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
PENG216	Structural geology	7	3rd
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	3	94	81
Description			
Structural Geology: Structural geology is a module within the petroleum engineering department that focuses on the study of geological structures and their significance in the exploration and production of hydrocarbons. It explores the deformation and tectonic processes that have shaped the Earth's crust and their implications for the distribution and behavior of subsurface reservoirs. The Structural Geology module provides petroleum engineering students with a fundamental understanding of geological structures and their importance in hydrocarbon exploration and production. It enables them to analyze and interpret subsurface data, assess reservoir potential, and make informed decisions regarding well placement, drilling operations, and reservoir management.			

Module 2

Code	Course/Module Title	ECTS	Semester
PENG 215	Fundamentals of Petroleum Engineering	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	63	62
Description			
The module "Fundamentals of Petroleum Engineering " serves as an introductory course in petroleum engineering, providing students with a foundational understanding of key concepts and principles in the field. "Fundamentals of Petroleum Engineering 1" provides students with a solid foundation in the fundamental principles and concepts of petroleum engineering. It lays the groundwork for more advanced modules in the discipline and equips students with the necessary knowledge to analyze reservoirs, evaluate production potential, and make informed engineering decisions.			

Module 3

Code	Course/Module Title	ECTS	Semester
PENG 214	Fluid Mechanics	4	3rd
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	37
Description			
Fluid Mechanics is a fundamental module in petroleum engineering that focuses on the behavior and properties of fluids, particularly liquids and gases, within the context of oil and gas operations. This module covers the principles and laws governing fluid flow, providing students with a solid foundation for understanding various fluid-related processes encountered in the petroleum industry. Understanding Fluid Mechanics is crucial for petroleum engineers as it is relevant to numerous processes in the industry, such as well drilling, fluid transport through pipelines, oil and gas production, and reservoir engineering. It provides the necessary knowledge to analyze and solve fluid-related problems encountered in various petroleum engineering disciplines.			

Module 4

Code	Course/Module Title	ECTS	Semester
CENG 213	Mathematics III	6	3rd
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Math III is a foundational module in the petroleum engineering curriculum that focuses on mathematical principles and techniques applicable to various engineering problems encountered in the oil and gas industry. This module aims to equip students with the mathematical skills necessary for analyzing and solving engineering problems in their future career. Throughout the module, students are encouraged to apply the mathematical concepts and techniques learned to solve practical problems encountered in petroleum engineering, such as well performance analysis, fluid flow in porous media, and reservoir characterization. By completing the Math III module, students gain a solid mathematical foundation that enables them to tackle more advanced engineering courses and apply mathematical principles to solve complex problems in the petroleum industry.			

Module 5

Code	Course/Module Title	ECTS	Semester
GE 212	Computer Science II	4	3rd
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
The Computer Science module is designed to equip petroleum engineering students with the essential programming skills and knowledge required to leverage computational tools and software for various tasks in the industry. It enables them to develop software solutions, analyze large datasets, and automate repetitive tasks, enhancing their efficiency and productivity in their future careers. Additionally, programming skills are becoming increasingly valuable in the petroleum industry as technology and digitalization play a more significant role in optimizing operations and decision-making processes.			

Module 6

Code	Course/Module Title	ECTS	Semester
GE 211	English Language II	4	3rd
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4		63	37
Description			
English language II: The English Language II module is designed to improve students' communication skills in the specific context of petroleum engineering. This module focuses on developing language proficiency in reading, writing, speaking, and listening, with a particular emphasis on technical vocabulary, terminology, and concepts related to the oil and gas industry. The overall goal of the Technical English module is to equip petroleum engineering students with the necessary language skills and confidence to effectively communicate within their field. By improving their technical English proficiency, students can enhance their professional prospects, collaborate with colleagues from different backgrounds, and stay updated with the latest advancements in the petroleum industry.			

Second Semester
Module 1

Code	Course/Module Title	ECTS	Semester
PENG 226	Petroleum Geology	7	4th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	3	94	81
Description			
Petroleum Geology: The module on Petroleum Geology focuses on the study of subsurface geological formations to identify and evaluate potential oil and gas reservoirs. It combines principles of geology, sedimentology, stratigraphy, and structural geology to understand the origin, distribution, and characteristics of hydrocarbon deposits. The Petroleum Geology module provides students with the necessary knowledge and skills to understand the geological aspects of hydrocarbon exploration and production. By studying the subsurface geology, students can contribute to the identification and development of viable oil and gas reserves, supporting the overall field development and production operations in the petroleum industry.			

Module 2

Code	Course/Module Title	ECTS	Semester
PENG 225	Petroleum Properties	5	4th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The Petroleum Properties module focuses on the study of the physical and chemical properties of petroleum fluids. It is essential for petroleum engineers to understand these properties as they directly influence the behavior of hydrocarbon reservoirs and the design of production and refining processes. By studying Petroleum Properties, students gain a comprehensive understanding of the behavior and characteristics of petroleum fluids. This knowledge is crucial for making informed decisions in reservoir management, production optimization, and field development planning.			

Module 3

Code	Course/Module Title	ECTS	Semester
CENG224	Mathematics IV	6	4th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	87
Description			
Mathematics IV is a module within the petroleum engineering department that focuses on the application of mathematical concepts and techniques to solve engineering problems specifically related to the oil and gas industry. It builds upon the foundational knowledge acquired in Applied Math 1 and provides further mathematical tools and methods that are relevant to petroleum engineering. Mathematics IV module equips petroleum engineering students with the necessary mathematical tools and techniques to analyze, model, and solve complex engineering problems encountered in the oil and gas industry. It enables students to apply mathematical concepts effectively in their future work, research, and decision-making processes.			

Module 4

Code	Course/Module Title	ECTS	Semester
CENG 223	Geostatistics	6	4th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	63	87
Description			
Geostatistics is a module within the petroleum engineering department that focuses on building a brief review of basic statistics to cover traditional and modern data analysis techniques, with a focus on robust estimates of statistics with uncertainties. Also, provides students with fundamental knowledge in statistics and computational techniques to study problems with random factors in geology. The main focus of the module will be detailed introduction of geostatistical methodology with emphasis on applications in Petroleum engineering, spatial variability and its characterization; mapping reservoir variables via geostatistical tools; and accounting for spatial variability in analysis of designed experiments.			

Module 5

Code	Course/Module Title	ECTS	Semester
CENG 222	Electrical Technology	4	4th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
The Electrical Technology module in Petroleum Engineering focuses on the application of electrical principles and technologies in the oil and gas industry. It equips students with the knowledge and skills necessary to design, maintain, and troubleshoot electrical systems and equipment used in various petroleum operations. The Electrical Engineering module in Petroleum Engineering prepares students to work on various electrical aspects of the oil and gas industry, including drilling operations, production facilities, refineries, and distribution systems. It provides them with a strong foundation in electrical engineering principles and their specific applications in the petroleum sector.			

Module 6

Code	Course/Module Title	ECTS	Semester
GE 221	Arabic Language	2	4th
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		33	17
Description			

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