

University of Mosul جامعة الموصل



Bachelor's degree (B.Sc.) – petroleum Reservoir Engineering
بكالوريوس – علوم هندسة المكامن النفطية



جدول المحتويات | Table of Contents

1. Mission & Vision Statement	بيان المهمة والرؤية
2. Program Specification	مواصفات البرنامج
3. Program (Objectives) Goals	أهداف البرنامج
4. Program Student learning outcomes	مخرجات تعلم الطالب
5. Academic Staff	الهيئة التدريسية
6. Credits, Grading and GPA	الاعتمادات والدرجات والمعدل التراكمي
7. Modules	المواد الدراسية
8. Contact	اتصال

1. **Mission & Vision Statement**

Vision Statement

The department aspires to graduate qualified petroleum reservoir engineers who will be contribute to the achievement of various engineering projects in Iraq.

Mission Statement

For many years Nineveh govern ate has been among the top three governorate in the production of crude oil. Thus, it has been important that Mosul University , maintain a strong nationally recognized department of petroleum reservoir engineering designed to provide undergraduate education of high quality to meet the current and future needs for engineers, managers and researchers associated with the petroleum producing industry; to serve as a regional center for graduate education, research, and technology transfer concerning the safe and efficient utilization of subsurface natural resources by processes involving well systems; and to provide continuing education programs designed to meet the training needs of professional engineers currently associated with the petroleum producing industry.

2. Program Specification

Programme code:	BSc-PET	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

Petroleum reservoir engineers design and develop methods for extracting oil and gas from deposits below the Earth's surface. Petroleum engineers generally work in offices or at drilling and well sites. Travel is frequently required to visit these sites or to meet with other engineers, oilfield workers, and customers.

Level 1,2 : Students in these two levels study the basic requirements of engineering science which will be useful in petroleum reservoir program. All program content are non-elective, at the end of these two levels, the student is qualified to study oil reservoir engineering program.

At 3,4 level the students will be professionals to understand and effectively utilize the workflow concepts now prevailing in the oil industry, and prepares them fully for work in multidisciplinary teams. The program provide a 1,2,3 and 4 levels conversion from other engineering and science-based foundations into the specialties of petroleum engineering, and is designed for both those with industrial experience and recent graduates

3. Program Objectives

The Program Educational Objectives have been formulated taking into account constituency needs and expectations, in order to provide students with an outstanding engineering education that allows them to achieve a fruitful and rewarding professional practice in a highly demanding workplace. Taking into account the needs and expectations of constituencies and considering the accomplishments that petroleum engineers are expected to attain a few years after graduation, the Program Educational Objectives have been defined so that the graduates of Petroleum Engineering:

1. Technical Competence

Demonstrate a solid technical competence for the planning, exploration and drilling of oil and gas wells, as well as their production, transport and storage.

2. Adaptability and Achievement

Work and interact at the different levels of an engineering project, attaining proposed goals, and advancing in their field of professional development.

3. Leadership

Lead and proactively participate in multidisciplinary teams with an attitude toward the effective achievement of objectives.

4. Professionalism

Conduct themselves correctly respecting the standards and ethical principles of the profession, and projecting themselves as responsible citizens and professionals.

5. Continuing Education

Develop a continuous learning and training, assimilating the changes and advances in the profession, and completing specialization.

4. **Student Learning Outcomes**

The petroleum reservoir engineering program's student outcomes are shown below:

Outcome 1

Be practical, employable and qualified petroleum engineers, who effectively solve problems and design new processes and workflows in the oil and gas production and services industries or other similar pursuits. Many will have started to move into leadership roles within their workplace.

Outcome 2

Keep their education up to date through self-instruction and other training.

Outcome3

Serve society by encouraging the ideals of ethical behavior, professionalism, and environmentally responsible use of natural resources.

Outcome 4

an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

Outcome 5

an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

Outcome 6

an ability to communicate effectively with a range of audiences

Outcome 7

an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

Outcome8

an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

Outcome 9

an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Outcome 10

an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

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Credits, Grading and GPA .6

Credits

(Name) University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME				
مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:

$$\text{CGPA} = [(1^{\text{st}} \text{ module score} \times \text{ECTS}) + (2^{\text{nd}} \text{ module score} \times \text{ECTS}) + \dots] / 240$$

Curriculum/Modules .7

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PRE 111	Geology for engineers I	93	82	7.00	S	
PRE 112	Engineering mechanics I	63	87	6.00	B	
PRE 113	Mathematics I	78	72	6.00	B	
PRE 114	English I (Reading & Writing)	33	17	2.00	B	
PRE 115	Engineering Drawing	93	82	7.00	B	
PRE 116	Human Rights & Democracy	31	19	2.00	B	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PRE 117	Geology for engineers II	93	82	7.00	S	PRE 111
PRE 118	Engineering mechanics II	63	62	5.00	B	PRE 112
PRE 119	Mathematics II	78	72	6.00	B	PRE 113
PRE 120	English.II(Listening& Speaking)	33	17	2.00	B	PRE 114
PRE 121	Engineering drawing using AUTOCAD	93	32	5.00	B	PRE 115
PRE 122	Principals of Petroleum Engineering	48	77	5.00	C	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PRE 211	Chemistry of Oil & Gas	78	47	5.00	B	
PRE212	Petroleum Geology	78	72	6.00	S	PRE 117
PRE213	Fundamentals of Petroleum Reservoir. Eng. I	63	87	6.00	C	PRE 122
PRE 214	Numerical & Engineering Analysis	63	62	5.00	B	
PRE 215	Thermodynamic	63	37	4.00	B	
PRE 216	Computer Applications in Engineering (MATLAB)	78	22	4.00	B	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PRE 217	Fundamentals of Petroleum Reservoir. Eng. II	63	87	6.00	C	PRE213
PRE218	Fluid mechanics	63	62	5.00	B	
PRE219	Gravity&magnetic Prospecting	78	72	6.00	C	
PRE 220	Strength of Materials	63	37	4.00	B	
PRE 221	Engineering Statics	63	37	4.00	B	
PRE 222	Serving Engineering	78	47	5.00	B	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PRE311	Seismic Exploration	78	47	5.00	C	
PRE312	Well logging	78	72	6.00	C	
PRE313	Drilling Engineering I	48	77	5.00	C	
PRE314	Rock Mechanics	78	22	4.00	C	
PRE315	Production Engineering I	48	52	4.00	C	
PRE316	Applied petroleum reservoir engineering I	97	53	6.00	C	PRE 217

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PRE317	Seismic interpretation	78	72	6.00	C	
PRE318	Formation evaluation	78	47	5.00	C	PRE312
PRE319	Drilling Engineering II	48	52	4.00	C	PRE313
PRE320	Natural gas technology	48	52	4.00	C	
PRE321	Production Engineering II	48	77	5.00	C	PRE315
PRE322	Applied petroleum reservoir engineering II	78	72	6.00	C	PRE316

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PRE411	Enhanced oil recovery I	63	87	6.00	C	
PRE412	reservoir characterization	78	72	6.00	C	
PRE413	petroleum system modeling	78	72	6.00	C	
PRE414	Core Analysis	78	72	6.00	C	
PRE415	Petroleum Economic	63	37	4.00	C	
PRE416	Graduate Project 1	33	17	2.00	C	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PRE417	Enhanced oil recovery II	63	87	6.00	C	PRE411
PRE418	Reservoir Simulation	78	72	6.00	C	
PRE419	Advanced petroleum reservoir engineering	78	72	6.00	C	PRE322
PRE420	Well testing	78	72	6.00	C	
PRE421	Petroleum reservoir management	63	37	4.00	C	
PRE422	Graduate Project 2	33	17	2.00	C	PRE322

Contact .8

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