 421	Engineering Project II	4	7 <sup>th</sup>
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
	4	63	37
Description			
<p>The Engineering Project II module in Petroleum Engineering is designed to provide students with the knowledge and skills they have their academic program to a real-world problem. Students are typically required to work in teams on an industry-based project, which may involve working with a company or organization to address a specific issue or challenge related to the petroleum industry.</p> <p>During the module, students will be expected to evaluate and analyze data, develop solutions, and present their findings to industry professionals. goal is to provide students with an understanding of the complexities of the petroleum industry and the challenges that engineers face when working in this field.</p> <p>To be successful in this module, students will need to have a solid understanding of the fundamental concepts of petroleum engineering, including drilling, production, reservoir engineering, and field development. They should also have strong communication teamwork, and analytical skills, as they will be required to work collaboratively on a complex project that requires the integration of multiple disciplines and perspectives.</p>			



## Contact

Program Manager:

Email:

Mobile no.:

Program Coordinator:

Email:

Mobile no.:

---