University of Baghdad
جامعة بغداد

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

بكالوريوس - هندسة نفط

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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.

نظره 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 316	Reservoir Engineering I and Rock Mechanics	7	5th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	3	94	81
Description			
Reservoir Engineering is an introductory module that focuses on the fundamental concepts and principles of reservoir engineering in the oil and gas industry. The module provides students with a solid foundation in understanding reservoir characteristics, behavior, and management. 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.			

Module 2

Code	Course/Module Title	ECTS	Semester
PENG 315	Drilling Engineering I	7	5th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	3	94	81
Description			
Drilling Engineering: The drilling engineering module focuses on the design, planning, and execution of drilling operations to extract oil and gas from underground reservoirs. It covers various aspects of drilling, including well planning, equipment selection, drilling techniques, and wellbore stability. Overall, the drilling engineering module equips students with the knowledge and skills necessary to design, plan, and execute drilling operations effectively and safely. It prepares them to handle the technical and operational challenges encountered in the field of drilling engineering within the petroleum industry.			

Module 3

Code	Course/Module Title	ECTS	Semester
PENG 314	Production Engineering I	4	5th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	63	37
Description			
The Production Engineering module focuses on the optimization and management of production processes in the oil and gas industry. It covers various techniques and strategies to maximize the efficiency and profitability of producing hydrocarbons from reservoirs. Students gain knowledge and skills in designing, operating, and troubleshooting production systems. The Production Engineering module equips students with the necessary skills to optimize production operations, troubleshoot production challenges, and make informed decisions to maximize hydrocarbon recovery from oil and gas reservoirs.			

Module 4

Code	Course/Module Title	ECTS	Semester
PENG 313	Well logging and formation evaluation	4	5th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Well logging is a crucial module in petroleum engineering that focuses on the acquisition and interpretation of data from downhole instruments or tools to evaluate subsurface formations. Well logs provide essential information about the geological characteristics, fluid content, and potential hydrocarbon reserves in a well. Throughout the module, students often engage in practical exercises, case studies, and software simulations to gain hands-on experience in interpreting well logs and making informed decisions based on the data. The module aims to equip students with the skills necessary to effectively utilize well logging data for reservoir assessment and management in the petroleum industry.			

Module 5

Code	Course/Module Title	ECTS	Semester
CENG 312	Engineering Analysis I	4	5th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Engineering analysis is a fundamental module that provides students with the mathematical skills and knowledge necessary for solving engineering problems in the petroleum industry. It covers a range of mathematical concepts and techniques applicable to various engineering disciplines, including petroleum engineering. Engineering Mathematics provides students with a solid foundation in mathematical principles and problem-solving techniques necessary for understanding and analyzing complex engineering problems in petroleum engineering. It forms the basis for more advanced modules in the curriculum and helps students develop the quantitative skills required for various aspects of petroleum engineering, such as reservoir modeling, fluid flow analysis, and optimization of production processes.			

Module 6

Code	Course/Module Title	ECTS	Semester
PENG 311	Gas Technology	4	5th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	63	37
Description			
Gas Technology: This module focuses specifically on the exploration, production, and processing of natural gas, which is a significant component of the petroleum industry. It covers various aspects related to natural gas, including its composition, properties, reservoir characteristics, and extraction methods. The Natural Gas Engineering module provides students with a comprehensive understanding of the unique characteristics and challenges related to natural gas production and processing. It equips them with the necessary knowledge and skills to contribute to the efficient and sustainable extraction and utilization of natural gas resources.			

Second Semester
Module 1

Code	Course/Module Title	ECTS	Semester
PENG 326	Reservoir Engineering II and FFTPM	7	6th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	3	94	81
Description			
Reservoir Engineering is an introductory module that focuses on the fundamental concepts and principles of reservoir engineering in the oil and gas industry. The module provides students with a solid foundation in understanding reservoir characteristics, behavior, and management. 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. The module on Multiphase Flow in Porous Media focuses on the study of fluid behavior and flow characteristics in subsurface reservoirs. It examines the simultaneous flow of multiple fluids, such as oil, water, and gas, through the interconnected pore spaces of rocks found in reservoirs. This module is essential for understanding and predicting the movement and distribution of fluids during oil and gas production processes. The module on Multiphase Flow in Porous Media equips students with the knowledge and skills necessary to analyze, model, and optimize fluid flow in reservoirs. Understanding the complex behavior of multiphase flow is crucial for effectively managing oil and gas reservoirs and maximizing hydrocarbon recovery.			

Module 2

Code	Course/Module Title	ECTS	Semester
PENG 325	Drilling Engineering II	7	6th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	3	94	81
Description			
Drilling Engineering: The drilling engineering module focuses on the design, planning, and execution of drilling operations to extract oil and gas from underground reservoirs. It covers various aspects of drilling, including well planning, equipment selection, drilling techniques, and wellbore stability. Overall, the drilling engineering module equips students with the knowledge and skills necessary to design, plan, and execute drilling operations effectively and safely. It prepares them to handle the technical and operational challenges encountered in the field of drilling engineering within the petroleum industry.			

Module 3

Code	Course/Module Title	ECTS	Semester
PENG 324	Production Engineering II	5	6th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	63	62
Description			
The Production Engineering module focuses on the optimization and management of production processes in the oil and gas industry. It covers various techniques and strategies to maximize the efficiency and profitability of producing hydrocarbons from reservoirs. Students gain knowledge and skills in designing, operating, and troubleshooting production systems. The Production Engineering module equips students with the necessary skills to optimize production operations, troubleshoot production challenges, and make informed decisions to maximize hydrocarbon recovery from oil and gas reservoirs.			

Module 4

Code	Course/Module Title	ECTS	Semester
PENG 323	Geophysics	4	6th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	63	37
Description			
Geophysics is a module within the petroleum engineering department that focuses on the application of physics principles and techniques to study the Earth's subsurface. It plays a crucial role in the exploration and production of oil and gas resources. The Geophysics module provides students with the necessary knowledge and skills to interpret geophysical data, identify potential hydrocarbon reservoirs, and contribute to the overall understanding of subsurface structures. It plays a crucial role in the exploration and development of oil and gas resources, helping petroleum engineers make informed decisions regarding drilling locations, reservoir management, and production optimization.			

Module 5

Code	Course/Module Title	ECTS	Semester
PENG 322	Engineering Economics	3	6th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	63	12
Description			
Petroleum Engineering Economics is a module within the petroleum engineering department that focuses on the economic analysis and decision-making processes involved in the oil and gas industry. This module combines principles of economics with the technical aspects of petroleum engineering to evaluate the financial viability of exploration, production, and development projects. Petroleum Engineering Economics equips students with the necessary skills to analyze the financial aspects of petroleum projects, evaluate investment opportunities, and make informed decisions in the oil and gas industry. It provides a valuable foundation for professionals involved in project management, investment analysis, and economic planning within the petroleum engineering field.			

Module 6

Code	Course/Module Title	ECTS	Semester
CENG 321	Engineering Analysis II and PDE	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
The module of Engineering Analysis and PDE focuses on providing petroleum engineering students with a strong foundation in mathematical concepts and techniques that are essential for solving engineering problems in the oil and gas industry. It aims to develop their mathematical skills and their ability to apply mathematical principles to real-world engineering scenarios. The Engineering Analysis and PDE module equips petroleum engineering students with the mathematical tools necessary to analyze and solve engineering problems encountered in the field. It provides a solid mathematical foundation that is essential for advanced courses within the petroleum engineering curriculum and for future research or industry work.			

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