



العلمي والبحث العالي التعليم وزارة
العلمي والتقويم الإشراف جهاز
الأكاديمي والاعتماد الجودة ضمان دائرة
الاعتماد قسم

دليل وصف البرنامج الأكاديمي والمقرر الدراسي



نموذج وصف البرنامج الأكاديمي

اسم الجامعة: كلية الوركاء الجامعة

الكلية/ المعهد: كلية الوركاء الجامعة

القسم العلمي: قسم هندسة النفط

اسم البرنامج الأكاديمي او المهني: بكالوريوس هندسة نفط

اسم الشهادة النهائية: بكالوريوس في هندسة النفط

النظام الدراسي: بولونيا

تاريخ اعداد الوصف: 1/3/ 2025

تاريخ ملء الملف: 7/5/2025

التوقيع

اسم المعاون العلمي أ.د. عادل بقمق الخنضل

التاريخ 11/4/2025

التوقيع

اسم رئيس القسم أ.د. أمينة محمد هادي

التاريخ 11/4/2025



دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي

التاريخ 11/4/2025

التوقيع

مصادقة السيد

العميد

أ.د. نادر عبد الحكيم



Introduction:

The academic program is a structured and organized package of courses that includes procedures and experiences organized into course content. Its primary purpose is to build and refine graduates' skills, making them qualified to meet the demands of the labor market. It is reviewed and evaluated annually through internal and external audit procedures and programs, such as the external examiner program.

The academic program description provides a concise summary of the program's main features and courses, outlining the skills students are designed to acquire, based on the program's objectives. The importance of this description lies in its role as the cornerstone for obtaining program accreditation. It is written collaboratively by faculty members under the supervision of the academic committees in the departments.

This second edition of the guide includes an updated academic program description, reflecting the changes and developments in the Iraqi education system. It includes the traditional academic program description (annual, semester-based), as well as the standardized academic program description issued by the Department of Studies, T M3/2906, dated May 3, 2023, for programs that follow the Bologna Process. In this context, we must emphasize the importance of writing descriptions of academic programs and courses to ensure the smooth operation of the educational process.

Concept and Terminology:

Academic Program Description: The academic program description provides a concise overview of its vision, mission, and objectives, including a precise description of the intended learning outcomes according to specific teaching strategies.

Course Description: This provides a concise summary of the most important characteristics of the course and the learning outcomes expected of the student, demonstrating whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Mission:

The Department of Petroleum Engineering was established at Warka University College in the 2025-2026 academic year. The department aims to provide students with comprehensive knowledge and practical skills in the field of petroleum and gas engineering, specifically designed to meet the requirements and challenges of the energy sector in Iraq. Over four years of study, students are prepared according to the Bologna Process to contribute effectively to the development and growth of Iraq's energy sector. This is achieved through a comprehensive curriculum that includes rigorous lectures, practical laboratory experiences, graduation research projects designed to reach the level of publishable and applicable research papers, and fieldwork within a periodic training program. This program equips graduates to work efficiently in public and private sector oil and industrial institutions and oil companies.

Program Objectives: The mission of the Petroleum Engineering Department at Warka University College is to provide exceptional university education and training in petroleum and gas engineering. This includes theoretical instruction using modern teaching methods and outstanding practical training using diverse and advanced laboratory equipment in the department's various laboratories, all under the supervision of a specialized academic staff holding advanced degrees. The department is committed to nurturing a generation of highly skilled and competent young engineers who possess a deep understanding of scientific principles, advanced technologies, and best industry practices relevant to the Iraqi energy landscape. The department awards graduates a Bachelor of Science degree in Petroleum Engineering.



Curriculum Structure:

All courses/subjects included in the academic program, according to the approved learning system (Bologna Process), whether required by the Ministry, University, College, or Department, along with the number of credit hours.

Learning Outcomes:

A coherent set of knowledge, skills, and values acquired by the student upon successful completion of the academic program. The learning outcomes for each course must be defined in a way that achieves the program objectives.

Teaching and Learning Strategies: These are the strategies used by faculty members to enhance student teaching and learning. They are plans implemented to achieve learning objectives. They describe all classroom and extracurricular activities designed to achieve the program's learning outcomes.



Warka University College

كلية الوركاء الجامعة
قسم هندسة النفط



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

بكالوريوس – علوم هندسة النفط

Table of Contents | جدول المحتويات

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



Mission & Vision Statement

Vision Statement

The Petroleum Engineering Department Division at Warka University College believes that students gain comprehensive knowledge and practical skills in the field of oil and gas engineering, specifically tailored to meet the demands and challenges of the energy sector in Iraq. Through a holistic approach encompassing rigorous coursework, hands-on laboratory experiences, cutting-edge research, and immersive fieldwork, our students are prepared to contribute effectively to the development and growth of the Iraq energy sector.

Our instructional methods are designed to provide students with a deep understanding of the scientific principles and advanced technologies relevant to the Iraqi energy industry. We emphasize the integration of theoretical knowledge with practical training, ensuring that our graduates are equipped with the necessary skills to address the unique challenges and opportunities faced by the sector.

In recognition of the importance of Iraq's energy sector, our department maintains strong collaborations with industry partners and stakeholders. This allows us to align our curriculum and research activities with the current and future needs of the sector, ensuring that our graduates possess the relevant expertise and knowledge sought after by employers in Iraq's energy industry.

With a focus on fostering strong connections between faculty and students, our department maintains small class sizes within the oil and gas engineering program. This creates an environment of close collaboration, where academic staff can provide individualized guidance and mentorship to students, allowing them to develop both professionally and personally.

Our vision is to produce highly skilled and competent oil and gas engineers who are capable of driving the sustainable growth and development of the Iraq energy sector. We aim to empower our students to tackle the unique challenges faced by the industry, such as maximizing production efficiency, optimizing resource utilization, and integrating renewable energy solutions. Through innovation, research, and ethical practices, we strive to prepare our graduates to become leaders in the Iraqi energy sector, contributing to the country's energy independence, economic prosperity, and environmental sustainability.



Mission Statement

The mission of the Petroleum Engineering Department Division at Warka University College is to provide exceptional education and training in oil and gas engineering, specifically tailored to the needs of the Iraq energy sector. We are committed to nurturing a generation of highly skilled and competent engineers who possess a deep understanding of the scientific principles, advanced technologies, and industry best practices relevant to the Iraqi energy landscape.

Our mission is achieved through:

1. **Comprehensive Education:** We deliver a rigorous and comprehensive curriculum that combines theoretical knowledge, practical skills, and real-world applications. Our faculty members are dedicated to fostering a dynamic learning environment that encourages critical thinking, problem-solving, and innovation.
2. **Practical Training:** We provide hands-on laboratory experiences, research opportunities, and fieldwork to ensure that our students develop the necessary technical skills and practical competencies required by the Iraq energy sector. By engaging in real-world projects, our students gain the confidence and proficiency needed to address industry challenges.
3. **Collaboration with Industry:** We actively collaborate with industry partners, energy companies, and government entities to align our educational programs with the needs and priorities of the Iraq energy sector. Through these partnerships, we facilitate knowledge exchange, internships, and industry-driven research, ensuring our graduates are equipped with the latest industry insights and skills.
4. **Student-Focused Approach:** We maintain small class sizes and a supportive learning environment to foster strong faculty-student relationships. Our dedicated faculty members provide individualized guidance, mentorship, and professional development opportunities, empowering our students to achieve their full potential.
5. **Research and Innovation:** We promote a culture of research and innovation, encouraging faculty and students to undertake cutting-edge research projects that address the specific challenges and opportunities of the Iraq energy sector. By advancing knowledge and developing innovative solutions, we contribute to the sustainable development of the energy industry.
6. **Ethical Practices:** We instill in our students a strong sense of ethical responsibility, emphasizing the importance of integrity, environmental stewardship, and social impact. Our graduates are equipped with the necessary ethical framework to make informed decisions and contribute positively to the sustainable growth of the Iraq energy sector.

Through our mission, we are dedicated to preparing our graduates to become leaders, innovators, and contributors to the Iraq energy sector. We aim to shape the future of the industry by producing skilled professionals who can drive sustainable development, address energy challenges, and advance the well-being of society at large.

كلية الوركاء الجامعة
قسم هندسة النفط





1. Program Specification

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

Petroleum Engineering is a dynamic and multidisciplinary field that encompasses various aspects of the energy sector. Our program is designed to provide students with a comprehensive understanding of the entire energy system, from the exploration and extraction of hydrocarbons to the utilization of renewable energy sources.

The curriculum emphasizes a holistic approach, where students explore the intricate relationships between different components of the energy sector. From the molecular level, where the properties of hydrocarbons are studied, to the macroscopic level, where the impacts of energy production and consumption on ecosystems and populations are examined, our students gain a broad perspective of the field.

During their first year, students are exposed to the fundamental principles and concepts of Oil and Gas Engineering, which serve as a strong foundation for specialization in later years. At the end of the first year, students have the opportunity to transfer to specialized programs within the field, such as Reservoir Engineering, Petroleum Geology, or Renewable Energy Systems.

As students progress through the program, they have the freedom to choose a significant portion of their modules, allowing them to tailor their studies to their specific interests within the energy sector. This flexibility ensures that graduates possess a well-rounded knowledge base, encompassing various areas of specialization.

Our program promotes a research-driven approach to learning, with practical exercises and research seminars incorporated throughout the curriculum. Field courses provide students with hands-on experiences in real-world energy environments, further enhancing their understanding of the complexities involved in the industry. In their final year, students undertake an independent research project, enabling them to apply their knowledge and skills to a specific area of interest.

Academic tutorials and personal tutoring are integral parts of our program, providing students with guidance, support, and opportunities to develop key skills required in the field. Workshops and assessed exercises are conducted to enhance skills such as research, critical thinking, communication, and presentation, ensuring that our graduates are well-prepared for professional success.

We recognize the importance of international exposure and industrial experience in shaping well-rounded professionals. Therefore, we offer opportunities for international study years and industrial placements, allowing students to gain global perspectives and practical industry experience. Individual needs and aspirations are accommodated to the best of our abilities to provide a comprehensive and enriching educational experience.



Through our interdisciplinary and research-focused approach, we aim to produce highly skilled and adaptable graduates who are capable of contributing to the growth, sustainability, and technological advancements of the Iraq energy sector. We strive to develop future leaders who will drive innovation, address challenges, and shape the future of the energy industry in Iraq and beyond.



2. Program Objectives

The objective of the Petroleum Engineering program at Warka University College is to provide students with a comprehensive education that prepares them to excel in the Iraq energy sector. The program aims to:

1. **Foster a Deep Understanding:** Develop students' knowledge and understanding of the fundamental principles, scientific concepts, and advanced technologies relevant to the oil and gas industry, with a focus on the unique challenges and opportunities within the Iraq energy sector.
2. **Cultivate Practical Skills:** Equip students with the necessary practical skills, including data analysis, problem-solving, and technical proficiency, to address real-world challenges in the oil and gas engineering field. Provide hands-on laboratory experiences, research opportunities, and fieldwork to enhance their practical competencies.
3. **Promote Interdisciplinary Learning:** Encourage interdisciplinary learning by integrating knowledge from various fields, such as geology, reservoir engineering, renewable energy systems, and environmental sustainability. Enable students to understand the interconnectedness of different components within the energy sector.
4. **Nurture Research and Innovation:** Instill a research-oriented mindset among students and promote a culture of innovation. Engage students in research projects, seminars, and practical exercises that foster critical thinking, analytical skills, and the ability to develop innovative solutions to complex energy challenges.
5. **Foster Industry Collaboration:** Facilitate collaboration and partnerships with industry stakeholders, energy companies, and governmental organizations to align the curriculum with the current and future needs of the Iraq energy sector. Provide opportunities for internships, industrial placements, and guest lectures to enhance students' industry exposure and employability.
6. **Develop Professional Skills:** Enhance students' professional skills, including communication, teamwork, leadership, and ethical decision-making, to prepare them for successful careers in the oil and gas industry. Offer workshops, tutorials, and assessed exercises to develop these skills within a subject-specific context.
7. **Support Personal and Career Development:** Provide personalized academic and career guidance to students, fostering their personal and professional growth. Offer opportunities for international study years, exchange programs, and exposure to diverse energy contexts to broaden their perspectives and enhance their global competency.
8. **Foster Sustainability and Ethical Practices:** Emphasize the importance of sustainable development, environmental stewardship, and ethical practices within the energy sector. Encourage students to consider



the social, economic, and environmental impacts of oil and gas engineering activities, and develop solutions that contribute to a more sustainable energy future.

Through these program objectives, we aim to produce graduates who are well-equipped with the knowledge, skills, and ethical mindset to contribute to the advancement, sustainability, and prosperity of the Iraq energy sector.



3. Student Learning Outcomes

Upon completion of the Petroleum Engineering program at Warka University College, students will:

1. Demonstrate a comprehensive understanding of the fundamental principles, scientific concepts, and advanced technologies relevant to the oil and gas industry, specifically tailored to the Iraq energy sector.
2. Apply critical thinking, problem-solving, and data analysis skills to address complex challenges and make informed decisions in the field of oil and gas engineering.
3. Conduct independent research, design experiments, and analyze data to develop innovative solutions and contribute to the advancement of the energy sector, considering the unique characteristics and requirements of the Iraq energy landscape.
4. Effectively communicate scientific concepts and technical information through oral presentations, written reports, and visual representations, demonstrating proficiency in scientific communication within the context of oil and gas engineering.
5. Collaborate effectively in multidisciplinary teams, demonstrating strong teamwork, leadership, and interpersonal skills, while respecting diverse perspectives and contributing to the achievement of common goals within the energy sector.
6. Apply ethical principles and consider the social, economic, and environmental impacts of oil and gas engineering activities, integrating sustainable practices and environmental stewardship in their decision-making processes.
7. Adapt to technological advancements, industry trends, and evolving practices within the oil and gas sector, demonstrating a commitment to lifelong learning and professional development in order to stay current and contribute to the industry's growth and innovation.
8. Evaluate the risks and challenges associated with oil and gas operations, applying safety protocols, risk assessment methodologies, and regulatory compliance to ensure the protection of human life, property, and the environment.
9. Demonstrate a global perspective and an understanding of the international energy landscape, including knowledge of energy policies, regulations, and practices, and the ability to contribute effectively to the Iraq energy sector within the broader global context.
10. Demonstrate professionalism, integrity, and ethical behavior in their interactions with colleagues, clients, and the wider community, upholding the highest standards of professional ethics and social responsibility within the oil and gas engineering field.



These student learning outcomes reflect the alignment with the program's vision, mission, and objectives, and they ensure that graduates of the Oil and Gas Engineering program at Basrah University are well-prepared to excel in their careers and make significant contributions to the Iraq energy sector.



4. Credits, Grading and GPA

Credits

Warka University College 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:

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



5. Curriculum/Modules

Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
WUC1111	Calculus I	58	92	5.00	B	
WUC1112	General Geology I	58	92	5.00	S	
WUC1113	Physics	72	53	5.00	B	
WUC1114	Computer Programming	72	53	5.00	B	
WUC1115	English I	44	31	3.00	B	
WCE1116	Chemistry	58	67	5.00	B	
WUC1117	Democracy and Human rights	44	31	2.00	B	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
WUC1121	Calculus II	58	92	6.00	S	
WUC1122	General Geology II	58	92	6.00	S	
WUC1123	Introduction to Petroleum Engineering	58	92	6.00	C	
WUC1124	Petroleum Chemistry and Properties	30	70	4.00	S	
WUC1125	Engineering Drawing	72	78	6.00	B	
WUC1126	Arabic Language	30	20	2.00	B	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs



Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
WUC1131	Calculus III	58	92	6.00	B	
WUC1132	Statics and Dynamics	58	67	5.00	B	
WUC1133	Thermodynamics	58	67	5.00	B	
WUC1134	Reservoir Rock Properties	58	92	6.00	C	
WUC1135	Petroleum Geology	58	92	6.00	C	
WUC1136	Human Rights and Democracy	30	20	2.00	B	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
WUC1141	Differential Equations	58	92	6.00	S	
WUC1142	Strength of Materials	30	45	3.00	S	
WUC1143	Transport Phenomena	58	92	6.00	S	
WUC1144	Reservoir Fluid Properties	58	92	6.00	C	
WUC1145	Drilling Fluids	58	92	6.00	C	
WUC1146	Technical Writing and communication skills	30	45	3.00	S	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
WUC1151	Drilling Engineering I	86	64	6.00	C	



WUC1152	Reservoir Engineering I	58	92	6.00	C	
WUC1153	Well Logging	58	92	6.00	C	
WUC1154	Numerical Methods	58	67	5.00	C	
WUC1155	Petroleum Data Analytics	58	42	4.00	S	
WUC1156	Oil and gas engineering electives	44	31	3.00	E	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
WUC1161	Drilling Engineering II	86	64	6.00	C	
WUC1162	Reservoir Engineering II	58	92	6.00	C	
WUC1163	Production Engineering	58	92	6.00	C	
WUC1164	Reservoir Characterization	58	67	5.00	C	
WUC1165	Oil and gas engineering electives	58	67	5.00	E	
WUC1166	Oil and gas engineering electives	30	20	2.00	E	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
WUC1171	Engineering Project I	30	45	3.00	C	
WUC1172	Geostatistical Modelling	72	78	6.00	E	



WUCG1173	Reservoir Simulation	72	78	6.00	C	
WUC1174	Well Testing	58	92	6.00	C	
WUC1175	Oil and gas engineering electives	44	81	5.00	E	
WUC1176	Oil and gas engineering electives	44	56	4.00	E	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
WUC1181	Engineering Project II	30	45	3.00	C	
WUC1182	Reservoir Management	72	78	6.00	C	
WUC1183	Well Control	58	92	6.00	C	
WUC1184	Enhanced Oil Recovery	58	92	6.00	C	
WUC1185	Oil and gas engineering electives	44	81	5.00	E	
WUC1186	Oil and gas engineering electives	30	70	4.00	E	

ECTS/Semester =30

Total ECTS (ECTS/ 8 Semesters) =240



Warka University College		كلية الوركاء الجامعة - قسم هندسة النفط																		
Bachelor's level (First cycle) - Honors Bachelor degree in Petroleum Engineering		مستوى البكالوريوس (الدورة الأولى) - بكالوريوس مع مرتبة الشرف في هندسة النفط																		
Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25hr		أربع سنوات (ثمانية فصول دراسية) - 240 وحدة ائتمانية = 25 ساعة																		
Program Curriculum (2025- 2026)		المناهج الدراسية للعام 2025-2026																		
Level	Semester	No.	Module Code	Module Name In English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	\$SWL hr/sem	US SWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisites Module (s) Code	
UGI	One	1		Calculus I	التفاضل والتكامل I	English	4	-	-	-	-	-	2	58	92	150	5.00			
		2		General Geology I	جيولوجيا عامة I	English	2	-	2	-	-	-	-	2	58	92	150	5.00		
		3		Physics	فيزياء	English	3	-	2	-	-	-	-	2	72	53	125	5.00		
		4		Computer Programming	برمجة حاسبات	English	2	-	3	-	-	-	-	2	72	53	125	5.00		
		5		English	اللغة الانكليزية	English	1	2	-	-	-	-	-	2	44	31	75	3.00		
		6		Chemistry	الكيمياء	English	2	-	2	-	-	-	-	2	58	67	125	5.00		
				Democracy and human rights	الديمقراطية وحقوق الانسان	Arabic	2	-	-	-	-	-	2	44	31	75	2.00			
Total																				
UGI	Two	1		Calculus II	التفاضل والتكامل II	English	4	-	-	-	-	-	2	58	92	150	6.00			
		2		General Geology II	جيولوجيا عامة II	English	2	-	2	-	-	-	-	2	58	92	150	6.00		
		3		Introduction to Petroleum Engineering	مقدمة في هندسة النفط	English	2	2	-	-	-	-	-	2	58	92	150	6.00		
		4		Petroleum Chemistry and Properties	خواص كيمياء النفط	English	2	-	-	-	-	-	-	2	30	70	100	4.00		
		5		Engineering Drawing	الرسم الهندسي	English	-	2	3	-	-	-	-	2	72	78	150	6.00		
		6		Arabic Language	اللغة العربية	Arabic	2	-	-	-	-	-	-	2	30	20	50	2.00		
Total																				
UGI	Three	1		Calculus III	التفاضل والتكامل III	English	4	-	-	-	-	-	2	58	92	150	6.00			
		2		Statics and Dynamics	ميكانيك الحركة ولسكون	English	2	2	-	-	-	-	-	2	58	67	125	5.00		
		3		Thermodynamics	الديناميك الحراري	English	2	2	-	-	-	-	-	2	58	67	125	5.00		
		4		Reservoir Rock Properties	خواص الصخور لمكثنية	English	2	-	2	-	-	-	-	2	58	92	150	6.00		
		5		Petroleum Geology	جيولوجيا النفط	English	2	-	2	-	-	-	-	2	58	92	150	6.00		
		6		Human Rights and Democracy	حقوق الانسان والديموقراطية	Arabic	-	2	-	-	-	-	-	2	30	20	50	2.00		
Total																				
UGII	Four	1		Differential Equations	المعادلات التفاضلية	English	4	-	-	-	-	-	2	58	92	150	6.00			
		2		Strength of Materials	مقاومة المواد	English	2	30	45	75	3.00									
		3		Transport Phenomena	ظواهر الانتقال	English	2	-	2	-	-	-	-	2	58	92	150	6.00		
		4		Reservoir Fluid Properties	خواص الموائع المكثنية	English	2	-	2	-	-	-	-	2	58	92	150	6.00		
		5		Drilling Fluids	موائع الحفر	English	2	-	2	-	-	-	-	2	58	92	150	6.00		
		6		Technical Writing and communication skills	اعداد التقارير ومهارات التواصل	English	-	2	-	-	-	-	1	2	30	45	75	3.00		
Total																				
UGII	Five	1		Drilling Engineering I	هندسة الحفر I	English	3	-	3	-	-	-	2	86	64	150	6.00			
		2		Reservoir Engineering I	هندسة المكثن I	English	4	-	-	-	-	-	-	2	58	92	150	6.00		
		3		Well Logging	الامر المر	English	2	-	2	-	-	-	-	2	58	92	150	6.00		
		4		Numerical Methods	طرق المثلث العددي	English	2	-	2	-	-	-	-	2	58	67	125	5.00		
		5		Petroleum Data Analytics	تحليلات البيانات البترولية	English	2	-	2	-	-	-	-	2	58	42	100	4.00		
		6		Oil and gas engineering electives	ساعات صمنة الفيزياء النظرية	English	3	-	-	-	-	-	-	2	44	31	75	3.00		
Total																				
UGII	Six	1		Drilling Engineering II	هندسة الحفر II	English	3	-	3	-	-	-	2	86	64	150	6.00			
		2		Reservoir Engineering II	هندسة المكثن II	English	4	-	-	-	-	-	-	2	58	92	150	6.00		
		3		Production Engineering	هندسة الانتاج	English	4	-	-	-	-	-	-	2	58	92	150	6.00		
		4		Reservoir Characterization	توصيف المكثن	English	4	-	-	-	-	-	-	2	58	67	125	5.00		
		5		Oil and gas engineering electives	ساعات صمنة الفيزياء النظرية	English	4	-	-	-	-	-	-	2	58	67	125	5.00		
		6		Oil and gas engineering electives	ساعات صمنة الفيزياء النظرية	English	2	-	-	-	-	-	-	2	30	20	50	2.00		
Total																				
UGIII	Seven	1		Engineering Project I	مشروع هندسي I	English	2	1	-	-	1	-	2	30	45	75	3.00			
		2		Geostatistical Modelling	نمذجة غير احتمالية	English	2	-	3	-	-	-	-	2	72	78	150	6.00		
		3		Reservoir Simulation	محاكاة المكثن	English	2	-	3	-	-	-	-	2	72	78	150	6.00		
		4		Well Testing	امتحان البئر	English	2	-	-	-	2	-	-	2	58	92	150	6.00		
		5		Oil and gas engineering electives	ساعات صمنة الفيزياء النظرية	English	3	-	-	-	-	-	-	2	44	81	125	5.00		
		6		Oil and gas engineering electives	ساعات صمنة الفيزياء النظرية	English	3	-	-	-	-	-	-	2	44	56	100	4.00		
Total																				
UGIV	Eight	1		Engineering Project II	مشروع هندسي II	English	2	1	-	-	1	-	2	30	45	75	3.00			
		2		Reservoir Management	اخراج المكثن	English	2	-	3	-	-	-	-	2	72	78	150	6.00		
		3		Well Control	سيطرة البئر	English	2	-	-	-	2	-	-	2	58	92	150	6.00		
		4		Enhanced Oil Recovery	استخراج النفط المعزز	English	4	-	-	-	-	-	-	2	58	92	150	6.00		
		5		Oil and gas engineering electives	ساعات صمنة الفيزياء النظرية	English	3	-	-	-	-	-	-	2	44	81	125	5.00		
		6		Oil and gas engineering electives	ساعات صمنة الفيزياء النظرية	English	2	-	-	-	-	-	-	2	30	70	100	4.00		
Total																				
Total																				

Note: The student should complete 4 weeks of Summer Internships to fulfill the requirements of the Bachelor of Science degree

Structured SWL (hr/w) type	Module type	Module type		SWL Student Workload	\$ SWL Structured SWL	US SWL Unstructured SWL
		B Basic learning activities	C Core learning activity			
CL Class Lecture	B Basic learning activities					
Lab Laboratory	C Core learning activity					
Pr Practical Training	\$ Support or related learning activity					
Tut Tutorial	E Elective learning activity					
Lect Online lecture						
Semn Seminar						
	Oil and gas engineering electives					
	Globalization and Petroleum Politics					
	Health, Safety and Risk Management					
	Project Managements					
	Directional Drilling					
	Well Simulation					
	LPG Technology and Sector					
	Natural Gas Engineering					
	Fractured Reservoirs					
	Storage and Transportation of Oil and Gas					
	Advanced Well Test					
	Well Surveying and Anti-collision					
	Simulation operations and Artificial Lift					
	Explosion Geophysics					



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Calculus I		Module Delivery
Module Type	B		<input checked="" type="checkbox"/> Theory
Module Code	WUC1111		<input checked="" type="checkbox"/> Lecture
ECTS Credits	6		<input checked="" type="checkbox"/> Lab
SWL (hr/sem)	150		<input type="checkbox"/> Tutorial
			<input type="checkbox"/> Practical
			<input type="checkbox"/> Seminar
Module Level	UGI	Semester of Delivery	One
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	
Co-requisites module		Semester	



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives أهداف المادة الدراسية</p>	<p>To understand and apply the concepts and properties of various mathematical functions, including absolute-value, sign, and greatest integer functions, as well as trigonometric, inverse trigonometric, logarithmic, exponential, and hyperbolic functions. Additionally, to explore the graphs, domains, ranges, limits, derivatives, integrals, and inverse functions associated with these functions. Lastly, to learn and utilize L'Hopital's Rule for evaluating limits of indeterminate forms.</p>
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>Module Learning Outcomes:</p> <ol style="list-style-type: none"> 1. Understand and interpret the graphs of various functions, including absolute-value, sign, greatest integer, trigonometric, inverse trigonometric, logarithmic, exponential, and hyperbolic functions. 2. Determine the domain and range of different types of functions. 3. Apply the concepts of limits to evaluate basic limits, infinite limits, limits at infinity, and understand their significance in the context of functions. 4. Analyze the continuity of functions and establish the relationship between continuity and differentiation. 5. Differentiate functions using various techniques, such as the derivative from definition, laws of derivatives, implicit differentiation, chain rule, and apply Rolle's Theorem and the Mean-Value Theorem. 6. Perform indefinite and definite integrations of functions. 7. Explore the properties, derivatives, and integrals of trigonometric, inverse trigonometric, logarithmic, exponential, and hyperbolic functions. 8. Understand the graphs, domains, ranges, and identities involving inverse trigonometric functions. 9. Apply logarithmic functions and their derivatives and integrals, including natural logarithms. 10. Analyze exponential functions and their derivatives, integrals, graphs, and domains. 11. Explore the properties, derivatives, integrals, graphs, and domains of hyperbolic functions and their inverses. 12. Apply L'Hopital's Rule to evaluate limits of indeterminate forms.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative Contents for the Module:</p> <p>Introduction to Functions</p> <p>Definition of a function</p> <p>Graphs of functions</p> <p>Domain and range of functions</p> <p>Some important functions: Absolute-Value Function, Sign Function, Greatest Integer Function</p>



Limits

Basic limits

Infinite limits

Limits at infinity

Continuity of functions and its relation to limits

Differentiation

Derivative from definition

Laws of derivatives

First and Second Order Derivatives

Implicit Differentiation

Chain Rule

Rolle's Theorem

Mean-Value Theorem

Integrations

Indefinite Integration

Definite Integration

Trigonometric Functions

Graphs of trigonometric functions

Domain and range of trigonometric functions

Limits of trigonometric functions

Derivatives of trigonometric functions

Integrals involving trigonometric functions

Inverse Trigonometric Functions

Graphs of inverse trigonometric functions

Domain and range of inverse trigonometric functions

Identities involving inverse trigonometric functions

Derivatives of inverse trigonometric functions

Integrals leading to inverse trigonometric functions

Logarithm Functions

General and natural logarithm functions

Graphs of logarithm functions

Domain and range of logarithm functions

Derivatives of logarithm functions

Integrals leading to natural logarithms



	<p>Exponential Functions</p> <p>General and natural exponential functions Graphs of exponential functions Domain and range of exponential functions Derivatives of exponential functions Integrals involving exponential functions</p> <p>Hyperbolic Functions</p> <p>Graphs of hyperbolic functions Domain and range of hyperbolic functions Derivatives of hyperbolic functions Integrals involving hyperbolic functions</p> <p>Inverse of Hyperbolic Functions</p> <p>Graphs of inverse hyperbolic functions Domain and range of inverse hyperbolic functions Derivatives of inverse hyperbolic functions Integrals leading to inverse hyperbolic functions</p> <p>L'Hopital's Rule</p> <p>Limits of indeterminate forms Application of L'Hopital's Rule</p> <p>Please note that this is an indicative contents list and can be modified or expanded as per the specific requirements of the module.</p>
--	---

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>The learning and teaching strategies for this module involve a combination of lectures, problem-solving sessions, interactive discussions, practical applications, and the integration of technology. Through these strategies, students are exposed to the concepts, properties, and techniques associated with various mathematical functions. They engage in hands-on activities, analyze examples, and participate in discussions to deepen their understanding. Formative assessments, self-study opportunities, and revision sessions are incorporated to monitor progress, encourage independent learning, and reinforce knowledge. These strategies aim to create an inclusive and</p>
-------------------	---



	engaging learning environment that promotes active learning, critical thinking, and problem-solving skills
--	--

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)



المنهاج الاسبوعي النظري

Week	Material Covered
1	Functions: Graphs, Domain, and Range
2	Important Functions: Absolute Value, Sign, Greatest Integer
3	Limits: Basic Limits, Infinite Limits, Limits at Infinity, Continuity
4	Differentiation: Derivative from Definition, Laws of Derivatives, First and Second Order Derivatives, Implicit Differentiation, Chain Rule, Rolle's Theorem, Mean-Value Theorem
5	Integrations: Indefinite Integration, Definite Integration
6	Trigonometric Functions: Graphs, Domain, Range, Limits, Derivatives, Integrations
7	Inverse Trigonometric Functions: Graphs, Domain, Range, Identities, Derivatives, Integrals
8	Logarithm Functions: General and Natural Logarithm, Graphs, Domain, Range, Derivatives, Integrals
9	Exponential Functions: General and Natural Exponential, Graphs, Domain, Range, Derivatives, Integrals
10	Hyperbolic Functions: Graphs, Domain, Range, Derivatives, Integrals
11	Inverse of Hyperbolic Functions: Graphs, Domain, Range, Derivatives, Integrals
12	L'Hopital's Rule: Limits of Undetermined Forms
13	
14	
15	
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	General Geology I		Module Delivery
Module Type	S		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1112		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	One
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives</p> <p>أهداف المادة الدراسية</p>	<p>The module aims to provide an understanding of the Earth's geological time scale and the properties of minerals. It explores the Rock Cycle and covers the formation of igneous, sedimentary, and metamorphic rocks, including volcanic activity and weathering processes. Students will learn to identify and classify different rock types, analyze their interrelationships, and apply their knowledge through practical exercises and fieldwork. The module also aims to develop critical thinking skills and an appreciation for the role of geology in environmental science and resource exploration.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Module Learning Outcomes:</p> <p>By the end of this module, students should be able to:</p> <p>Demonstrate a comprehensive understanding of the Earth's geological time scale, including the ability to identify major divisions and significant geological events.</p> <p>Describe the crystal lattice structure, composition, and physical and chemical properties of minerals.</p> <p>Explain the processes involved in the Rock Cycle and its role in the formation of igneous, sedimentary, and metamorphic rocks.</p> <p>Identify and classify different rock types based on their characteristics and formation processes.</p> <p>Analyze volcanic activity and its impact on the formation of igneous rocks.</p> <p>Understand the processes of weathering, erosion, transportation, and deposition in the formation of sedimentary rocks.</p> <p>Explain the factors influencing the transformation of rocks into metamorphic rocks.</p> <p>Apply knowledge and skills to identify and interpret rocks and minerals through practical laboratory exercises and fieldwork.</p> <p>Evaluate the interrelationships between different rock types and their significance in</p>



	<p>understanding the Earth's geological history and processes.</p> <p>Develop critical thinking and analytical skills through the examination of case studies and geological phenomena related to rocks and minerals.</p> <p>Demonstrate an appreciation for the importance of geology in various fields, such as environmental science, resource exploration, and geotechnical engineering.</p>
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<p>Understanding of the earth including Geological Time Scale. Minerals, their crystal lattice,</p> <p>composition, physical and chemical properties. Rocks: Rock Cycle in nature. Igneous Rocks</p> <p>including Volcanoes, Sedimentary Rocks including weathering, Erosion, Transportation and</p> <p>Deposition. Metamorphic Rocks.</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<p>The main strategy for delivering this module is to foster active student participation through engaging exercises, while simultaneously cultivating their critical thinking abilities. This will be accomplished through interactive classes, tutorials, and practical experiments that involve hands-on activities and sampling, designed to captivate and intrigue the students.</p>
--------------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

<p>Structured SWL (h/sem)</p> <p>الحمل الدراسي المنتظم للطالب خلال الفصل</p>	<p>58</p>	<p>Structured SWL (h/w)</p> <p>الحمل الدراسي المنتظم للطالب أسبوعيا</p>	
<p>Unstructured SWL (h/sem)</p> <p>الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	<p>92</p>	<p>Unstructured SWL (h/w)</p> <p>الحمل الدراسي غير المنتظم للطالب أسبوعيا</p>	



Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150
---	------------

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1-3	Understanding the Earth and Geological Time Scale
Week 4-6	Minerals: Crystal Lattice, Composition, and Properties
Week 7-8	Rocks and the Rock Cycle
Week 9-11	Igneous Rocks and Volcanoes
Week 12-13	Sedimentary Rocks and Weathering Processes



Week 14	Erosion, Transportation, and Deposition
Week 15	Metamorphic Rocks
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Physics		Module Delivery
Module Type	B		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1113		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGI	Semester of Delivery	One
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To learn principles of physics and its application to engineering.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>After studying this course, the learners will be able to: -</p> <ol style="list-style-type: none"> 1. Possess sufficient knowledge of fundamental concepts in classical and modern Applied Physics. 2. Understand the laws and concepts of Applied Physics and to solve the problems and to interpret the results. 3. Develop and analyze the mathematical models of Applied Physics. 4. Conducting lab experiments and to use laboratory work bench equipment. 5. Understand interfacing Physics and Engineering to create better infrastructure for the society.
Indicative Contents المحتويات الإرشادية	This physics course covers fundamental topics in electricity, magnetism, electromagnetic induction, and interference/diffraction. Students will explore concepts such as electric fields, Gauss's Law, magnetic fields, Ampere's Law, electromagnetic waves, and the principles of interference and diffraction. By the end of the course, students will have a strong understanding of these key principles and their practical applications.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم



Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.
-------------------	--

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	72	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	53	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
	Midterm Exam	1hr	10% (10)	7	LO #1 - #7



Summative assessment	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
	Here's a suggested 15-week delivery plan for the physics course with the provided content:
Week 1	<p>Week 1:</p> <p>Introduction to Electricity</p> <p>Electric field and electrical forces</p> <p>Week 2:</p> <p>Electric field calculations</p> <p>Gauss's Law</p> <p>Week 3:</p> <p>Applications of Gauss's Law</p>



Charges on conductors

Week 4:

Electrical Potential

Energy and potential

Week 5:

Calculation of potentials

Potential gradient

Week 6:

Cathode-ray tube

Week 7:

Sources of Magnetic Field

Magnetic field of a moving charge

Week 8:



Magnetic field of a current element

Ampere's Law

Week 9:

Magnetic field of a long straight conductor

Force between parallel conductors

Week 10:

Magnetic field of circular loops and solenoids

Magnetism

Week 11:

Magnetic field and displacement current

Magnetic properties of materials

Week 12:

Electromagnetic Induction



Induction phenomena

Motional electromotive force

Week 13:

Faraday's Law

Induced electric fields

Week 14:

Lenz's Law

Eddy currents

Week 15:

Maxwell's equations

Electromagnetic Waves

Introduction to electromagnetic waves

Speed of electromagnetic waves

Please note that the distribution of topics may vary depending on the depth of coverage and the specific requirements of the course. Adjustments can be made based on the available class hours and the pace at which students grasp the material.



Week 16	Preparatory week before the final Exam
----------------	---

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE
Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer Programming		Module Delivery
Module Type	B		<input checked="" type="checkbox"/> Theory
Module Code	WUC1114		<input checked="" type="checkbox"/> Lecture
ECTS Credits	5		<input checked="" type="checkbox"/> Lab
SWL (hr/sem)	125		<input type="checkbox"/> Tutorial
			<input type="checkbox"/> Practical
			<input type="checkbox"/> Seminar
Module Level	UGI	Semester of Delivery	One
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The objective of this class is to introduce students to programming fundamentals, including binary computation, problem-solving techniques, algorithm development, program design, debugging, testing, and documentation, with a focus on procedural and data abstractions, data types, control structures, functions, parameter passing, library functions, arrays, inheritance, object-oriented design, and practical implementation through laboratory exercises in Python.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ul style="list-style-type: none"> ➤ Learn the syntax and semantics of Python Programming Language ➤ Write Python functions to facilitate code reuse and manipulate strings ➤ Illustrate the process of structuring the data using lists, tuples and dictionaries. ➤ Demonstrate the use of built-in functions to navigate the file system
Indicative Contents المحتويات الإرشادية	Introduction to programming basics (what it is and how it works), binary computation, problem-solving methods and algorithm development. Includes procedural and data abstractions, program design, debugging, testing, and documentation. Covers data types, control structures, functions, parameter passing, library functions, arrays, inheritance and object oriented design. Laboratory exercises in Python

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to actively engage students in practical programming exercises, fostering their participation and enhancing their critical thinking skills. This will be accomplished through interactive classes, tutorials, and hands-on experiments that provide relevant and engaging activities aligned with the students' interests.
-------------------	--



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	72	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	53	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction to Programming Basics
Week 2	Control Structures and Data Types
Week 3	Functions and Parameter Passing
Week 4	Object-Oriented Design and Inheritance
Week 5	Python Libraries and Advanced Concepts
Week 6-15	Applications
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?



Required Texts		
Recommended Texts	Al Sweigart, "Automate the Boring Stuff with Python", William Pollock, 2015, ISBN: 978-1593275990	
Websites		

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
<p>Note: Marks 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.</p>				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English		Module Delivery
Module Type	B		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1115		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGI	Semester of Delivery	One
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The objective of this class is to familiarize students with the different parts of speech, sentence structures, subordinate clauses, tense usage, and the conversion of sentences, while developing their understanding of passive and active voice and direct and indirect speech.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Identify and classify different parts of speech, including nouns, pronouns, verbs, adverbs, prepositions, conjunctions, and interjections. 2. Construct and analyze various types of sentences, such as simple, compound, and complex sentences. 3. Understand the concept of subordinate clauses and their role in sentence structure. 4. Demonstrate the ability to transform sentences between simple and compound forms. 5. Use appropriate tenses to express actions and events accurately. 6. Differentiate between passive and active voice constructions and apply them appropriately in writing. 7. Recognize and interpret direct and indirect speech in written and spoken texts. 8. Apply acquired knowledge and skills in grammatical analysis and sentence construction to enhance writing and communication abilities.
Indicative Contents المحتويات الإرشادية	<p>Parts of speech (nouns, pronouns, verbs, adverbs, prepositions, conjunctions, interjections); kinds of sentences (simple, compound, complex).</p> <p>Subordinate clauses; change of sentences from simple to compound and vice versa; tenses; passive and active; direct and indirect speech.</p>

Learning and Teaching Strategies



استراتيجيات التعلم والتعليم

Strategies	The main strategy for delivering this module is to foster active student engagement through interactive learning activities, discussions, and practical exercises that promote critical thinking and application of grammatical concepts in real-world contexts. This will be facilitated through classroom instruction, interactive tutorials, and opportunities for students to practice and refine their language skills.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	44	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
	Midterm Exam	1hr	10% (10)	7	LO #1 - #7



Summative assessment	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Parts of Speech and Sentence Types
Week 2	Nouns: Types and Usage
Week 3	Pronouns: Types and Usage
Week 4	Verbs: Types, Tenses, and Verb Usage
Week 5	Adverbs: Types and Functions
Week 6	Prepositions: Usage and Common Examples
Week 7	Mid-Semester Examination
Week 8	Conjunctions: Types and Functions
Week 9	Interjections: Usage and Examples
Week 10	Subordinate Clauses: Introduction and Types
Week 11	Transforming Sentences: Simple to Compound
Week 12	Transforming Sentences: Compound to Simple
Week 13	Tenses: Introduction and Verb Forms
Week 14	Passive and Active Voice: Concept and Usage
Week 15	Direct and Indirect Speech: Introduction and Examples
Week 16	Preparatory week before the final Exam



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Chemistry		Module Delivery
Module Type	B		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1116		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGI	Semester of Delivery	One
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The class objectives for the above content are to provide a comprehensive understanding of basic concepts in chemistry, including stoichiometry, chemical reactions, and heat, as well as to explore topics related to organic chemistry, fuels, batteries, electronic cells, corrosion principles, water for domestic and industrial use, and atmospheric pollution.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Possible learning outcomes for the above class may include: <ol style="list-style-type: none"> 1. Gain a thorough understanding of basic concepts in chemistry, including stoichiometry, chemical reactions, and heat, and their applications in various contexts. 2. Develop knowledge and comprehension of organic chemistry principles and their relevance to different chemical processes. 3. Explore the characteristics, properties, and applications of different types of fuels and their impact on energy production and sustainability. 4. Understand the principles of various batteries and electronic cells, their working mechanisms, and their importance in modern technology. 5. Gain knowledge of corrosion principles, including types of corrosion, preventive measures, and their significance in different industries. 6. Develop an understanding of water quality and its importance for domestic and industrial purposes, including water treatment methods and environmental considerations. 7. Explore the causes and effects of atmospheric pollution, understand the major pollutants, and discuss strategies for pollution prevention and control. <p>These learning outcomes aim to equip students with a comprehensive understanding of key concepts and their practical applications in the fields of chemistry, energy, environmental science, and materials engineering.</p>



Indicative Contents المحتويات الإرشادية	Review of basic concepts; stoichiometry; chemical reaction and heat; organic chemistry; fuels; various batteries and electronic cells, Principles of corrosion; water for domestic uses; industrial water; atmospheric pollution.
---	--

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy for delivering this module is to foster active student engagement through exercises, discussions, and interactive tutorials, enabling them to develop critical thinking skills and apply their knowledge in practical contexts. This will be supported by incorporating hands-on experiments and relevant sampling activities that capture students' interest and enhance their learning experience.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome



Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Review of basic concepts
Week 2	Stoichiometry
Week 3	Chemical Reaction and Heat
Week 4	Organic Chemistry
Week 5	Fuels
Week 6	Batteries and Electronic Cells
Week 7	Principles of Corrosion
Week 8	Water for Domestic Uses
Week 9	Industrial Water
Week 10	Atmospheric Pollution
Week 11-15	Applications



Week 16	Preparatory week before the final Exam
---------	--

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Calculus II		Module Delivery
Module Type	S		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1121		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	Two
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives</p> <p>أهداف المادة الدراسية</p>	<p>The class objectives for the given content are to develop students' proficiency in methods of integration including trigonometric substitutions and partial fractions, understanding of improper integrals, application of integration to calculate areas and volumes, determination of lengths of plane curves, exploration of surfaces of revolution, comprehension of polar coordinates and polar curves, and mastery of matrix operations and solving systems of linear equations using matrices.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. Demonstrate proficiency in applying various methods of integration, including trigonometric substitutions, integration by parts, and partial fractions, to solve a variety of integrals. 2. Understand the concept of improper integrals and apply appropriate techniques to evaluate them. 3. Apply integration techniques to calculate areas under curves and between curves, and understand the relationship between integration and finding the area. 4. Use integration to determine volumes of solids of revolution using both the disk method and cylindrical shells method. 5. Calculate the lengths of plane curves using the appropriate formulas and techniques. 6. Apply integration to find the areas of surfaces of revolution. 7. Understand and utilize polar coordinates and equations to solve problems involving areas, volumes, and arc lengths of polar curves. 8. Develop proficiency in matrix operations, including matrix addition, multiplication, and finding determinants. 9. Apply matrix operations to find the inverse of a matrix and solve systems of linear equations using the inverse matrix method and Cramer's method. 10. Demonstrate critical thinking and problem-solving skills through the application of integration, matrices, and their respective techniques to real-world problems.
<p>Indicative Contents</p>	<p>-Methods of Integrations: Trigonometric Substitutions, Integration by Parts, Integration of Rational Functions by Partial Fractions, Powers of Trigonometric Functions, The substitution \tan</p>



المحتويات الإرشادية	$z \cdot x \cdot \dots$ \dots <ul style="list-style-type: none"> - Improper Integrals. - Areas: Area under a Curve, Area between Curves. - Volumes of Solids of Revolutions: Volumes by Disk Method, Volumes by Cylindrical Shells. - Lengths of Plane curves: Length of a Curve $y = f(x)$, Length of a Curve $x = g(y)$, Length of a Parametric Curve. - Areas of Surfaces of Revolution. - Polar Coordinates and Polar Curves: Areas, Volumes and Arc lengths of Polar Curves. - Matrices: Algebra of Matrices, Determinant of a matrix, Inverse of a Matrix, Solutions of Systems of Linear Equations (Inverse of a Matrix Method, Cramer's Method).
---------------------	--

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>The main strategy for delivering this module is to engage students actively in the learning process through a combination of lectures, interactive problem-solving sessions, and application-based activities, fostering their critical thinking skills and enhancing their understanding and proficiency in integration techniques, areas, volumes, lengths of curves, polar coordinates, and matrix operations.</p>
------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		



Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	



Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?



Required Texts		
Recommended Texts		
Websites		

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
<p>Note: Marks 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.</p>				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	General Geology II		Module Delivery
Module Type	S		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1122		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	Two
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives أهداف المادة الدراسية</p>	<p>The main objectives of the class are to:</p> <p>Familiarize students with geological maps and develop their ability to interpret and analyze the information presented on these maps, including understanding the representation of rock formations, structures, and other geological features.</p> <p>Provide students with an understanding of structural geology, including the deformation and movement of rocks, faulting, folding, and the formation of geological structures, and enable them to apply this knowledge in interpreting and analyzing geological formations.</p> <p>Explore the concept of plate tectonics and its role in shaping the Earth's surface, including the occurrence of earthquakes, and develop students' understanding of the processes and mechanisms behind plate tectonics.</p> <p>Introduce students to the concept of using geological evidence to reconstruct past events and environments, including the study of fossils, sedimentary layers, and other geological indicators, and develop their skills in interpreting and analyzing this evidence to gain insights into Earth's history.</p> <p>Overall, the class aims to provide students with a solid foundation in geological mapping, structural geology, plate tectonics, and the interpretation of geological evidence, fostering their critical thinking, observation, and analytical skills in the field of geology.</p>
---	---



<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Possible learning outcomes for the class could include:</p> <ol style="list-style-type: none">1. Demonstrate proficiency in reading and interpreting geological maps, including identifying rock formations, structures, and other geological features.2. Understand and apply the principles of structural geology to analyze and interpret geological structures, such as faults and folds, and their implications for the Earth's crust.3. Explain the theory of plate tectonics, including the processes of seafloor spreading, subduction, and continental drift, and recognize the relationship between plate boundaries and the occurrence of earthquakes.4. Apply geological evidence, such as fossils, sedimentary layers, and stratigraphic principles, to reconstruct past environments, interpret Earth's history, and understand key events in geological time.5. Develop skills in data analysis, critical thinking, and problem-solving through geological investigations and the interpretation of geological phenomena and processes.6. Communicate effectively about geological concepts, both orally and in written form, using appropriate scientific terminology and visual aids to present findings and interpretations.7. Collaborate with peers in group projects or fieldwork, demonstrating teamwork, data sharing, and effective communication in a geologically oriented context.8. Develop an appreciation for the importance of geological knowledge and its applications in areas such as resource exploration, hazard assessment, and environmental management.9. Exhibit ethical and responsible attitudes towards geological research,
---	---



	<p>fieldwork, and the stewardship of Earth's geological resources.</p> <p>By achieving these learning outcomes, students will gain a comprehensive understanding of geological mapping, structural geology, plate tectonics, and the interpretation of geological evidence, equipping them with the necessary skills and knowledge to pursue further studies or careers in the field of geology.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<ol style="list-style-type: none"> 1. Geological maps. 2. Structural Geology. 3. Plate Tectonics including Earthquakes. 4. Keys to the past.

<p>Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>	
<p>Strategies</p>	<p>The main strategy for delivering this module is to foster active student participation through engaging exercises, while simultaneously cultivating their critical thinking abilities. This will be accomplished through interactive classes, tutorials, and practical experiments that involve hands-on activities and sampling, designed to captivate and intrigue the students.</p>

<p>Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً</p>			
<p>Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل</p>	58	<p>Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً</p>	
<p>Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	92	<p>Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً</p>	
<p>Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل</p>	150		



Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Geological Maps: Purpose, types, and symbols.
Week 2	Reading and Interpreting Geological Maps: Identification of rock formations, structures, and geological features.
Week 3	Introduction to Structural Geology: Stress and strain, deformation mechanisms.
Week 4	Faults and Folds: Classification, characteristics, and interpretation.
Week 5	Plate Tectonics: Theory, plate boundaries, and their associated geological features.
Week 6	Earthquakes: Causes, seismic waves, and measuring earthquake intensity.
Week 7	Mid-Semester Assessment: Review and assessment of knowledge covered in previous weeks.



Week 8	Fossils and Stratigraphy: Principles of paleontology, fossil identification, and stratigraphic correlation.
Week 9	Sedimentary Rocks and Processes: Depositional environments, sedimentation processes, and facies analysis.
Week 10	Geological Time Scale: Principles of relative and absolute dating, geologic events and epochs.
Week 11	Field Trip/Practical Exercise: Application of geological mapping and structural geology concepts in the field.
Week 12	Key Concepts in Plate Tectonics: Seafloor spreading, subduction zones, and continental drift.
Week 13	Tectonic Landforms: Volcanoes, mountain building, and rift zones.
Week 14	Environmental Geology: Hazards associated with geological processes, impact of geological factors on human activities.
Week 15	Review and Recapitulation: Consolidation of key concepts, review of learning outcomes, and preparation for final assessments.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Introduction to Petroleum Engineering		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1123		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	Two
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى



Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives</p> <p>أهداف المادة الدراسية</p>	<p>The objective of this class is to provide students with a comprehensive understanding of the oil industry value chain, petroleum engineering roles and workplaces, petroleum definitions and concepts, upstream exploration and production processes, midstream transportation, processing and storage, as well as downstream marketing and distribution aspects.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. Gain a thorough understanding of the oil industry value chain and the different stages involved in the exploration, production, transportation, processing, and distribution of petroleum products. 2. Acquire knowledge about the role of petroleum engineers and the skills required to work in the industry. 3. Develop an understanding of the various methods and techniques used in geosciences and exploration for identifying and assessing potential oil reserves. 4. Familiarize with the concepts and principles related to reservoir engineering, including reservoir characterization, modeling, and management. 5. Comprehend the drilling process, including drilling equipment, techniques, and safety considerations. 6. Gain insights into the production of oil, including well completion, artificial lift methods, and production optimization. 7. Understand the importance of field surface facilities and the processes involved in crude oil refining and treatment. 8. Develop knowledge about oil storage tanks, transportation methods, and the logistics of delivering petroleum products to end users. 9. Gain awareness of the marketing and distribution aspects of the downstream sector, including market analysis, supply chain management, and customer engagement. 10. Develop critical thinking skills by analyzing and evaluating the environmental, economic, and social impacts of the oil industry.



	<p>11. Enhance communication skills through presentations, discussions, and written assignments related to the various topics covered in the class.</p> <p>12. Apply theoretical knowledge to real-world scenarios through case studies and practical exercises, fostering problem-solving and decision-making abilities.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Chapter 1 : General Overview</p> <p>(1-1) Oil Industry Value chain</p> <p>(1-2) What is Petroleum Engineer ?</p> <p>(1-3) Where Does Petroleum Engineers Work?</p> <p>(1-4) What Does Petroleum Mean?</p> <p>(1-5) Definitions , Crude Oil , API , OPEC , Oil Reserve ,</p> <p>Chapter 2: Upstream (Exploration & Production)</p> <p>(2-1) Geosciences & Exploration Methods</p> <p>(2-2) Reservoir</p> <p>(2-3) Drilling</p> <p>(2-4) Production</p> <p>Chapter 3 : Midstream (Transportation , Processing & Storage)</p> <p>(3-1) Field Surface Facilities</p> <p>(3-2) Crude Oil Refining</p> <p>(3-3) Oil Treatment</p> <p>(3-4) Oil Storage Tanks</p> <p>(3-5) Transportation</p> <p>Chapter 4 : Downstream (Marketing , Distribution & End User)</p> <p>(4-1) Distributions</p> <p>(4-2) Marketing</p>

<p>Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>	
<p>Strategies</p>	



يتم التركيز على قطاع الاستخراج والإنتاج لأقسام هندسة النفط والغاز بينما يتم التركيز على قطاع الخزن والمعالجة والنقل بالنسبة لأقسام البتروكيمياويات والبوليمرات , ويتم التركيز على قطاع التوزيع والتسويق بالنسبة لأقسام الإدارة اقتصاديات النفط

Student Workload (SWL)

الحمل الدراسي للطالب محسوب ل ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		



Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Oil Industry Value Chain
Week 2	What is a Petroleum Engineer? AND Where Does Petroleum Engineers Work?
Week 3	Understanding Petroleum Terminology and Definitions (Crude Oil, API, OPEC, Oil Reserve)
Week 4	2 Upstream (Exploration & Production)
Week 5	Geosciences & Exploration Methods
Week 6	Reservoir Engineering
Week 7	Drilling Techniques and Technologies
Week 8	Production Operations
Week 9	3 Midstream (Transportation, Processing & Storage)
Week 10	Field Surface Facilities
Week 11	Crude Oil Refining Processes and Oil Treatment Methods
Week 12	Oil Storage Tanks and Facilities AND Transportation Systems and Logistics
Week 13	4 Downstream (Marketing, Distribution & End User)
Week 14	Distribution Channels and Networks
Week 15	Marketing Strategies in the Oil Industry
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر



	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Petroleum Chemistry and Properties		Module Delivery
Module Type	S		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1124		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGI	Semester of Delivery	Two
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى



Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The objective of this class is to provide students with a comprehensive understanding of crude oils and their properties, including chemical composition, classification, density, viscosity, vapor pressure, heat characteristics, evaluation methods, fractional distillation, analysis of fractions, dehydration, natural gas properties, and oilfield water properties.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Understand the chemical composition, classification, and properties of crude oils, including density, specific gravity, and coefficient of expansion. 2. Comprehend the factors affecting viscosity, molecular weight, vapor pressure, specific heat, latent heat, boiling range, flash point, pour point, sulfur content, aniline point, and penetration number of crude oils. 3. Gain knowledge of crude oil evaluation techniques and the significance of fractional distillation and TBP (True Boiling Point) curves in analyzing crude oil fractions. 4. Develop an understanding of the processes involved in the dehydration of crude oil and the properties of natural gas and oilfield water. 5. Apply acquired knowledge to evaluate and analyze crude oil samples and make informed decisions based on their properties. 6. Enhance problem-solving skills and critical thinking abilities in the context of crude oil analysis and evaluation.
Indicative Contents المحتويات الإرشادية	Crude Oils (chemical composition, classification, properties); density, specific gravity and coefficient of expansion; viscosity, molecular weight; vapor pressure, specific heat; latent heat; heat of combustion; boiling range, flash point; pour point, sulfur content; aniline point; penetration number; softening point; crude oil evaluation; fractional distillation and TBP curve; analysis of fraction; dehydration of crude oil; natural gas properties; oilfield water properties



Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy for delivering this module is to foster active student participation through engaging exercises, while enhancing their critical thinking abilities. This will be accomplished through interactive classes, tutorials, and incorporating interesting sampling activities and simple experiments that promote hands-on learning.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	70	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
	Midterm Exam	1hr	10% (10)	7	LO #1 - #7



Summative assessment	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Crude Oils
Week 2	Density, Specific Gravity, and Coefficient of Expansion
Week 3	Viscosity, Molecular Weight, and Vapor Pressure
Week 4	Specific Heat, Latent Heat, and Heat of Combustion
Week 5	Boiling Range, Flash Point, and Pour Point
Week 6	Sulfur Content, Aniline Point, and Penetration Number
Week 7	Softening Point and Crude Oil Evaluation
Week 8	Fractional Distillation and TBP Curve
Week 9	Analysis of Fractions
Week 10	Dehydration of Crude Oil
Week 11	Natural Gas Properties
Week 12	Oilfield Water Properties
Week 13	
Week 14	
Week 15	
Week 16	Preparatory week before the final Exam



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Drawing		Module Delivery
Module Type	B		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1125		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	Two
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives</p> <p>أهداف المادة الدراسية</p>	<p>The objectives of this class are to introduce students to the fundamentals of engineering drawing and Computer-Aided Drafting (CAD). Students will learn about the selection and use of instruments, engineering lettering, and basic geometry concepts. They will gain an understanding of dimensioning in engineering drawings and become familiar with CAD software applications. Students will be able to create new drawings using different coordinate systems, utilize drawing commands to create shapes, and modify objects using various editing commands. They will also learn about layers, text styles, and dimensions. Additionally, students will be introduced to isometric drawing techniques and gain knowledge about plotting and printing drawings to scale.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Upon completion of this class, students will be able to:</p> <ol style="list-style-type: none"> 1. Understand the fundamentals of engineering drawing and the importance of precise graphical representation in engineering practice. 2. Demonstrate proficiency in using engineering drawing instruments and techniques for accurate and professional drawing. 3. Apply appropriate lettering styles and geometric principles to create clear and legible engineering drawings. 4. Utilize Computer-Aided Drafting (CAD) software effectively to create, modify, and manipulate engineering drawings. 5. Demonstrate competency in using CAD commands and tools for tasks such as drawing shapes, editing objects, and creating layers. 6. Apply dimensioning principles and standards to accurately represent size and scale in engineering drawings. 7. Create isometric drawings and understand the principles of isometric projection. 8. Understand the concept of model space and paper space in CAD software and utilize viewports for plotting and scaling drawings. 9. Interpret and utilize title blocks and understand the importance of proper



	<p>documentation in engineering drawings.</p> <p>10. Demonstrate the ability to select appropriate plotter or printer settings and generate scaled and accurate printed copies of engineering drawings.</p> <p>These learning outcomes aim to equip students with the necessary knowledge and skills to effectively create and work with engineering drawings using both traditional techniques and modern CAD software.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Introduction, selection of instruments, engineering lettering, geometry, fundamentals of dimension on engineering drawing, Computer Aided Drafting (CAD) fundamentals: Open, (and close), CAD application, Open multiple drawings and switch between them, Create a new drawing. Roaming facilities: Use zooming tools, Panning a drawing, Create named views & recall them. Create new drawings: Understand & use Absolute, Relative and Polar coordinate system, Drawing commands, Draw rectangle, polygon, ellipse.</p> <p>Modifying Commands: Erase & oops, Copy and Move objects, Rotate, Scale, Stretch Extend & Ofset, Mirror and array, Apply Chamfers and Fillets. Layers: Create layers and assign properties as line weights, line types, colour, Modify status, Modify layer attributes. Text and Dimensions: Create and set text styles with diferent fonts, Understand the text alignment abbreviations. Isometric: Changing to isometric mode, Switching between isoplanes (top, right & left views), Isometric ellipses, Isometric fllets, Writing in isometric mode, Plotting: Understand between Model and Paper space, Add a new title block, Create a viewports with diferent scales, Select plotter/ printer, Plot all, part of drawing to scale</p>

<p>Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>	
<p>Strategies</p>	



	<p>The main strategy in delivering this module is to promote active student participation and enhance their critical thinking skills. This will be accomplished through interactive classes, engaging tutorials, and practical exercises that involve hands-on experiences. By incorporating various sampling activities and experiments, we aim to make the learning process interesting and relevant to the students' needs. Through this approach, students will develop a deeper understanding of the subject matter and be able to apply their knowledge effectively.</p>
--	--

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	72	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	78	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All



Total assessment	100% (100 Marks)		
-------------------------	------------------	--	--

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Engineering Drawing
Week 2	Selection of Instruments
Week 3	Engineering Lettering
Week 4	Geometry
Week 5	Fundamentals of Dimension on Engineering Drawing
Week 6	CAD Fundamentals: Opening and Closing Applications
Week 7	CAD Fundamentals: Working with Multiple Drawings
Week 8	Creating a New Drawing
Week 9	Roaming Facilities: Zooming and Panning
Week 10	Coordinate Systems and Drawing Commands
Week 11	Basic Shapes and Modifying Commands
Week 12	Layers and Text Styles
Week 13	Introduction to Isometric Drawing
Week 14	Plotting: Model Space and Paper Space
Week 15	Advanced Drawing Techniques
Week 16	Preparatory week before the final Exam



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Arabic Language		Module Delivery
Module Type	B		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1126		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	Two
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	إعداد مهندس جاد فاهم ناجح ملم بلغته الأم , وجعله يكتب كتابة صحيحة ودقيقة
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>مخرجات التعلم للمواضيع المذكورة في الدرس هي:</p> <p>فهم مدخل اللغة العربية والتعرف على أهميتها كلغة عربية أصيلة.</p> <p>التمييز بين الحرفين العربيين "الضاد" و"الظاء" وفهم الفروق بينهما في النطق والكتابة.</p> <p>فهم استخدام الهمزة المتوسطة وتعلم طرق كتابتها على الألف وعلى الواو والياء.</p> <p>تطوير مهارات الخطابة وفن الإلقاء من خلال الدروس التطبيقية.</p> <p>فهم أقسام الكلام في النحو العربي وتعلم استخدامها بشكل صحيح.</p> <p>فهم قواعد وأسس الأعداد في النحو العربي.</p> <p>تعلم بناء الجمل الفعلية والأسمية بشكل صحيح في النحو العربي.</p> <p>التعرف على علامات الترتيب وفهم كيفية استخدامها بشكل صحيح.</p> <p>تطبيق عملي لدروس الخطابة وفن الإلقاء.</p> <p>دراسة وتحليل استخدام كلمة "كان" وأخواتها في النحو العربي.</p> <p>دراسة وتحليل استخدام كلمة "أن" وأخواتها في النحو العربي.</p> <p>فهم قواعد استخدام الأفعال في النحو العربي.</p> <p>فهم قواعد استخدام الأسماء في النحو العربي.</p> <p>تطبيق عملي للمفاهيم والقواعد المتعلقة بالموضوعات المختلفة.</p> <p>هذه هي بعض المخرجات المتوقعة للدروس المذكورة والتي تهدف إلى تطوير مهارات اللغة العربية والفهم</p>



	الصحيح لقواعدها.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>استراتيجيات التعلم والتعليم المناسبة لهذا الدرس يمكن أن تشمل:</p> <ol style="list-style-type: none"> 1. الاستخدام المتنوع للوسائل التعليمية: يمكن استخدام مجموعة متنوعة من الوسائل التعليمية مثل الشرائح التقديمية، الأنشطة التفاعلية، الأمثلة التطبيقية والموارد المرئية لتسهيل فهم المفاهيم وتحفيز المشاركة الفعالة للطلاب. 2. العمل الجماعي والمناقشة: تشجيع الطلاب على العمل الجماعي والتفاعل مع بعضهم البعض من خلال المناقشات والأنشطة الجماعية. يمكن استخدام التداول الحوارى لتوضيح المفاهيم وتطبيقها في سياقات حقيقية. 3. التطبيق العملي: توفير فرص للطلاب لتطبيق المفاهيم والمهارات المكتسبة في دروس الخطابة وفن الإلقاء من خلال التدريبات العملية والأنشطة التطبيقية. يمكن تنظيم محاكاة للخطابة والألقاء لتطوير قدرات الطلاب في التواصل اللفظي والتأثير الإيجابي. 4. التقييم المستمر: إجراء تقييمات منتظمة ومستمرة لفهم تقدم الطلاب وتحقيقهم لأهداف التعلم. يمكن استخدام تقييمات شفوية وكتابية وتقييمات تطبيقية لتقييم مستوى الفهم وتطبيق المفاهيم. 5. تشجيع الاستقلالية والتفكير النقدي: تشجيع الطلاب على تطوير مهاراتهم في التفكير النقدي والاستقلالية من خلال حل المشكلات والتحليل النقدي للمفاهيم المطروحة. يمكن استخدام تدريبات التفكير النقدي والمناقشات الموجهة لتعزيز هذه المهارات. 6. التواصل وتوفير



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	20	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	مدخل الى اللغة العربية واهميتها
Week 2	الفرق بين الضاد والظاء
Week 3	الهمزة المتوسطة وطرق كتابتها (الهمزة المتوسطة على الألف)
Week 4	الهمزة المتوسطة وطرق كتابتها(الهمزة المتوسطة على الواو والياء)
Week 5	دروس تطبيقية في الخطابة وفن الالقاء
Week 6	دروس في النحو العربي (اقسام الكلام)
Week 7	دروس في النحو العربي (الأعداد)
Week 8	دروس في النحو العربي (الجملة الفعلية والأسمية)
Week 9	علامات الترقيم
Week 10	درس تطبيقي في الخطابة وفن الألقاء
Week 11	دروس في النحو العربي(كان وأخواتها)
Week 12	دروس في النحو العربي(أن وأخواتها)
Week 13	دروس في النحو العربي(أفعال)
Week 14	دروس في النحو العربي(الاسماء)
Week 15	درس تطبيقي عملي
Week 16	مراجعة

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	



Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Calculus III		Module Delivery
Module Type	B		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1131		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGII	Semester of Delivery	Three
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives أهداف المادة الدراسية</p>	<p>The objectives of this class are to develop a solid understanding and proficiency in several key mathematical concepts. Firstly, students will learn about polar coordinates and their applications, including the representation of polar curves and the calculation of area in polar coordinates. Secondly, they will explore the principles of vectors, lines, planes, and surfaces, gaining the ability to manipulate and analyze these geometric entities. Additionally, the class will cover cylindrical and spherical coordinates, providing students with the tools to describe and work with objects in three-dimensional space.</p> <p>Furthermore, students will delve into the realm of functions of two and three variables, studying topics such as limits, continuity, and partial derivatives. This knowledge will enable them to evaluate directional derivatives and solve optimization problems by identifying extrema of functions with multiple variables. The class will also introduce the concept of double integrals, teaching students how to calculate them in both rectangular and polar coordinates and apply them in the context of area and volume calculations.</p> <p>Lastly, the course will cover triple integrals and their applications, with a focus on cylindrical and spherical coordinates. Students will develop proficiency in evaluating triple integrals and utilizing them for problems involving volumes and mass calculations. By the end of the class, students will have acquired a solid foundation in these mathematical concepts and be equipped with the necessary skills to apply them in various fields of study.</p>
<p>Module Learning Outcomes</p>	<ol style="list-style-type: none"> 1. Understand and apply the concepts of polar coordinates, including the representation of polar curves and the calculation of area in polar coordinates. 2. Demonstrate proficiency in working with vectors, lines, planes, and surfaces, and apply them to solve geometric problems.



<p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 3. Gain proficiency in cylindrical and spherical coordinates, and effectively describe and manipulate objects in three-dimensional space using these coordinate systems. 4. Develop a strong understanding of functions of two and three variables, including limits, continuity, and partial derivatives, and apply these concepts to solve problems involving multivariable functions. 5. Apply the principles of extrema to optimize functions of two variables, identifying maximum and minimum values. 6. Master the techniques of evaluating double integrals, both in rectangular and polar coordinates, and apply them to calculate areas and solve related problems. 7. Understand the concept of triple integrals and apply them in cylindrical and spherical coordinates to calculate volumes and solve relevant problems. 8. Develop critical thinking and problem-solving skills through the application of mathematical concepts to real-world scenarios. 9. Enhance computational skills through the use of mathematical software and tools for numerical calculations and visualizations. 10. Prepare for further studies in mathematics, engineering, physics, and other disciplines that require a solid foundation in multivariable calculus.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Polar coordinates, polar curves, area in polar coordinates. Vectors, lines, planes and surfaces. Cylindrical and spherical coordinates. Functions of two and three variables, limits and continuity. Partial derivatives, directional derivatives. Extrema of functions of two variables. Double integrals, double integrals in polar coordinates. Triple integrals, triple integrals in cylindrical and spherical coordinates.</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<p>The main strategy for delivering this module is to actively engage students in the learning process, fostering their participation in exercises and activities. The aim is to enhance their critical thinking skills and deepen their understanding of the subject matter. This will be accomplished through interactive classes, tutorials, and practical experiments that involve hands-on experiences and relevant sampling activities. By creating an engaging and interactive learning environment, students will be encouraged to actively explore and apply the concepts of polar coordinates, vectors, functions, derivatives, and integrals in various contexts.</p>
--------------------------	--



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction to Polar Coordinates and Polar Curves
Week 2	Area in Polar Coordinates
Week 3	Vectors, Lines, Planes, and Surfaces
Week 4	Introduction to Cylindrical and Spherical Coordinates
Week 5	Functions of Two and Three Variables, Limits, and Continuity
Week 6	Partial Derivatives and Directional Derivatives
Week 7	Extrema of Functions of Two Variables
Week 8	Double Integrals and Double Integrals in Polar Coordinates
Week 9	Triple Integrals and Triple Integrals in Cylindrical and Spherical Coordinates
Week 10	Review and Practice
Week 11	Mid-semester Examination (Week 7)
Week 12	Applications of Multivariable Calculus
Week 13	Review of Concepts and Problem-solving Techniques
Week 14	Final Exam Preparation and Practice
Week 15	Revision and Recap
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	



Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Statics and Dynamics		Module Delivery
Module Type	B		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1132		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGII	Semester of Delivery	Three
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	Application of the fundamental principles of Newtonian mechanics to the statics and dynamics of particles; equilibrium of trusses, frames, beams and other rigid bodies.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>The learning outcomes for the class on static and dynamic principles, including resultant forces, friction, center of gravity, moment of inertia, rectilinear motion, curvilinear motion rotation, energy and work, and mechanical vibration, are as follows:</p> <p>Understand the principles of statics and dynamics and their application in engineering systems.</p> <p>Calculate and analyze the resultant forces acting on objects and structures.</p> <p>Evaluate and analyze frictional forces and their effects on motion and stability.</p> <p>Determine the center of gravity of objects and its significance in balancing and stability.</p> <p>Calculate and analyze moments of inertia for rotating objects and their implications in rotational motion.</p> <p>Apply the principles of energy and work to solve mechanical engineering problems.</p> <p>Analyze and predict mechanical vibrations and their effects on systems.</p> <p>Apply the principles of rectilinear and curvilinear motion to solve engineering problems.</p> <p>Develop skills in problem-solving, critical thinking, and analytical reasoning in the context of mechanical systems.</p> <p>Apply theoretical concepts to real-world engineering scenarios through practical examples and case studies.</p>



	By achieving these learning outcomes, students will gain a solid foundation in statics and dynamics, enabling them to analyze and solve complex engineering problems related to motion, forces, and mechanical systems.
Indicative Contents المحتويات الإرشادية	Application of the fundamental principles of Newtonian mechanics to the statics and dynamics of particles; equilibrium of trusses, frames, beams and other rigid bodies.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy for delivering this module on static and dynamic principles is to foster active student participation in exercises and problem-solving. The aim is to enhance their critical thinking skills through interactive classes, engaging tutorials, and hands-on experiments. These experiments will involve various sampling activities that not only pique students' interest but also provide practical insights into the concepts being taught. By adopting this approach, students will develop a deeper understanding of the subject matter and apply their knowledge effectively.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		



Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Statics and Dynamics
Week 2	Resultant of Forces
Week 3	Friction and its Effects
Week 4	Center of Gravity and Stability
Week 5	Moment of Inertia and Rotational Motion
Week 6	Rectilinear Motion and its Applications
Week 7	Curvilinear Motion and its Applications
Week 8	Energy and Work



Week 9	Mechanical Vibration and its Analysis
Week 10	Review and Practice
Week 11	Mid-Semester Examination
Week 12	Applications of Statics and Dynamics
Week 13	Advanced Topics in Motion and Forces
Week 14	Case Studies and Problem Solving
Week 15	Revision and Preparation for Final Exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?



Required Texts		
Recommended Texts		
Websites		

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
<p>Note: Marks 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.</p>				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Thermodynamics		Module Delivery
Module Type	B		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1133		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGII	Semester of Delivery	Three
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To learn principles of mechanical and chemical thermodynamics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>After studying this course, the learners will be able to: -</p> <ol style="list-style-type: none"> 1. Understand the fundamentals of applied thermodynamics 2. Identify and describe energy exchange processes. 3. Apply the Laws of thermodynamics on different systems. (Heaters, coolers, pumps, turbines, pistons, etc.) 4. Understand the calculation of heat and work quantities for physical processes. 5. Explain the underlying principles of phase equilibrium (PVT) in twocomponent and multi-component systems
Indicative Contents المحتويات الإرشادية	<ol style="list-style-type: none"> 1. Introduction to thermodynamic systems and processes, equilibrium, thermodynamic variables, intensive and extensive variables, thermodynamic properties, state functions, derived intensive variables. 2. Types of work, kinetic and potential energy, the first law of thermodynamics, internal energy, energy transfer by heat, energy balance, energy analysis of cycles. 3. Quasi-static processes, reversibility, heat capacities. <p>65</p>



4. Property relations relevant to engineering thermodynamics, P-V-T relation, evaluating thermodynamic properties, generalized compressibility chart Ideal gas model, internal energy, enthalpy and specific heat of ideal gases, evaluating changes in specific enthalpy and internal energy for ideal gases, polytropic process of an ideal gas.
5. Introducing the control volume, conservation of mass and energy in a control volume, Steady-state and transient forms of mass and energy rate balances.
6. Second law of thermodynamics, irreversible processes, entropy.
7. Applying the second law to thermodynamic cycles, the Carnot cycle.
8. The Clausius inequality, entropy changes, evaluating entropy data.
9. Entropy balance for closed systems, entropy rate balance for control volumes, isentropic processes, isentropic efficiencies of turbines, nozzles, etc.
10. Equations of state, property relations from exact differentials, fundamental thermodynamic functions, relations for gas mixtures and multi-component systems, the Gibbs-Duhem relation.
11. Applications to flow processes, nozzles, turbines, compressors, Heat Engines, Refrigeration and Air Conditioning, and Liquefaction of gases.
12. Thermal expansion coefficients of metals, thermal conductivity of liquids, thermal radiation and Stefan Boltzmann law, steam power plant, refrigeration unit, freezing point depression, PVT cell.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم



Strategies	The main strategy for delivering this module is to promote active student engagement and enhance critical thinking skills. This will be accomplished through interactive classes, tutorials, and hands-on experiments that involve practical applications related to thermodynamics. Students will be encouraged to actively participate in exercises, discussions, and problem-solving activities. By incorporating various learning methods, including interactive sessions and experiments, students will have the opportunity to deepen their understanding of thermodynamic concepts and develop their analytical and problem-solving abilities.
-------------------	---

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10



Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to thermodynamic systems and processes
Week 2	Types of work, energy transfer, and the first law of thermodynamics
Week 3	Quasi-static processes and property relations
Week 4	Ideal gas model and thermodynamic properties of ideal gases
Week 5	Conservation of mass and energy in control volumes
Week 6	Second law of thermodynamics and entropy
Week 7	Mid-semester examination (in addition to regular class)
Week 8	Applying the second law to thermodynamic cycles
Week 9	Entropy balance and isentropic processes
Week 10	Equations of state and property relations
Week 11	Applications to flow processes and gas mixtures
Week 12	Thermal expansion, thermal conductivity, and radiation
Week 13	Steam power plant and refrigeration units
Week 14	Freezing point depression and PVT cell
Week 15	Recap and review
Week 16	Preparation week



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>a. Smith J.M., Van Ness H.C., Abbott M.M. "Chemical Engineering Thermodynamics" 8thEd. McGraw-Hill International Edition, 2005.</p> <p>b. Daubert Thomas E. "Chemical Engineering Thermodynamics", 1stEd., McGraw-Hill Book Company, 1985.</p> <p>c. Sandler Stanley I. "Chemical and Engineering Thermodynamics" 3rdEd. John Wiley and Sons, Inc.</p>	



	<p>d. Moran M. J., Shapiro H. N., "Fundamentals of Engineering Thermodynamics" 6th Ed. John Wiley and Sons, Inc.</p> <p>e. Cengel, Y. A., Boles, M. A., "Thermodynamics: An Engineering Approach", , McGraw-Hill, 2008</p> <p>f. Thomas D. Eastop, A. McConkey, "Applied Thermodynamics for Engineering Technologists", 5th Edition, Prentice Hall, 1996.</p>	
Websites		

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
<p>Note: Marks 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.</p>				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Reservoir Rock Properties		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1134		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGII	Semester of Delivery	Three
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives</p> <p>أهداف المادة الدراسية</p>	<p>The objectives of this class are to provide students with a comprehensive understanding of the properties and characteristics of reservoir rocks and the relevant measurements associated with them. By the end of the course, students will be able to define and measure porosity, understand the complexities of porosity in different porous media, define and measure saturations and permeability, analyze the effects of Klinkenberg and Darcy's law on permeability and flow rates, comprehend the concept of relative permeability and its correlations, evaluate capillary pressure and interfacial tension in relation to wettability, measure wettability, understand the formation resistivity/conductivity and its implications, analyze compressibility and pressure gradients, and explore geothermal gradients. The class aims to equip students with the necessary knowledge and skills to effectively evaluate and analyze reservoir rocks and their properties for petroleum exploration and production.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Upon completion of this class, students will achieve the following learning outcomes:</p> <p>Demonstrate a comprehensive understanding of the different types of reservoir rocks and their properties.</p> <p>Apply appropriate methods for measuring porosity, saturations, permeability, and capillary pressure.</p> <p>Analyze and interpret data related to porosity, permeability, and relative permeability for reservoir characterization.</p> <p>Understand the concepts of wettability and interfacial tension and their effects on fluid flow in porous media.</p> <p>Evaluate the formation resistivity, conductivity, and pressure gradients in reservoirs.</p> <p>Demonstrate proficiency in analyzing and interpreting data related to geothermal gradients.</p>



	<p>Apply theoretical knowledge to practical situations and make informed decisions in the field of petroleum exploration and production.</p> <p>Through the achievement of these learning outcomes, students will develop a solid foundation in the properties and behaviors of reservoir rocks, enabling them to contribute effectively to the petroleum industry and related fields.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Types of Reservoir Rocks, Definitions & Measurements of Porosity, Packing & Particle Size,</p> <p>Porosity of Complex Porous Media, Definitions & Measurements of Saturations, Definitions &</p> <p>Measurements of Permeability, Klinkenberg Effects, Permeability & Flow rates – Darcy's</p> <p>Law, Linear & Radial System, Relative Permeability, Hysteresis-Drainage & Imbibition, Correlations of Relative Permeability, Mobility concepts, Definitions & Measurements of</p> <p>Capillary Pressure, Capillary Pressures Curves, Interfacial Tension & Wettability, Measurements of Wettability, Formation Resistivity/Conductivity, Compressibility, Pressure</p> <p>Gradients, Geothermal Gradients.</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<p>The main strategy for delivering this module is to foster active student engagement and enhance critical thinking skills. This will be accomplished through interactive classes, tutorials, and hands-on experiments that involve relevant sampling activities. By encouraging students to actively participate in exercises and explore practical applications, we aim to create an engaging learning environment that promotes deeper understanding and application of the concepts covered in the class.</p>
--------------------------	--

Student Workload (SWL)



الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
--	-------------------------



Week 1	Types of Reservoir Rocks
Week 2	Definitions & Measurements of Porosity
Week 3	Packing & Particle Size
Week 4	Porosity of Complex Porous Media
Week 5	Definitions & Measurements of Saturations
Week 6	Definitions & Measurements of Permeability
Week 7	Klinkenberg Effects, Permeability & Flow rates - Darcy's Law (Mid-sem)
Week 8	Linear & Radial System
Week 9	Relative Permeability
Week 10	Hysteresis-Drainage & Imbibition
Week 11	Correlations of Relative Permeability
Week 12	Mobility Concepts
Week 13	Definitions & Measurements of Capillary Pressure
Week 14	Capillary Pressure Curves
Week 15	Interfacial Tension & Wettability, Measurements of Wettability
Week 16	Formation Resistivity/Conductivity, Compressibility, Pressure Gradients, Geothermal Gradients (Preparation)

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	



Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Petroleum Geology and Geophysical Exploration		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1135		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGII	Semester of Delivery	Three
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى



Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To learn dynamics of earth's structural formations and develop an understanding of hydrocarbon reservoir formations and methods of exploration
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After studying this course, the learners will be able to: - 1. Understand basic principles of petroleum exploration and field development. 2. Describe theories, methods and applications of petroleum geology 3. Understand the principles of sedimentation and stratigraphy. 4. Solve geological problems by integrating different types of data used in the oil industry. 5. Draw geological maps and interpret seismic sections 6. Understand the sedimentary Basins and tectonic history of Iraq
Indicative Contents المحتويات الإرشادية	1. Geological history of petroleum. 2. The origin, migration and accumulation of petroleum. 3. Reservoirs with abnormal pressure and temperature. 4. Geological distribution of petroleum in the world. 5. Geological basins of Iraq. 6. Geology of existing oil and gas fields in Iraq. 7. Surface geological methods for petroleum exploration.



	<p>8. Use of topography and surface features for oil prospecting.</p> <p>9. Modes of deformation of rocks, parts.</p> <p>10. Classification of Folds, faults, joints and unconformities.</p> <p>11. Expression of the above features on geological field maps and construction of cross sections.</p> <p>12. Geological mapping and the application of photogrammetry.</p> <p>13. Geophysical exploration methods with emphasis on seismic survey.</p> <p>14. History of exploration in Iraq.</p> <p>15. Principles of Stratigraphy:</p> <p>16. Stratigraphy of Iraq with special emphasis on salt range.</p> <p>17. Introduction to structural geology and its objectives.</p> <p>18. Interpretation of pore pressure and fracture gradient profiles from seismic data.</p>
--	--

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>The main strategy for delivering this module is to foster active student participation in exercises, while simultaneously enhancing their critical thinking abilities. This will be accomplished through engaging classes, interactive tutorials, and the inclusion of various sampling activities and simple experiments that captivate student interest. By employing these methods, students will have the opportunity to refine their critical thinking skills and actively apply their knowledge in practical settings.</p>
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem)	58	Structured SWL (h/w)	
الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعياً	



Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Geological history of petroleum
Week 2	The origin, migration and accumulation of petroleum
Week 3	Reservoirs with abnormal pressure and temperature



Week 4	Geological distribution of petroleum in the world
Week 5	Geological basins of Iraq
Week 6	Geology of existing oil and gas fields in Iraq
Week 7	Surface geological methods for petroleum exploration
Week 8	Use of topography and surface features for oil prospecting
Week 9	Modes of deformation of rocks, parts
Week 10	Classification of Folds, faults, joints and unconformities
Week 11	Expression of the above features on geological field maps
Week 12	Geological mapping and the application of photogrammetry
Week 13	Geophysical exploration methods with emphasis on seismic survey
Week 14	History of exploration in Iraq
Week 15	Principles of Stratigraphy
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	



Week 7	
--------	--

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>a. Robert J. Twiss, Eldridge M. Moores, "Structural Geology", 2nd Edition, W. H. Freeman and Company, New York, 2007.</p> <p>b. Peter K. Link, "Basic Petroleum Geology", Oil and Gas Consultants International - Tulsa, Oklahoma, 2001.</p> <p>c. Richard C. selley, " Elements of petroleum geology", 2nd Edition, 1997</p> <p>d. Richard H. Groshong, "3-D Structural Geology", 2nd Edition, Springer, 2008.</p> <p>e. William Lowrie, "Fundamentals of Geophysics", 2nd Edition, 2007</p>	
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Human Rights and Democracy		Module Delivery
Module Type	B		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1136		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGII	Semester of Delivery	Three
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	تعريف الطالب بحقوق الانسان واساسيات الديمقراطية
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	مفهوم حقوق الإنسان وتطوره ، حقوق الانسان في الاديان والشرائع السماوية(اليهودية ، المسيحية ، الاسلام)، حقوق الانسان في العصور الوسطى والحديثة والمعاصرة ، ضمانات حقوق الإنسان وحمايتها على الصعيد الوطني، انتهاكات حقوق الانسان (جرائم حزب البعث)، حقوق الانسان في ظل تحديات جديدة (الارهاب ، الاتجار بالبشر، ظاهرة الفساد الإداري ، الملكية الفكرية) ، الأنظمة السياسية من حيث ممارسة السلطة (المونوقراطية -الفردية- ، الديموقراطية) ، مفهوم الديمقراطية وتطوره ، خصائص ومميزات الديمقراطية ، أنواع الديمقراطية (المباشرة ، شبه المباشرة ، الديمقراطية النيابية) ، مقومات النظام الديمقراطي

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	
-------------------	--

Student Workload (SWL)



الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	20	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
--	-------------------------



Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	



Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Differential Equations		Module Delivery
Module Type	S		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1141		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGII	Semester of Delivery	Four
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	To learn advance mathematical concepts.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>After studying this course, the learners will be able to: -</p> <p>48</p> <ol style="list-style-type: none"> 1. Identify an ordinary differential equation and its order. 2. Develop fundamental skills of solving ordinary differential equations. 3. Classify ordinary differential equations into linear and nonlinear equations. 4. Develop differential equations to analyze and solve the engineering, social and other physical models. 5. Link practical application of petroleum engineering with differential equations.
Indicative Contents المحتويات الإرشادية	<p>First order and frst degree equations. The homogeneous diferential equations with constant coefficients. The methods of undetermined coefficients, reduction of order, and</p> <p>variation of parameters. The Cauchy-Euler equation. Series solutions. Systems of linear</p> <p>diferential equations. Applications</p>



Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy for delivering this module is to foster active student engagement and enhance critical thinking skills. This will be accomplished through a combination of interactive classes, engaging tutorials, and hands-on activities. By incorporating simple experiments and sampling activities that capture students' interest, they will be encouraged to actively participate in their learning process, enabling them to develop a deeper understanding of the subject matter.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All



	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	First order and first degree equations
Week 2	Homogeneous differential equations with constant coefficients
Week 3	Methods of undetermined coefficients
Week 4	Reduction of order
Week 5	Variation of parameters
Week 6	Cauchy-Euler equation
Week 7	Series solutions
Week 8	Systems of linear differential equations
Week 9-15	Applications
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	



Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>a. Dennis G. Zill, Warren S Wright, "Differential equations with Boundary-Value Problems", 8th Edition, Cengage Learning, 2012.</p> <p>b. John Warren Dettman," Introduction To Linear Algebra And Differential Equations", Mcgraw-Hill Kogakusha - Tokyo, 1974</p> <p>c. Erwin Kreysizg, "Advanced Engineering Mathematics", ISBN: 9780470458365</p> <p>d. Schaum's Outline Series, "Differential Equations" , ISBN: 0071611622</p>	
Websites		



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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Strength of Materials		Module Delivery
Module Type	S		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1142		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGII	Semester of Delivery	Four
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To teach the students effect of forces on the dynamics of materials
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Understand the fundamental concepts of stress, strain, buckling, geometrical properties and materials properties in tension and compression. 2. Learn the beams and short columns design concepts. 3. Develop and solve problems of the stress on a beam section, circular shafts and short columns due to tension, compression, torsion, bending, shear, combined loading etc.
Indicative Contents المحتويات الإرشادية	<p>Stress; simple stress, shearing stress, bearing stress, thin wall cylinders, strain, stress diagram, Hook law, Poisson's ratio, thermal stress; torsion; torsion formula, flanged bolt;</p> <p>coupling helical springs; shear and bending moments diagrams; analytical and graphical</p> <p>deflection; buckling; special topics.</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	
-------------------	--



	The main strategy for delivering this module is to actively engage students in exercises that promote their participation and enhance critical thinking skills. This will be accomplished through interactive classes, tutorials, and the inclusion of simple experiments and sampling activities that captivate student interest. By adopting this approach, students will have the opportunity to deepen their understanding of the subject matter while actively applying their knowledge in practical contexts.
--	---

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب ل ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All



Total assessment	100% (100 Marks)		
------------------	------------------	--	--

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Stress; simple stress, shearing stress, bearing stress, thin wall cylinders
Week 2	Strain, stress diagram, Hook's Law, Poisson's ratio
Week 3	Thermal stress; torsion; torsion formula
Week 4	Flanged bolt; coupling helical springs
Week 5	Shear and bending moments diagrams
Week 6	Analytical and graphical deflection
Week 7	Mid-Semester Examination (In addition to regular class)
Week 8-15	Buckling; special topics
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	



Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>a. Andrew Pytel, Ferdinand L. Singer, "Strength of Materials", 3rd Edition, Harper and Row, 1998.</p> <p>b. Robert R. Archer , Stephen H. Crandall , Norman C. Dahl," An Introduction To The Mechanics Of Solids", Mcgraw-Hill - New York, 1959.</p> <p>c. R.C.Hibbeler, "Mechanics of Materials", 8th Edition, Prentice Hall, 2011</p>	
Websites		

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	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Transport Phenomena		Module Delivery
Module Type	S		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1143		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGII	Semester of Delivery	Four
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To develop the concepts of fluid mechanics, and their applications
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Understand the basic principles of fluid mechanics and its application on types of flow. 2. Perform a basic analysis of static and dynamic fluid systems. 3. Carry out basic design calculations of fluid engineering systems (pumps, compressors etc.) 4. Apply their understanding and analysis on real-life problems related to equipment.
Indicative Contents المحتويات الإرشادية	Dimensions & units, Process variables, Physical state, Fluid statics, Newtonian and nonnewtonian fluids, Overall mass balance, Overall energy balance, Overall momentum balance, Flow measurements, Flow of incompressible fluids, Friction losses in pipes and fittings and Fluid machinery. Review for fundamentals of fluid mechanics, Navier-Stokes Equation, Flow of compressible fluids, Two-phase flow, Dimensional analysis, Pumps: Types of pumps, performance of pumps.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy for delivering this module is to foster active student participation in exercises, thereby enhancing their critical thinking skills. This will be accomplished through interactive classes, engaging tutorials, and the incorporation of hands-on experiments that involve sampling activities, capturing the students' interest and
-------------------	--



curiosity. By employing these methods, students will be encouraged to actively engage with the subject matter and develop their analytical abilities.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب ل ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		



Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Dimensions & Units, Process Variables, Physical State
Week 2	Fluid Statics: Pressure, Hydrostatic Forces, Buoyancy
Week 3	Newtonian and Non-Newtonian Fluids: Viscosity, Shear Stress, Rheological Behavior
Week 4	Overall Mass Balance: Conservation of Mass, Mass Flow Rate
Week 5	Overall Energy Balance: Conservation of Energy, Bernoulli's Equation
Week 6	Overall Momentum Balance: Conservation of Momentum, Impulse-Momentum Principle
Week 7	Mid-Semester Exam
Week 8	Flow Measurements: Flow Rate Measurement Techniques
Week 9	Flow of Incompressible Fluids: Reynolds Number, Flow Regimes, Laminar and Turbulent Flow
Week 10	Friction Losses in Pipes and Fittings: Pipe Flow Analysis, Loss Coefficients, Pipe Networks
Week 11	Fluid Machinery: Types of Pumps, Pump Performance Parameters
Week 12	Review for Fundamentals of Fluid Mechanics
Week 13	Navier-Stokes Equation: Derivation and Applications
Week 14	Flow of Compressible Fluids: Isentropic Flow, Mach Number, Shock Waves
Week 15	Two-Phase Flow: Flow Patterns, Pressure Drop, Void Fraction
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
--	------------------



Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>a. Bruce R. Munson , Donald F. Young , Theodore H. Okiishi, Wade W. Huebsch “Fundamentals of Fluid Mechanics”, 6th Edition, Wiley, 2010</p> <p>b. Robert Byron Bird, Warren E. Stewart, Edwin N. Lightfoot, “Transport Phenomena”, 2nd Edition, John Wiley & Sons</p>	
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Reservoir Fluid Properties		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1144		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGII	Semester of Delivery	Four
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To study the properties of reservoir fluids.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After studying this course, the learners will be able to: - 1. Understand and explain the reservoir fluid properties and examine its impact in reservoir engineering and production problems. 2. Predict the dependency of reservoir fluid properties on pressure, temperature and composition. 3. Compute reservoir fluid properties using correlations, field production data and lab experiments. 4. Derive and use equation of state for predicting the performance of petroleum reservoirs. 5. Use relevant computer software to study fluid behavior.
Indicative Contents المحتويات الإرشادية	Phase Behaviour of Pure Substance, Phase Behaviour of Multi Component System, Reservoir Fluids Identification, Classification of Reservoirs According to the Phase Diagram to Five Reservoir Fluid Types, Fluid Sampling, PVT Analysis (API, Gas Specific Gravity, Separator Gas Composition, GOR, Constant-Composition Expansion – CCE, Differential Liberation, Constant-Volume Depletion – CVD, Separator Test, FVF of oil, FVF of Gas, Total FVF, Solution Gas Oil Ratio, Coefficient of Isothermal Compressibility, Thermal Expansion, Viscosity Measurements, Compositional Measurements, Special Studies: e.g. Interfacial Tension), Properties of Black Oil, Properties of Dry Gases (Critical Pressure and Temperature, Compressibility Factor-Z factor, Viscosity, Isothermal Compressibility), Equation of State, Properties of Formation Water.

Learning and Teaching Strategies



استراتيجيات التعلم والتعليم

Strategies	The main strategy for delivering this module is to actively engage students in exercises and foster their critical thinking skills. This will be accomplished through interactive classes, tutorials, and hands-on experiments that involve sampling activities relevant to the subject matter. By encouraging student participation and providing an engaging learning environment, we aim to enhance their understanding and application of the course content.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
	Midterm Exam	1hr	10% (10)	7	LO #1 - #7



Summative assessment	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Phase Behaviour of Pure Substance
Week 2	Phase Behaviour of Multi Component System
Week 3	Reservoir Fluids Identification
Week 4	Classification of Reservoirs According to the Phase Diagram to Five Reservoir Fluid Types
Week 5	Fluid Sampling
Week 6	PVT Analysis (API, Gas Specific Gravity, Separator Gas Composition, GOR, Constant-Composition Expansion - CCE, Differential Liberation, Constant-Volume Depletion - CVD, Separator Test, FVF of oil, FVF of Gas, Total FVF, Solution Gas Oil Ratio, Coefficient of Isothermal Compressibility, Thermal Expansion, Viscosity Measurements, Compositional Measurements, Special Studies: e.g. Interfacial Tension)
Week 7	Properties of Black Oil
Week 8	Properties of Dry Gases (Critical Pressure and Temperature, Compressibility Factor-Z factor, Viscosity, Isothermal Compressibility)
Week 9	Equation of State
Week 10	Properties of Formation Water
Week 11	Review and reinforcement of previous topics
Week 12	



Week 13	
Week 14	
Week 15	
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	



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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Drilling Fluids		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1145		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGII	Semester of Delivery	Four
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The objectives of this class are to provide an understanding of drilling fluids and their principal functions in the drilling process, familiarize students with the properties and chemical composition of drilling fluids, introduce the drilling fluid system and its equipment, develop the ability to perform drilling fluid calculations for volumes, quantities, time, pressure, and hydraulic parameters, identify and address drilling problems related to drilling fluids, and enhance the skills necessary for preparing and presenting drilling fluids reports to effectively communicate findings and observations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>By the end of this class, students will be able to:</p> <ol style="list-style-type: none"> 1. Explain the key functions of drilling fluids in the drilling process. 2. Identify and describe the properties of drilling fluids and their significance. 3. Understand the different types of drilling fluids and their chemical compositions. 4. Recognize and analyze the components and equipment of the drilling fluid system. 5. Perform calculations related to drilling fluid volumes, quantities, time, pressure, and hydraulic parameters. 6. Identify and troubleshoot drilling problems associated with drilling fluids. 7. Prepare comprehensive drilling fluids reports, including findings and observations. 8. Communicate effectively and professionally in presenting drilling fluids information and reports.
Indicative Contents المحتويات الإرشادية	This class provides students with a comprehensive understanding of drilling fluids and their role in the drilling process. Through a series of chapters covering topics such as drilling fluids overview, properties, types, system equipment, calculations, problems, and reporting, students will gain the necessary knowledge and skills to work with drilling fluids effectively. The course aims to develop students' ability to analyze drilling fluid-related challenges, make informed decisions, and communicate their findings



	professionally. By the end of the class, students will have a solid foundation in drilling fluids and be prepared to apply their knowledge in practical scenarios.
--	--

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy employed in delivering this class is to foster active student engagement through various exercises, promoting critical thinking skills. This will be accomplished through interactive classes, tutorials, and hands-on experiments that involve practical sampling activities to captivate students' interest. By actively participating in these activities, students will refine their critical thinking abilities and deepen their understanding of the subject matter.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية				
	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome



Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Chapter 1: Drilling Fluids Overview & Principal Functions of Drilling Fluids
Week 2	Chapter 2: Drilling Fluids Properties
Week 3	Chapter 3: Types of Drilling Fluids – Chemical Composition
Week 4	Chapter 4: Drilling Fluid System – Mud System Equipment
Week 5	Chapter 5: Drilling Fluid Calculations - Volumes, Quantities, Time, Pressure, and Hydraulic
Week 6	Chapter 6: Drilling Problems related to Drilling Fluids
Week 7	Mid-semester exam (in addition to class)
Week 8	Chapter 7: Drilling Fluids Reports
Week 9-15	Review and reinforcement of previous chapters, additional practice, and interactive sessions
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)



المناهج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Technical Writing and communication skills		Module Delivery
Module Type	S		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1146		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGII	Semester of Delivery	Four
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى



Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives</p> <p>أهداف المادة الدراسية</p>	<p>The class objectives for the mentioned class contents are to develop research skills for information discovery, improve correspondence skills, enhance explanatory and demonstrative writing skills, master visual communication skills, overcome communication obstacles, improve speaking and listening skills, enhance interpersonal communication skills, strengthen writing skills, understand audience and context, and learn and apply different presentation skills. By achieving these objectives, students will acquire the necessary skills for effective business and professional communication, including research, writing, visual communication, speaking, listening, interpersonal communication, and presentation skills.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. Develop proficient research skills to effectively gather and evaluate information from primary and library sources. 2. Acquire the ability to apply appropriate correspondence skills based on the specific communication context and audience. 3. Enhance explanatory and demonstrative writing skills to effectively disseminate technical information to both technical and non-technical readers. 4. Master visual communication skills to create impactful visual aids and presentations that enhance the understanding of technical information. 5. Overcome obstacles to effective business and professional communication by identifying and addressing common challenges. 6. Improve speaking and listening skills for clear and effective oral communication in professional settings. 7. Enhance interpersonal communication skills and develop self-confidence in interacting with colleagues, clients, and stakeholders. 8. Strengthen writing skills and adhere to the rules of professional English writing for accurate and concise communication. 9. Understand how the audience and context influence the construction and delivery of messages in different professional communication scenarios. 10. Learn and apply various types of presentation skills, including organizing



	<p>content, using visual aids, and delivering engaging presentations.</p> <p>By accomplishing these learning outcomes, students will be equipped with the necessary skills and knowledge to excel in business and professional communication, effectively convey technical information, and engage with diverse audiences in various professional settings.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>In this class, students will develop essential skills in research, correspondence, explanatory writing, visual communication, and presentation. They will overcome obstacles to effective communication, improve speaking and listening abilities, enhance interpersonal skills, and gain confidence in professional interactions. Students will also strengthen their writing proficiency, understand the impact of audience and context, and learn to deliver engaging presentations. By achieving these objectives, students will be well-prepared for successful business and professional communication, equipped to convey technical information effectively, and adapt to diverse communication situations.</p>

<p>Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>	
<p>Strategies</p>	<p>The main strategy for delivering this class is to foster active student participation and enhance critical thinking skills. This will be accomplished through interactive classes, engaging tutorials, and practical exercises that involve hands-on activities and sampling tasks relevant to the subject matter. By emphasizing student engagement and encouraging exploration, this approach aims to facilitate a deeper understanding of the course content and promote the development of critical thinking abilities.</p>

<p>Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا</p>			
<p>Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل</p>	<p>30</p>	<p>Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا</p>	
<p>Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	<p>45</p>	<p>Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا</p>	



Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75
---	-----------

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Research Skills
Week 2	Library Research Techniques
Week 3	Primary Research Methods
Week 4	Generic Conventions in Correspondence
Week 5	Explanatory and Demonstrative Writing



Week 6	Visual Communication Techniques
Week 7	Mid-Semester Assessment
Week 8	Communication Obstacles and Solutions
Week 9	Effective Speaking and Active Listening
Week 10	Interpersonal Communication Skills
Week 11	Building Self-Confidence in Communication
Week 12	Enhancing Writing Proficiency
Week 13	Audience-Centric Message Construction and Delivery
Week 14	Types of Presentation Skill
Week 15	
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Drilling Engineering I		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1151		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	Five
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	Overall, the class aims to provide students with a comprehensive understanding of drilling operations, equipment, problem-solving techniques, and cost analysis. By the end of the course, students should be capable of applying their knowledge to design and execute drilling programs efficiently while utilizing software tools for analysis and optimization.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>The learning outcomes for the mentioned class content are as follows:</p> <ol style="list-style-type: none"> 1. Understand the classification of wells and identify different types of wells used in drilling operations. 2. Comprehend the step-by-step process of drilling a vertical well and gain knowledge of fundamental drilling operations. 3. Familiarize with the components of a land rig, their functions, and the calculations involved in rig selection. 4. Gain knowledge of drilling string components, BHA design, and associated calculations. 5. Identify common drilling problems, apply problem-solving techniques, and understand well control measures and fishing equipment. 6. Understand drilling hydraulics, impact force, torque & drag, and buckling phenomena in drilling operations. 7. Calculate swab and surge pressures, interpret FIT and LOT results, and analyze their impact on drilling operations. 8. Develop the ability to analyze drilling costs, optimize drilling operations, and perform cost estimation and control. 9. Comprehend the components and importance of a drilling program, and effectively communicate drilling reports. 10. Acquire practical skills in using Landmark software for drilling-related tasks and apply it to real case scenarios. 11. Apply critical thinking and problem-solving skills to address challenges encountered in drilling operations. 12. Enhance technical proficiency in drilling operations, including calculations, equipment selection, and optimization.



	<p>13. Foster teamwork and collaboration through practical exercises and software utilization.</p> <p>14. Develop effective communication skills to convey drilling-related information and reports accurately.</p> <p>15. Demonstrate an understanding of safety protocols and risk management practices in drilling operations.</p> <p>By achieving these learning outcomes, students will have a solid foundation in drilling operations, equipment, problem-solving techniques, cost analysis, and the utilization of software tools. They will be prepared to contribute effectively to drilling projects and pursue careers in the oil and gas industry with a comprehensive understanding of drilling processes and best practices.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>This class aims to provide a comprehensive understanding of various aspects related to drilling operations in the oil and gas industry. Students will be introduced to the classification and types of wells, drilling operations for vertical wells, land rig components and selection, drilling string components and BHA design, drilling problems and their solutions, well control fishing equipment, drilling hydraulics, impact force, torque and drag, buckling, swab and surge calculations, FIT and LOT analysis, drilling cost analysis and optimization, drilling program development, and drilling report preparation. The use of Landmark software from Halliburton will offer practical exposure to real-world cases. By actively engaging in class activities, interactive tutorials, and practical exercises, students will develop critical thinking skills and gain a solid foundation in the field of drilling operations.</p>

<p>Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>	
<p>Strategies</p>	<p>The main strategy for delivering this module is to foster active student engagement and enhance their critical thinking abilities. This will be accomplished through a combination of interactive classes, engaging tutorials, and practical exercises that involve hands-on activities and relevant sampling tasks. By incorporating these methods, students will have the opportunity to actively participate in their learning process and develop a deeper understanding of the course content.</p>

<p>Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً</p>	
---	--



Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Well classification & well types



Week 2	Drilling Operations (Vertical well) as a basic case
Week 3	Land Rig Components & Selection (calculations)
Week 4	Drilling String Components & BHA Design (calculations)
Week 5	Drilling Problems and solution, well control fishing equipment
Week 6	Drilling hydraulics, impact force, torque & drag, buckling
Week 7	Swab & surge calculation, FIT, LOT
Week 8	Drilling Cost analysis & Optimization
Week 9	Drilling program and drilling reports
Week 10	Practice & Real Case: Landmark software from Halliburton Co.
Week 11	Practice & Real Case: Landmark software from Halliburton Co.
Week 12	Practice & Real Case: Landmark software from Halliburton Co.
Week 13	Practice & Real Case: Landmark software from Halliburton Co.
Week 14	Practice & Real Case: Landmark software from Halliburton Co.
Week 15	Practice & Real Case: Landmark software from Halliburton Co.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1-14	Practice & Real Case : landmark software from Halliburton Co.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?



Required Texts		
Recommended Texts	TBA	
Websites		

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
<p>Note: Marks 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.</p>				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Reservoir Engineering I		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1152		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	Five
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To introduce the principles of Reservoir Engineering.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>After studying this course, the learners will be able to: -</p> <ol style="list-style-type: none"> 1. Discuss the fundamentals of reservoir engineering. 2. Distinguish between various reservoir flow systems and geometry. 3. Derive and apply different flow equations (Darcy equation, diffusivity equation, frontal advance, etc.). 4. Interpret the hydrocarbon recoveries from reservoirs under derive mechanisms through both volumetric and material balance methods. 5. Quantify well-bore damage, pressure gradient, relative permeability, flowing bottom-hole pressure, gas compressibility and pseudoreduced compressibility from different methods. 6. Understand the concepts of water/gas coning and fingering, its predictions and remedial treatments.
Indicative Contents المحتويات الإرشادية	<p>Introduction to Reservoir Engineering (Types of Reservoirs, Review for Reservoir Rocks</p> <p>Properties, Review for Fluid properties), Concept of Reserve, Classification of Reserves,</p> <p>Estimation of Original Oil and Gas in Place by Volumetric Methods (Undersaturated Reservoirs, Saturated Reservoir with Gas Cap), Recovery Factor, Fluid pressures regimes,</p> <p>Steady State Flow through Porous Media (Types of Fluids and Flow Regimes, Linear Flow of</p> <p>Incompressible Slightly Compressible and Compressible fluids, Radial flow of</p> <p>Incompressible, Slightly Compressible and Compressible Fluids), Unsteady State Flow in</p>



	<p>Porous Media (Linear Flow of Slightly Compressible and Compressible Fluids, Radial Flow of Slightly Compressible and Compressible Fluids), Difusivity Equation, Solutions of Difusivity Equation, Pseudo Steady State Flow.</p>
--	--

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>The main strategy for delivering this module is to encourage students' active participation in exercises while refining and expanding their critical thinking skills. This will be achieved through a combination of classes, interactive tutorials, and engaging experiments involving sampling activities that capture the students' interest.</p> <p>The course begins with an introduction to Reservoir Engineering, covering topics such as the types of reservoirs and a review of reservoir rock and fluid properties. Students will also learn about the concept of reserves and the classification of reserves.</p> <p>The estimation of original oil and gas in place by volumetric methods will be explored, focusing on undersaturated reservoirs and saturated reservoirs with gas caps. The calculation of recovery factors and understanding different fluid pressure regimes will be covered.</p> <p>Steady-state flow through porous media will be discussed, including the types of fluids and flow regimes. Linear flow of incompressible, slightly compressible, and compressible fluids, as well as radial flow, will be examined.</p> <p>The course will also cover unsteady-state flow in porous media, including linear and radial flow of slightly compressible and compressible fluids. Students will learn about the diffusivity equation, its solutions, and the concept of pseudo steady-state flow.</p>
-------------------	--



	Through interactive classes, tutorials, and hands-on experiments, students will be actively engaged in applying the learned concepts, honing their critical thinking skills, and deepening their understanding of reservoir engineering principles. The inclusion of practical experiments and sampling activities will provide students with a tangible and engaging learning experience, enhancing their comprehension and retention of the course material.
--	--

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All



Total assessment	100% (100 Marks)		
-------------------------	------------------	--	--

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Reservoir Engineering: Types of Reservoirs and Review of Reservoir Rocks and Fluid Properties
Week 2	Concept of Reserve
Week 3	Classification of Reserves
Week 4	Estimation of Original Oil and Gas in Place by Volumetric Methods: Undersaturated Reservoirs
Week 5	Estimation of Original Oil and Gas in Place by Volumetric Methods: Saturated Reservoir with Gas Cap
Week 6	Recovery Factor
Week 7	Fluid Pressure Regimes
Week 8	Steady State Flow through Porous Media: Types of Fluids and Flow Regimes
Week 9	Steady State Flow through Porous Media: Linear Flow of Incompressible, Slightly Compressible, and Compressible Fluids
Week 10	Steady State Flow through Porous Media: Radial Flow of Incompressible, Slightly Compressible, and Compressible Fluids
Week 11	Unsteady State Flow in Porous Media: Linear Flow of Slightly Compressible and Compressible Fluids
Week 12	Unsteady State Flow in Porous Media: Radial Flow of Slightly Compressible and Compressible Fluids
Week 13	Diffusivity Equation
Week 14	Solutions of Diffusivity Equation
Week 15	Pseudo Steady State Flow



Week 16	Preparatory week before the final Exam
----------------	---

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>a. Mark P. Walsh and Larry W. Lake, "A Generalized Approach to Primary Hydrocarbon Recovery", Volume 4, Elsevier, 2003.</p> <p>b. Tarek Ahmed, "Reservoir Engineering Handbook", Third Edition, Elsevier, 2006.</p> <p>c. Brian F. Towle, "Fundamental Principles of Reservoir Engineering"</p>	



Websites	
----------	--

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 (فيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Well Logging		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1153		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	Five
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	Learning log interpretation as diagnostic tool in formation evaluation.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Define and describe the basic principles of wireline logging measurements and formation evaluation parameters. 2. Understand the principles and functions of logging tool and design a wireline logging job. 3. Investigate the effects of logging environment on open and cased hole logs and perform required quantitative environmental corrections. 4. Perform Interpretation on well logs to determine the zone of interest(s) and to estimate the hydrocarbon volumes and other formation evaluation parameters in the zone of interest.
Indicative Contents المحتويات الإرشادية	<p>Basic rock properties, petrophysics; SP log; conventional resistivity log, induction log; lateral log, macro resistivity log, sonic log, density log.</p> <p>Neutron log, gamma ray log, TDT log, CBL log and quick method in (HC) detection and Production logs.</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy for delivering this module is to actively engage students in exercises, encouraging their participation and fostering the development of their critical thinking skills. This will be achieved through a combination of interactive classes, engaging tutorials, and the incorporation of simple experiments that involve sampling activities to pique student interest.
-------------------	--



	<p>During classes, students will be encouraged to actively participate in exercises and discussions, allowing for a deeper understanding of the basic rock properties and petrophysics concepts. Interactive tutorials will provide opportunities for students to apply their knowledge, ask questions, and engage in problem-solving activities related to the different types of well logs.</p> <p>To enhance the learning experience, the course will include simple experiments involving sampling activities. These activities will not only make the learning process more enjoyable but also provide students with practical insights and hands-on experience in analyzing and interpreting well log data.</p> <p>By adopting this approach, the course aims to not only provide theoretical knowledge but also develop students' critical thinking abilities, problem-solving skills, and their ability to apply concepts to real-world scenarios. The combination of interactive classes, tutorials, and engaging experiments will create a dynamic learning environment that encourages active participation and a comprehensive understanding of the course content.</p>
--	---

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11



Formative assessment	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Basic Rock Properties and Petrophysics
Week 2	SP Log
Week 3	Conventional Resistivity Log
Week 4	Induction Log
Week 5	Lateral Log
Week 6	Macro Resistivity Log
Week 7	Sonic Log
Week 8	Density Log
Week 9	Neutron Log
Week 10	Gamma Ray Log
Week 11	TDT Log
Week 12	CBL Log
Week 13	Quick Method in Hydrocarbon Detection



Week 14	Production Logs
Week 15	Week for preparation and review of the course material
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>a. Bassiouni, Z., "Theory, Measurement, and Interpretation of Well Logs", SPE Textbook Series Vol. 4, Society of Petroleum Engineers Richardson Texas, 1994.</p> <p>b. Rider, M., "The Geological Interpretation of Well Logs", 2nd Edition, Whittles Publishing, 2000.</p> <p>c. George Asquith and Daniel Krygowski, "Basic Well Log</p>	



	<p>Analysis”,ISBN: 0891816674 d. O. Serra, “Fundamental of Well Log Interpretations:1 The acquisition of Logging data”, ISBN: 044455341X.</p> <p>e. Zaki Bassiouni, “Theory, Measurement and Interpretation of Well Logs”,ISBN: 1555630561.</p>	
Websites		

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: Marks 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.				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Numerical Methods		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1154		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	Five
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To teach numerical techniques for solving non-linear equations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After studying this course, the learners will be able to: - <ol style="list-style-type: none"> 1. Understand the basics of elementary function and their applications. 2. Describe the difference between numerical and analytical methods and solutions. 3. Identify main sources of errors and take steps to eliminate or reduce the impact of errors 4. Apply numerical methods to solve petroleum engineering problems.
Indicative Contents المحتويات الإرشادية	<ol style="list-style-type: none"> 1. Approximation and Errors <ol style="list-style-type: none"> a. Accuracy, b. Truncation, c. Taylor series and bracketing methods 2. Linear Equations <ol style="list-style-type: none"> a. Gauss elimination, b. Eigen Values. 3. Non-Linear Equations <ol style="list-style-type: none"> a. Bisection method, b. iteration, c. secant method, d. Newton-Raphson method, e. System of Nonlinear Equations and, f. Convergence etc 4. Numerical Differentiation and Integration <ol style="list-style-type: none"> a. Accuracy of derivatives, b. Newton-Cotes Integration Formulae, c. Integration for multiple and improper integrals. 5. Interpolation and Curve Fitting Methods <ol style="list-style-type: none"> a. Binary Search, b. approximation,



	c. Lagrange polynomials, d. Inverse type, e. Least Squares and, f. Orthogonal Polynomials including rational and spline function.
--	--

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy for delivering this module is to foster active student engagement in exercises and promote the development of critical thinking skills. This will be accomplished through interactive classes, engaging tutorials, and the incorporation of hands-on experiments and sampling activities that captivate the students' interest. By employing these approaches, students will have the opportunity to apply their knowledge and enhance their understanding of the course material.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11



Formative assessment	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Week 1: Approximation and Errors: Accuracy, Truncation
Week 2	Week 2: Approximation and Errors: Taylor series and bracketing methods
Week 3	Week 3: Linear Equations: Gauss elimination
Week 4	Week 4: Linear Equations: Eigen Values
Week 5	Week 5: Non-Linear Equations: Bisection method
Week 6	Week 6: Non-Linear Equations: Iteration
Week 7	Week 7: Mid-Semester Exam
Week 8	Week 8: Non-Linear Equations: Secant method
Week 9	Week 9: Non-Linear Equations: Newton-Raphson method
Week 10	Week 10: Non-Linear Equations: System of Nonlinear Equations, Convergence
Week 11	Week 11: Numerical Differentiation and Integration: Accuracy of derivatives
Week 12	Week 12: Numerical Differentiation and Integration: Newton-Cotes Integration Formulae
Week 13	Week 13: Numerical Differentiation and Integration: Integration for multiple and improper integrals



Week 14	Week 14: Interpolation and Curve Fitting Methods: Binary Search, Approximation
Week 15	Week 15: Interpolation and Curve Fitting Methods: Lagrange polynomials, Inverse type, Least Squares, Orthogonal Polynomials (including rational and spline function)
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1-14	Lab part of the course will include Mathematica 11, or Matlab 2016. The introductory programming with course work related to the course outline shall be carried out.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>a. C. Woodford, C. Phillips. "Numerical Methods with Worked Examples: Matlab Edition", Springer Science and Business Media</p> <p>b. Steven T. Karris. "Numerical Analysis Using MATLAB and Excel", Orchard Publications</p> <p>c. Steven C. Chapra, Raymond P. Canale. "Numerical methods for engineers", McGraw-Hill Higher Education</p> <p>d. Timothy Sauer. "Numerical analysis", Pearson Education</p> <p>e. Stephen Wolfram. "An elementary introduction to the wolfram language", Wolfram Media, Incorporated.</p>	
Websites		



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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Petroleum Data Analytics		Module Delivery
Module Type	S		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1155		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGIII	Semester of Delivery	Five
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives</p> <p>أهداف المادة الدراسية</p>	<p>The main objectives of the class "Introduction to Elementary Probability Theory and its Applications in Engineering and Sciences" are as follows:</p> <ol style="list-style-type: none"> 1. Understand the fundamental concepts of probability theory and its relevance in engineering and sciences. 2. Develop knowledge and proficiency in analyzing discrete and continuous probability distributions. 3. Learn techniques for parameter estimation in probabilistic models. 4. Gain an understanding of hypothesis testing and its application in earth sciences and engineering. 5. Apply probability theory to real-world engineering and scientific problems, enhancing problem-solving skills. 6. Develop critical thinking and analytical reasoning abilities through the application of probability theory. 7. Gain practical skills in utilizing probability theory for decision-making in engineering and scientific contexts. 8. Develop a strong foundation in probability theory as a basis for further study in advanced engineering and scientific fields. <p>By achieving these objectives, students will be equipped with the necessary knowledge and skills to apply probability theory effectively in various engineering and scientific applications.</p>
<p>Module Learning Outcomes</p>	<p>Upon completion of the class, students will be able to:</p> <ol style="list-style-type: none"> 1. Understand the fundamental concepts of probability theory and its significance in petroleum engineering applications. 2. Apply probability theory to analyze and solve problems specific to the



<p>مخرجات التعلم للمادة الدراسية</p>	<p>petroleum engineering field, such as reservoir modeling, production forecasting, and risk assessment.</p> <ol style="list-style-type: none"> 3. Differentiate between discrete and continuous probability distributions and select appropriate distributions for modeling uncertainties in petroleum engineering. 4. Utilize statistical techniques to estimate parameters of probability distributions for reservoir characterization and production data analysis. 5. Perform hypothesis testing in the context of petroleum engineering to make informed decisions regarding reservoir behavior and production performance. 6. Apply probability theory to assess uncertainty and risk in petroleum engineering projects, including reserve estimation and economic evaluations. 7. Demonstrate proficiency in utilizing probability models and distributions to simulate and optimize petroleum engineering processes and operations. 8. Develop critical thinking skills to evaluate the reliability and uncertainty associated with petroleum engineering data and interpretations using probability theory. 9. Communicate effectively about probability-related concepts, analysis results, and findings in written reports and oral presentations specific to petroleum engineering applications. 10. Recognize the applications and limitations of probability theory in various areas of petroleum engineering, such as reservoir management, production optimization, and decision-making under uncertainty. <p>By achieving these learning outcomes, petroleum engineering students will have a solid foundation in elementary probability theory and its practical applications, equipping them with the necessary skills to tackle uncertainties and make informed decisions in the petroleum industry.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Introduction to elementary probability theory and its applications in engineering and sciences; discrete and continuous probability distributions; parameter estimation; hypothesis earth sciences and engineering.</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<p>Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes,</p>
--------------------------	---



	interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.
--	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		



Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Definition of Statistics
Week 2	Univariate Statistical Analysis
Week 3	Statistical data representation
Week 4	Types of data distribution
Week 5	Cumulative Probability Function
Week 6	Bivariate Statistical Analysis
Week 7	Introduction to Multivariate Statistical Analysis
Week 8	Regression Analysis (statistical modeling)
Week 9	Statistical validation tools
Week 10	Modeling and prediction
Week 11	Applications of R
Week 12	Recap and problem-solving exercises
Week 13	Final exam preparation and course summary
Week 14	Preparation for final exams (no regular class)
Week 15	
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
--	------------------



Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>Title: "Introduction to Statistical Learning: with Applications in R"</p> <p>Authors: Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani</p> <p>Publisher: Springer</p> <p>ISBN: 978-1461471370</p>	
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Oil and gas engineering electives		Module Delivery
Module Type	E		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1156		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGIII	Semester of Delivery	Five
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.</p>
-------------------	---



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	44	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction - Difference between Circuit Theory and Field Theory
Week 2	Basics of Network Elements
Week 3	Resistance and Resistivity, Ohm's Law and Inductance, Capacitance
Week 4	Review of Kirchhoff's Laws, Circuit Analysis - Nodal and Mesh
Week 5	Linearity and Superposition, Source Transformations, Thévenin and Norton Equivalents
Week 6	Review of Inductor and Capacitor as Circuit Elements, Source-free RL and RC Circuits, Transient Response
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Sinusoidal Forcing, Complex Forcing, Phasors, and Complex Impedance, Sinusoidal Steady State Response
Week 9	Nodal and Mesh Revisited, Average Power, RMS, Introduction to Polyphase Circuits
Week 10	Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance
Week 11	Frequency Response of Series/Parallel Resonances, High-Q Circuits
Week 12	Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots
Week 13	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 14	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 15	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE



Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Drilling Engineering II		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1161		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	Six
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives</p> <p>أهداف المادة الدراسية</p>	<p>The overall objectives of this class are to provide students with a comprehensive understanding of well design and casing considerations in the oil and gas industry. Through the exploration of various topics, including data gathering, well profile and casing design, casing landing methods and calculations, casing metallurgy selection, well stability, safety factor and design factor determination methods, temperature effects on HPHT wells, annular pressure buildup, wellhead movements, casing parting or buckling, cost analysis, and optimization, students will gain the necessary knowledge and skills to design and optimize well structures. The utilization of Landmark software from Halliburton will allow students to apply their learning to real-world cases, enhancing their practical expertise in well design and casing selection. By the end of the course, students will be equipped with the ability to analyze and make informed decisions regarding well design, casing selection, and optimization, taking into account factors such as data, safety, stability, and cost.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Upon completion of this class, students will be able to:</p> <ol style="list-style-type: none"> 1. Understand the importance of data gathering and its relevance to well design and casing selection. 2. Analyze and apply casing landing methods and calculations to ensure proper well construction. 3. Evaluate casing metallurgy options and consider factors such as SSC resistance in casing selection. 4. Assess well stability issues and implement appropriate measures to mitigate risks. 5. Determine safety factors and design factors using relevant methodologies for reliable well design. 6. Comprehend the effects of temperature on HPHT wells, including annular pressure buildup, wellhead movements, and potential casing parting or buckling. 7. Perform cost analysis and optimization techniques to make informed decisions regarding well design, casing selection, and design factors. 8. Utilize Landmark software from Halliburton to analyze and solve real-world



	<p>well design and casing-related problems.</p> <p>9. Apply the learned knowledge and skills to develop comprehensive drilling programs and accurate drilling reports.</p> <p>10. Demonstrate critical thinking, problem-solving, and decision-making abilities in the context of well design and casing selection.</p> <p>By achieving these learning outcomes, students will be well-prepared to handle the challenges and complexities associated with well design and casing considerations in the oil and gas industry.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>In this class, students will gain a comprehensive understanding of the key aspects involved in well design and casing selection. They will learn about data gathering techniques, casing landing methods, casing metallurgy selection, and factors affecting well stability. The course will cover safety factor determination, temperature effects on HPHT wells, cost analysis, and optimization related to well design. Students will also have the opportunity to practice their skills using industry-leading software. By the end of the class, students will have the knowledge and skills necessary to make informed decisions in well design, casing selection, and optimize drilling operations.</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<p>The main strategy for delivering this module is to foster active student engagement and enhance their critical thinking abilities. This will be accomplished through a combination of interactive classes, engaging tutorials, and hands-on activities that involve practical experiments and sampling. By encouraging student participation and providing opportunities for exploration and analysis, this teaching approach aims to deepen their understanding of well design and casing selection concepts. Additionally, the use of interactive sessions and real-world examples will help students connect theoretical knowledge with practical applications, enabling them to develop essential problem-solving and decision-making skills in the field of drilling engineering.</p>
--------------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<p>Structured SWL (h/sem)</p>	<p>86</p>	<p>Structured SWL (h/w)</p>	
--------------------------------------	-----------	------------------------------------	--



الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Data Gathering, Well Profile & Casing Design
Week 2	Casing Landing Methods & Calculations



Week 3	Casing Metallurgy Selection, SSC Resistance
Week 4	Well Stability
Week 5	Safety Factor & Design Factor Determination
Week 6	Temperature Effects on HPHT Wells, Annular Pressure Buildup, Wellhead Movements, Casing Parting or Buckling
Week 7	Cost Analysis & Optimization in Well Design
Week 8	Practice & Real Case (Landmark Software)
Week 9	Review and Revision
Week 10	Mid-Semester Assessment
Week 11	Practice & Real Case Continuation
Week 12	Review and Discussion
Week 13	Final Exam Preparation
Week 14	Exam Week
Week 15	Preparation Week
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المناهج الاسبوعي للمختبر

	Material Covered
Week 1-14	Practice & Real Case: landmark software from Halliburton Co.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?



Required Texts		
Recommended Texts	TBA	
Websites		

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
<p>Note: Marks 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.</p>				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Reservoir Engineering II		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1162		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	Six
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Study of advanced concepts of Reservoir Engineering.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>After studying this course, the learners will be able to: -</p> <ol style="list-style-type: none"> 1. Describe the basics of Gas reservoir engineering terminologies. 2. Compute the recoveries from a natural gas reservoir through volumetric and material balance methods for closed and water influx reservoir. 3. Understand the fundamentals of gas-condensate reservoir and apply different techniques to estimate its reserves. 4. Estimate formation evaluation parameters for gas and gas condensate reservoirs through well testing. 5. Use relevant software for analysis and estimation
Indicative Contents المحتويات الإرشادية	<p>Performance of Reservoirs under Different Types Drive Mechanisms, Material Balance</p> <p>Equations, MBE, (General MBE Derivation, Basic assumptions in MBE, Volumetric MBE for Undersaturated Reservoirs and Saturated Reservoirs, Reservoir Drive Indices, MBE</p> <p>for Gas Reservoirs, Models Used to Estimate Water Influx (Steady State, Pseudo-Steady</p> <p>State, and Unsteady State Models, Edge Water Drive and Bottom Water Drive), Decline</p> <p>Curve Analysis (Introduction: Forms of Production Data, Exponential Decline, Hyperbolic</p> <p>Decline, Harmonic Decline, Determination of Type of Decline), Displacement Mechanisms,</p> <p>Sweep Efficiency, Immiscible Displacement (Fractional Flow Theory), Displacement in</p>



	Stratified Reservoirs, Miscible Displacement
--	--

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>The main strategy for delivering this module is to foster active student participation, while simultaneously enhancing their critical thinking skills. To achieve this, the course will utilize a combination of interactive classes, engaging tutorials, and hands-on experiments that involve sampling activities.</p> <p>During classes, students will be encouraged to actively participate in exercises and discussions, allowing for a deeper understanding of the topics covered. Interactive tutorials will provide opportunities for students to apply their knowledge, ask questions, and engage in problem-solving activities. These interactive sessions will serve to reinforce the concepts learned in class and promote a deeper comprehension of the material.</p> <p>Additionally, the course will incorporate various types of simple experiments that involve sampling activities. These activities will not only make the learning process more enjoyable but also provide students with practical insights and hands-on experience in analyzing reservoir performance.</p> <p>By adopting this approach, the course aims to develop students' critical thinking abilities, problem-solving skills, and their ability to apply theoretical concepts to real-world scenarios. The combination of interactive classes, tutorials, and engaging experiments will create an engaging learning environment that encourages active participation and a comprehensive understanding of the course content.</p>

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem)	58	Structured SWL (h/w)	



الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Performance of Reservoirs under Different Types of Drive Mechanisms
Week 2	Material Balance Equations (MBE): General MBE Derivation and Basic Assumptions



Week 3	Material Balance Equations (MBE): Volumetric MBE for Undersaturated Reservoirs
Week 4	Material Balance Equations (MBE): Volumetric MBE for Saturated Reservoirs
Week 5	Material Balance Equations (MBE): Reservoir Drive Indices
Week 6	Material Balance Equations (MBE): MBE for Gas Reservoirs
Week 7	Models Used to Estimate Water Influx: Steady State, Pseudo-Steady State, and Unsteady State Models
Week 8	Models Used to Estimate Water Influx: Edge Water Drive and Bottom Water Drive
Week 9	Decline Curve Analysis: Introduction and Forms of Production Data
Week 10	Decline Curve Analysis: Exponential Decline
Week 11	Decline Curve Analysis: Hyperbolic Decline
Week 12	Decline Curve Analysis: Harmonic Decline and Determination of Type of Decline
Week 13	Displacement Mechanisms and Sweep Efficiency
Week 14	Immiscible Displacement: Fractional Flow Theory
Week 15	Displacement in Stratified Reservoirs
Week 16	Miscible Displacement

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	



Week 6	
Week 7	

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>a. Chi U. Ikoiku, "Natural Gas Production Engineering", ISBN: 0894646397.</p> <p>b. Dale Beggs, "Gas Production Operations", ASIN: B001078FVY.</p> <p>c. David A. T. Donohue, "Gas Well testing: theory, practice and regulation", ISBN: 9780934634106</p> <p>d. Amanat Chaudhry, "Oil Well Testing Handbook", ISBN: 0750677066.</p> <p>e. W. John Lee, "Gas Reservoir Engineering", ISBN: 1555630731.</p>	
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Production Engineering		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1163		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	Six
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The objective of this class is to develop an understanding of reservoir behavior, productivity assessment, pressure drop calculations, and completion and workover operations in order to optimize well performance and design effective completion systems for various reservoir types and flow conditions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Understand the different types of reservoirs and their radial flow characteristics, and apply appropriate mathematical and physical principles to analyze pressure drop and flow patterns. 2. Gain proficiency in assessing reservoir productivity through the interpretation of inflow performance relationships (IPR) and outflow performance relationships. 3. Develop skills in using various methods and techniques, such as Vogel, Standing, Couto, Fetkovich, Al-Saadoon, for productivity index calculations and well performance analysis. 4. Acquire knowledge of completion and workover operations, including completion design, tubing design, subsurface equipment, and selection of completion fluids. 5. Gain understanding of sand control techniques, perforating methods, and remedial cementing for maintaining well integrity and enhancing production. 6. Explore the principles and applications of horizontal well completion technology. 7. Apply problem-solving and critical thinking skills to optimize well performance and make informed decisions regarding completion and workover operations. 8. Develop effective communication skills through technical discussions, presentations, and reports related to reservoir behavior and completion practices. 9. Understand the importance of safety protocols and environmental considerations in completion and workover operations. 10. Apply theoretical knowledge and practical skills in real-world scenarios through hands-on exercises, simulations, and case studies.



<p>Indicative Contents المحتويات الإرشادية</p>	<p>Types of reservoirs and radial flow in the reservoirs, productivity index, inflow performance relationship (IPR), Outflow performance relationship, effect of stratification and water cut on IPR, productivity index test, Vogel method, Standing method, Couto method, Fetkovich method, Al-Saadoon method, mathematical and physical principles for pressure drop calculations, flow pattern and its relation with pressure drop, Poettmann and Carpenter method, Dukler method, working charts, analysis of choke performance, prediction of restricted and unrestricted production, effect of other parameters on well performance,</p> <p>Study of the fundamentals and applications of completion and work over operations including various completion designs, reservoir and mechanical considerations, basic tubing design, subsurface equipment, completion and work over fluids, perforating, sand control and remedial cementing. Horizontal well completion technology</p>
---	---

<p>Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>	
<p>Strategies</p>	<p>The main strategy for delivering this module is to actively engage students in practical exercises, fostering critical thinking and problem-solving skills. This will be achieved through interactive classes, hands-on tutorials, and the integration of relevant experiments and case studies to create an engaging learning experience.</p>

<p>Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا</p>			
<p>Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل</p>	58	<p>Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا</p>	
<p>Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	92	<p>Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا</p>	
<p>Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل</p>	150		



Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Types of reservoirs and radial flow in the reservoirs
Week 2	Productivity index, inflow performance relationship (IPR)
Week 3	Outflow performance relationship, effect of stratification and water cut on IPR
Week 4	Productivity index test, Vogel method, Standing method, Couto method, Fetkovich method, Al-Saadoon method
Week 5	Mathematical and physical principles for pressure drop calculations, flow pattern and its relation with pressure drop
Week 6	Poettmann and Carpenter method, Dukler method, working charts



Week 7	Analysis of choke performance, prediction of restricted and unrestricted production, effect of other parameters on well performance
Week 8	Fundamentals and applications of completion and work over operations
Week 9	Reservoir and mechanical considerations, basic tubing design, subsurface equipment
Week 10	Completion and work over fluids, perforating, sand control and remedial cementing
Week 11	Horizontal well completion technology
Week 12-15	Applications
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?



Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Reservoir Characterization		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1164		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	Six
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives أهداف المادة الدراسية</p>	<p>The objective of the subject is to provide petroleum engineering students with a comprehensive understanding of petroleum reservoir description and characterization. By the end of the course, students should be able to:</p> <ul style="list-style-type: none"> • Demonstrate a solid understanding of the general principles and techniques used in petroleum reservoir description. • Apply geostatistical methods for analyzing and interpreting subsurface data from geological and engineering sources. • Evaluate reservoir heterogeneity and its impact on fluid flow and reservoir performance. • Define and analyze flow units to identify key reservoir zones and their characteristics. • Utilize statistical zonation techniques to partition reservoirs into meaningful subdivisions. • Estimate reserves using Monte Carlo simulation and understand the associated uncertainties. • Understand the concept of history matching and its role in validating reservoir models. • Apply history matching techniques to adjust reservoir model parameters and improve model accuracy. • Develop critical thinking and problem-solving skills in the context of reservoir characterization and evaluation. <p>Overall, the objective is to equip students with the knowledge and skills necessary to effectively describe, analyze, and evaluate petroleum reservoirs, enabling them to make informed decisions in the field of petroleum engineering.</p>
---	--



<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>The learning outcomes for the given class content are as follows:</p> <ol style="list-style-type: none"> 1. Understand the general principles and techniques of petroleum reservoir description. 2. Gain knowledge and skills in geostatistics and its application in reservoir characterization. 3. Analyze and interpret subsurface data from geological and engineering sources. 4. Learn about reservoir heterogeneity and its impact on fluid flow and reservoir performance. 5. Understand the concept of flow units and their significance in reservoir characterization. 6. Acquire proficiency in statistical zonation techniques for subdividing reservoirs. 7. Develop skills in reserve estimation using Monte Carlo simulation. 8. Learn the concept of history matching and its role in validating reservoir models. 9. Apply history matching techniques to adjust reservoir model parameters. 10. Enhance critical thinking abilities and problem-solving skills in the context of reservoir characterization and evaluation. <p>Overall, the class aims to provide petroleum engineering students with a solid foundation in reservoir characterization principles, geostatistics, data analysis, reservoir heterogeneity, flow units, reserve estimation, and history matching. By achieving these learning outcomes, students will be equipped with the necessary knowledge and skills to effectively analyze and describe petroleum reservoirs.</p>
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<p>General Principles & Techniques of Petroleum Reservoir Description, Introduction to Geostatistics (Experiment, Sample Space, Event, Probability, Probability Laws, Univariate Data Analysis, Estimation, Ordinary Kriging Technique, Semivariogram, Kriging Variance, Multivariate Data Analysis), Subsurface Data from Geological and Engineering Sources (Data Reconciliation, Integrating Data from Reports of Routine Core Analysis, SCAL, Logs and Well Testing, Permeability-Porosity Correlation, Averaging Permeability Data, Determination of Permeability Cutoffs, Analyzing Relative Permeability Data, Determination of the Average Relative-Permeability, Methods of Determining Connate Water Saturation, Determination of the Average Capillary-Pressure, Wettability Measurements, Pay Thickness and Fluid Contacts, Net Pay Cutoffs, Data of PVT Reports), Reservoir Heterogeneity (Microscopic Heterogeneity, Macroscopic Heterogeneity, Megascopic Heterogeneity, Gegascopic Heterogeneity, Vertical-to-Horizontal Permeability Ratio, Anisotropy Index, Dykstra-Parsons Coefficient), Concept of Flow Units (Reservoir Quality Index, Flow Zone Indicator, Free Fluid Index), Statistical Zonation Technique, Reserve</p>



	Estimation by Monte Carlo Simulation. Testing Validity of the Reservoir Model by History Matching (Performance Data to Be Matched, General Strategy for History Matching, Judging the Acceptability of a Model, Parameters that can Be Changed to Match History, Examples of Adjustments Required in History Matching, Concept of Automatic History Matching).
--	--

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy in delivering this module is to foster active student participation and enhance their critical thinking skills. This will be accomplished through a combination of interactive classes, engaging tutorials, and hands-on experiments that involve practical sampling activities. By encouraging students to actively engage with the course material, we aim to deepen their understanding of petroleum reservoir description and characterization. Through collaborative exercises and discussions, students will have opportunities to apply their knowledge, analyze real-world scenarios, and develop their problem-solving abilities. The incorporation of interactive elements and practical experiments will make the learning process more engaging and enjoyable for the students, promoting a deeper understanding and retention of the subject matter.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		



Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	General principles & techniques of petroleum reservoir description
Week 2	Introduction to geostatistics and probability concepts
Week 3	Univariate data analysis and estimation techniques
Week 4	Ordinary kriging technique and semivariogram analysis
Week 5	Multivariate data analysis and integrating subsurface data sources
Week 6	Analyzing permeability-porosity correlation and averaging permeability data
Week 7	Relative permeability analysis and determination of average values
Week 8	Methods for determining connate water saturation and capillary pressure



Week 9	Wettability measurements and analysis of pay thickness
Week 10	Reservoir heterogeneity and anisotropy index
Week 11	Concept of flow units and statistical zonation technique
Week 12	Reserve estimation using Monte Carlo simulation
Week 13	History matching and testing the validity of reservoir models
Week 14	Recap and problem-solving exercises
Week 15	Final exam preparation and course summary
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?



Required Texts		
Recommended Texts	Title: "Principles of Applied Reservoir Simulation" Author: John R. Fanchi Publisher: Gulf Professional Publishing ISBN: 978-0123838463	
Websites		

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: Marks 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.				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Oil and gas engineering electives		Module Delivery
Module Type	E		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1165		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	Six
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction - Difference between Circuit Theory and Field Theory
Week 2	Basics of Network Elements
Week 3	Resistance and Resistivity, Ohm's Law and Inductance, Capacitance
Week 4	Review of Kirchhoff's Laws, Circuit Analysis - Nodal and Mesh
Week 5	Linearity and Superposition, Source Transformations, Thévenin and Norton Equivalents
Week 6	Review of Inductor and Capacitor as Circuit Elements, Source-free RL and RC Circuits, Transient Response
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Sinusoidal Forcing, Complex Forcing, Phasors, and Complex Impedance, Sinusoidal Steady State Response
Week 9	Nodal and Mesh Revisited, Average Power, RMS, Introduction to Polyphase Circuits
Week 10	Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance
Week 11	Frequency Response of Series/Parallel Resonances, High-Q Circuits
Week 12	Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots
Week 13	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 14	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 15	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE



Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Oil and gas engineering electives		Module Delivery
Module Type	E		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1166		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGIII	Semester of Delivery	Six
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	20	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction - Difference between Circuit Theory and Field Theory
Week 2	Basics of Network Elements
Week 3	Resistance and Resistivity, Ohm's Law and Inductance, Capacitance
Week 4	Review of Kirchhoff's Laws, Circuit Analysis - Nodal and Mesh
Week 5	Linearity and Superposition, Source Transformations, Thévenin and Norton Equivalents
Week 6	Review of Inductor and Capacitor as Circuit Elements, Source-free RL and RC Circuits, Transient Response
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Sinusoidal Forcing, Complex Forcing, Phasors, and Complex Impedance, Sinusoidal Steady State Response
Week 9	Nodal and Mesh Revisited, Average Power, RMS, Introduction to Polyphase Circuits
Week 10	Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance
Week 11	Frequency Response of Series/Parallel Resonances, High-Q Circuits
Week 12	Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots
Week 13	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 14	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 15	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE



Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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



<p>Note: Marks 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.</p>				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Project I & II		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1171 & WUC1181		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGIV	Semester of Delivery	Seven
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To create research abilities in student through research work.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>After studying this course, the learners will be able to: -</p> <ol style="list-style-type: none"> 1. Design a complete project includes; identification, analysis, preparation of methodology, execution, and consideration of alternative options both technically and economically feasible. 2. Integrate various components of petroleum engineering with possible application of computer techniques. 3. Enable students to comprehend technical contents. 4. Develop skills in oral and written communication. 5. Interact with other students to practice teamwork and communication skills.
Indicative Contents المحتويات الإرشادية	<p>Course includes a proposal, literature review and methodology at a multi-disciplinary design that integrates fundamentals and design concepts in geological, geophysical, and petroleum engineering.</p> <p>Students work in integrated teams from each of the disciplines. Open-ended design problems are assigned including the development of a prospect in an exploration play and a detailed engineering field study.</p> <p>Detailed reports are required for the prospect evaluation and engineering field study.</p>



--	--

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>The main strategy for delivering this course is to foster active student participation and enhance their critical thinking skills. This will be achieved through a combination of classes, interactive tutorials, and hands-on activities that involve sampling and experimentation. By encouraging students to actively participate in exercises and discussions, we aim to refine and expand their critical thinking abilities.</p> <p>This course focuses on a multi-disciplinary approach that integrates fundamentals and design concepts from geological, geophysical, and petroleum engineering. Students will work in integrated teams, bringing together their knowledge and expertise from each discipline. Open-ended design problems will be assigned, challenging students to develop a prospect in an exploration play and conduct a detailed engineering field study.</p> <p>Throughout the course, students will be required to complete a proposal, literature review, and methodology for their project. Additionally, they will be expected to prepare detailed reports for the prospect evaluation and engineering field study. These reports will serve as comprehensive documentation of their work and provide opportunities for students to demonstrate their understanding and application of the course material.</p> <p>By engaging in this course, students will not only gain a deeper understanding of the principles and concepts in geological, geophysical, and petroleum engineering but also develop essential skills in teamwork, problem-solving, and report writing. The integration of multiple disciplines and the completion of real-world design projects will provide students with valuable hands-on experience and prepare them for future professional endeavors.</p>
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا



Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	



Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	



Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Nil	
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Geostatistical Modelling		Module Delivery
Module Type	E		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1172		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIV	Semester of Delivery	Seven
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives</p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1. Give students the opportunity to acquire important statistical knowledge that can ^[1]_{SEP} be used to analyze spatial petrophysical estimation and modeling. 2. Make the students aware with the common workflow of incorporating Geostatistics in the overall reservoir characterization. ^[1]_{SEP} 3. Students will get the opportunity to be familiar with Petrel Software.
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>The learning outcomes for the described class content can be summarized as follows:</p> <ol style="list-style-type: none"> 1. Understand the concept of spatial statistics and its importance in analyzing and interpreting spatial data. 2. Gain proficiency in variogram modeling and its role in quantifying spatial variability and correlation. 3. Learn about covariograms and correlograms as tools to analyze the spatial correlation between variables. 4. Develop an understanding of reservoir heterogeneity and its impact on spatial data analysis. 5. Recognize the concepts of isotropy and anisotropy and their significance in spatial statistics. 6. Acquire knowledge and skills in spatial prediction techniques such as nearest neighbor and inverse distance interpolation. 7. Master different kriging methods, including ordinary kriging, simple kriging, universal kriging, co-kriging, block kriging, and Bayesian kriging. 8. Gain practical experience in conducting spatial simulations and understanding their applications. 9. Learn cross-validation techniques to assess the accuracy and reliability of spatial predictions. 10. Develop proficiency in using the Petrel Software for analyzing real reservoir-petrophysical spatial data, including data visualization, interpolation, kriging, and simulation.



	By the end of the course, students will have a solid foundation in spatial statistics principles and techniques, enabling them to effectively analyze and interpret spatial data in the context of reservoir engineering and petrophysics. They will also have gained hands-on experience using industry-standard software for spatial data analysis and visualization.
Indicative Contents المحتويات الإرشادية	Geostatistics or petrophysical property spatial statistics is one of the fastest growing areas of statistics and has essential preliminary step in reservoir characterization and reservoir simulation. It mainly concerns modelling the data into 2D or 3D spatial surfaced distribution. The Geostatistics can be applied to track many problems in other disciplines such as hydrology, geography, water resources, waste management, forestry, oceanography, meteorology, agriculture, weather forecast, etc., and in general to every problem where data are observed at geographic locations. [SEP]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to engage students actively in the learning process, fostering their participation and enhancing their critical thinking skills. This will be accomplished through a combination of interactive lectures, tutorials, and practical exercises that involve hands-on experience with spatial data analysis. Students will have the opportunity to work with real reservoir-petrophysical spatial data using the Petrel Software, allowing them to apply the concepts learned in class to real-world scenarios. Additionally, various sampling activities and experiments will be incorporated to make the learning experience more engaging and relevant to the students' interests. Through these activities, students will develop a deeper understanding of spatial statistics and its application in reservoir engineering, while honing their analytical and problem-solving abilities.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	72	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem)	78	Unstructured SWL (h/w)	



الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
الحمل الدراسي غير المنتظم للطلاب خلال الفصل	
Total SWL (h/sem)	150
الحمل الدراسي الكلي للطلاب خلال الفصل	

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction about spatial statistics
Week 2	Variogram modeling
Week 3	Covariogram & Correlogram
Week 4	Reservoir Heterogeneity



Week 5	Isotropy, anisotropy
Week 6	Spatial prediction: Nearest Neighbor and Inverse Distance interpolation
Week 7	Kriging: ordinary kriging, simple kriging, universal kriging, co-kriging, block kriging, and Bayesian Kriging
Week 8	Simulations
Week 9	Cross-validation
Week 10	Extensive use of the Petrel Software to analyze real reservoir-petrophysical spatial data
Week 11	Recap and problem-solving exercises
Week 12	Mid-semester examination (Week 7)
Week 13	Advanced applications and case studies
Week 14	Review and practice sessions
Week 15	Final exam preparation and course summary
Week 16	Preparation for final exams (no regular class)

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>1. Bivand, R. S., Pebesma, E. J., Gomez-Rubio, V., & Pebesma, E. J. (2008). Applied spatial data analysis with R (Vol. 747248717). New York: Springer. [SEP]</p> <p>2. Journel, A. G. (1989) Fundamentals of geostatistics in five lessons. In Short Course in Geology, Vol. 8. American Geophysical Union, Washington, DC, 40 pp. [SEP]</p>	
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Reservoir Simulation		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1173		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIV	Semester of Delivery	Seven
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To develop basic understanding of hydrocarbon-reservoir performance under various operating conditions by using simulation software.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>After studying this course, the learners will be able to: -</p> <ol style="list-style-type: none"> 1. Define the basic concepts of reservoir simulation. 2. Formulate fluid flow in porous media and to solve the governing equations, numerically using finite difference methods. 3. Apply the concepts of reservoir engineering and reservoir simulation for petroleum field development through relevant software.
Indicative Contents المحتويات الإرشادية	In this 15-week course on reservoir simulation, students will gain a comprehensive understanding of the subject. The course begins with an introduction to the concepts of reservoir simulation, including its advantages and limitations. It then covers the revision of basic reservoir engineering concepts, fluid and rock properties, and fundamental mathematical concepts. Students will learn about the formulation of single-phase flow equations, well representation in simulators, and the solution of linear difference equations. The course progresses to explore multi-phase flow, advanced simulation techniques, and the incorporation of geologic and reservoir heterogeneity. Students will study fluid displacement mechanisms, optimization, uncertainty analysis, and streamline simulation. Practical applications and case studies will provide real-world context. The course concludes with a recap, problem-solving exercises, and final exam preparation.

Learning and Teaching Strategies



استراتيجيات التعلم والتعليم

Strategies	<p>The main strategy for delivering this module is to encourage students' participation in interactive simulations, fostering their critical thinking skills and practical understanding. The classes and interactive tutorials will provide a foundation for learning, while the core focus will be on engaging students through hands-on simulation activities. By involving students in various simulation exercises, they will have the opportunity to apply their knowledge and develop problem-solving abilities in a realistic context. This approach aims to enhance their understanding of reservoir simulation concepts and empower them to analyze and make informed decisions based on simulation outcomes. Through this interactive and practical approach, students will actively participate in the learning process, refining their critical thinking skills and gaining valuable experience in the field of reservoir simulation.</p>
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	72	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	78	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7



	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to reservoir simulation concepts, advantages, and limitations.
Week 2	Revision of basic reservoir engineering, fluid and rock properties, and mathematical concepts.
Week 3	Formulation of single-phase flow equations, finite difference approximation, stability, and error analysis.
Week 4	Well representation in simulators, solving linear difference equations using direct and iterative methods.
Week 5	Introduction to multi-phase flow, two-phase flow equations, relative permeability, and capillary pressure relationships.
Week 6	Numerical methods for multi-phase flow, implicit/explicit schemes, grid block-centered and cell-centered approaches.
Week 7	Mid-semester Exam (in addition to regular class). Well Modeling
Week 8	Advanced simulation techniques: compositional modeling, equation of state, and phase behavior.
Week 9	Incorporating geologic and reservoir heterogeneity, grid generation, and upscaling methods.
Week 10	Modeling fluid displacement mechanisms: water flooding, gas injection, and enhanced oil recovery.



Week 11	Reservoir simulation optimization and uncertainty analysis: history matching, sensitivity analysis, parameter estimation.
Week 12	Introduction to streamline simulation, streamline generation, advantages, and limitations.
Week 13	Practical applications and case studies of reservoir simulation in field development and production optimization.
Week 14	Recap, problem-solving exercises, and discussion of real-world challenges.
Week 15	Final exam preparation and course summary.
Week 16	Preparation for final exams (no regular class).

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1-7	Software Applications: Use of a reservoir simulator, input data and data file preparation, fine tuning for history matching and performance prediction
Week 8-14	Class projects using software application.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>a. Turgay Ertekin, Jamal H. Abou-Kassem, Gregory R. King, "Basic Applied Reservoir Simulation", Vol. 7, Society of Petroleum Engineers Richardson Texas, 2001.</p> <p>b. M. R. Carlson, "Practical Reservoir Simulation", Edition illustrated, Pennwell Books-Tulsa, Oklahoma, 2003.</p>	



	<p>c. Calvin C. Mattax and Robert L. Dalton, "Reservoir Simulation", Vol. 13, Society of Petroleum Engineers Richardson Texas, 1990.</p> <p>d. Donald W. Peaceman, "Fundamentals of Numerical Reservoir Simulation", ISBN: 0444552987</p> <p>e. Calvin, C. Mattax, "Reservoir Simulation", ISBN: 1555630286.</p> <p>f. Henry B. Crichlow, "Modern Reservoir Engineering: A Simulation Approach" ISBN: 0135974682.</p>	
Websites		

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
<p>Note: Marks 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.</p>				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Well Testing & Pressure Transient Analysis		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1174		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIV	Semester of Delivery	Seven
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى



Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To acquire and analyze flow rate and pressure data for reservoir diagnostics..
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>After studying this course, the learners will be able to: -</p> <ol style="list-style-type: none"> 1. Define and develop equations for fluid flow in porous media and to solve the governing equations to determine reservoir properties by well testing. 2. Discuss various techniques of pressure transient and well deliverability testing with application. 3. Design and execute a well test and interpret well test data to estimate reservoir and well bore properties. 4. Justify the limitations of well test interpretation. 5. Use relevant software for analysis and estimations
Indicative Contents المحتويات الإرشادية	<p>Description of a well test, Types of tests, Why we do transient testing, Flow States, Development of Flow Equations for Flow in Porous Media[Difusivity Equation], Initial & Boundary</p> <p>Conditions, Solutions of the Difusivity Equation, Dimensional Group, Skin Development, Wellbore</p> <p>Storage (WBS), Radius of Investigation (ROI),Pseudo Steady-State, Flow Regime Duration Calculations</p>



	<p>– Dimensionless Time, Shape Factors, Principle of Superposition [Multiple producing wells, Bounded Reservoir & Variable Producing Rate], Horner’s Approximation [Pseudo producing Time].Type curve analysis [log-log Analysis, Semi-Log Analysis, Derivative Analysis].</p> <p>Computer lab material: [Pansys from Weatherford Co. Alternatively, PIE from BP Co.]</p>
--	---

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>The main strategy for delivering this module is to foster active student participation and enhance their critical thinking skills. This will be accomplished through a combination of classes, interactive tutorials, and engaging exercises. Emphasis will be placed on encouraging students to actively engage with the course material and apply their knowledge to practical scenarios. Additionally, the inclusion of simulations and computer lab activities will make the learning experience more interactive and relatable to the students. By adopting this approach, students will have the opportunity to refine and expand their critical thinking abilities while actively participating in their own learning process.</p>
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب ل ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem)	150		



الحمل الدراسي الكلي للطالب خلال الفصل	
---------------------------------------	--

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Description of a well test and types of tests
Week 2	Importance of transient testing and flow states
Week 3	Development of flow equations for flow in porous media
Week 4	Initial and boundary conditions
Week 5	Solutions of the diffusivity equation
Week 6	Dimensional groups, skin development, and wellbore storage



Week 7	Radius of investigation and pseudo steady-state
Week 8	Flow regime duration calculations and dimensionless time
Week 9	Shape factors and principle of superposition
Week 10	Horner's approximation and pseudo producing time
Week 11	Type curve analysis: log-log, semi-log, derivative analysis
Week 12	Computer lab material: Pansys or PIE software
Week 13	Recap and problem-solving exercises
Week 14	Final exam preparation and course summary
Week 15	Preparation for final exams (no regular class)
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE
Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources

مصادر التعلم والتدريس



	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Oil and gas engineering electives		Module Delivery
Module Type	E		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1175		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIV	Semester of Delivery	Seven
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	44	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction - Difference between Circuit Theory and Field Theory
Week 2	Basics of Network Elements
Week 3	Resistance and Resistivity, Ohm's Law and Inductance, Capacitance
Week 4	Review of Kirchhoff's Laws, Circuit Analysis - Nodal and Mesh
Week 5	Linearity and Superposition, Source Transformations, Thévenin and Norton Equivalents
Week 6	Review of Inductor and Capacitor as Circuit Elements, Source-free RL and RC Circuits, Transient Response
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Sinusoidal Forcing, Complex Forcing, Phasors, and Complex Impedance, Sinusoidal Steady State Response
Week 9	Nodal and Mesh Revisited, Average Power, RMS, Introduction to Polyphase Circuits
Week 10	Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance
Week 11	Frequency Response of Series/Parallel Resonances, High-Q Circuits
Week 12	Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots
Week 13	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 14	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 15	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE



Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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



<p>Note: Marks 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.</p>				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Oil and gas engineering electives		Module Delivery
Module Type	E		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1176		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGIV	Semester of Delivery	Seven
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	44	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction - Difference between Circuit Theory and Field Theory
Week 2	Basics of Network Elements
Week 3	Resistance and Resistivity, Ohm's Law and Inductance, Capacitance
Week 4	Review of Kirchhoff's Laws, Circuit Analysis - Nodal and Mesh
Week 5	Linearity and Superposition, Source Transformations, Thévenin and Norton Equivalents
Week 6	Review of Inductor and Capacitor as Circuit Elements, Source-free RL and RC Circuits, Transient Response
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Sinusoidal Forcing, Complex Forcing, Phasors, and Complex Impedance, Sinusoidal Steady State Response
Week 9	Nodal and Mesh Revisited, Average Power, RMS, Introduction to Polyphase Circuits
Week 10	Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance
Week 11	Frequency Response of Series/Parallel Resonances, High-Q Circuits
Week 12	Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots
Week 13	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 14	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 15	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE



Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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



<p>Note: Marks 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.</p>				



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Project II		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1181		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGIV	Semester of Delivery	Eight
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction - Difference between Circuit Theory and Field Theory
Week 2	Basics of Network Elements
Week 3	Resistance and Resistivity, Ohm's Law and Inductance, Capacitance
Week 4	Review of Kirchhoff's Laws, Circuit Analysis - Nodal and Mesh
Week 5	Linearity and Superposition, Source Transformations, Thévenin and Norton Equivalents
Week 6	Review of Inductor and Capacitor as Circuit Elements, Source-free RL and RC Circuits, Transient Response
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Sinusoidal Forcing, Complex Forcing, Phasors, and Complex Impedance, Sinusoidal Steady State Response
Week 9	Nodal and Mesh Revisited, Average Power, RMS, Introduction to Polyphase Circuits
Week 10	Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance
Week 11	Frequency Response of Series/Parallel Resonances, High-Q Circuits
Week 12	Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots
Week 13	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 14	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 15	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE



Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Reservoir Management		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1182		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIV	Semester of Delivery	Eight
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives أهداف المادة الدراسية</p>	<p>The class objectives for the given course are as follows:</p> <ol style="list-style-type: none"> 1. Understand the fundamentals of Integrated Reservoir Management: Gain knowledge of the principles and concepts involved in integrated reservoir management, including its importance in optimizing oil and gas field development. 2. Learn the techniques for Appraisal of Oil and Gas Fields: Acquire the skills to compare laboratory and field PVT (pressure-volume-temperature) data, perform field unitization and equity determination, interpret joint operating agreements, analyze fluid contacts using pressure-depth measurements and PVT lab data, and conduct appraisal well testing and extended well testing. 3. Develop proficiency in Analysis of Reservoir Performance: Apply material balance, well testing, and decline curve analysis techniques to analyze and evaluate reservoir performance in real-world field cases. Learn how to interpret the data obtained from these analyses to assess the productivity and behavior of reservoirs. 4. Understand Reservoir Management Economics: Gain an understanding of economic criteria and evaluation methods used in reservoir management. Learn to assess and quantify risks and uncertainties associated with economic evaluations and optimize reservoir management decisions based on economic considerations.
---	--



	<p>5. Analyze Reservoir Management Case Studies: Explore and analyze real-life case studies in reservoir management to gain practical insights into the application of concepts and techniques learned throughout the course. Understand the challenges and decision-making processes involved in managing various types of reservoirs.</p> <p>By the end of the course, students should be able to apply the knowledge and skills gained to effectively manage and optimize the performance of oil and gas reservoirs, considering technical, economic, and risk factors.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Based on the class content provided, the following are the intended learning outcomes for the course:</p> <ol style="list-style-type: none"> 1. Knowledge Acquisition: Develop a comprehensive understanding of Integrated Reservoir Management, including its principles, techniques, and applications in the oil and gas industry. 2. Data Analysis and Interpretation: Acquire the ability to compare and analyze laboratory and field PVT data, interpret joint operating agreements, and evaluate fluid contacts using pressure-depth measurements and PVT lab data. 3. Reservoir Performance Evaluation: Apply material balance, well testing, and decline curve analysis methods to assess reservoir performance in real-world field cases. Interpret the results to identify production trends, evaluate well productivity, and make informed decisions. 4. Economic Evaluation Skills: Demonstrate proficiency in performing economic evaluations for reservoir management, including applying economic criteria, assessing risks and uncertainties, and optimizing economic outcomes through decision-making. 5. Problem-Solving and Decision-Making: Develop critical thinking and problem-solving skills through the analysis of reservoir management case studies. Apply acquired knowledge and techniques to evaluate complex scenarios, identify challenges, and propose effective solutions. 6.



	<p>7. Communication and Presentation: Effectively communicate technical information related to Integrated Reservoir Management through presentations, reports, and discussions. Develop the ability to articulate ideas, analyze results, and convey recommendations.</p> <p>8. Collaborative Skills: Engage in group exercises, interactive tutorials, and case discussions to enhance teamwork and collaboration skills. Demonstrate the ability to work effectively in multidisciplinary teams to solve reservoir management challenges.</p> <p>9.</p> <p>10. Ethical and Professional Considerations: Recognize and address ethical issues and HSE (Health, Safety, and Environment) concerns associated with reservoir management. Apply professional standards and practices in all aspects of the field.</p> <p>By achieving these learning outcomes, students will be equipped with the necessary knowledge, skills, and attitudes to effectively contribute to the integrated reservoir management process and make informed decisions in the oil and gas industry.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Introduction to the Integrated Reservoir Management, Appraisal of Oil and Gas Fields(Comparison of Laboratory and Field PVT data, Field Unitization/Equity Determination,</p> <p>Joint Operating Agreement (JOA), Comparison of Fluid Contacts from Pressure-Depth Measurements with Fluid Pressure Gradients from PVT Lab Data, Appraisal Well Testing,</p> <p>Extended Well Testing), Analysis of Reservoir Performance (Applying Material Balance, Well</p> <p>Testing and Decline Curve Analysis to Field Cases), Reservoir Management Economics (Economic Criteria, Economic Evaluation, Risk and Uncertainties, Economic Optimization),</p> <p>Reservoir Management Case Studies.</p> <p>Computer Lab Material: Practical Use of Reservoir Management Commercial Software.</p>

Learning and Teaching Strategies



استراتيجيات التعلم والتعليم

Strategies	<p>The main strategy for delivering this module is to foster active student participation and enhance their critical thinking skills. This will be accomplished through a combination of classroom lectures, interactive tutorials, and engaging in simple experiments that involve hands-on sampling activities. By encouraging students to actively participate in exercises and discussions, we aim to refine and expand their critical thinking abilities. These interactive learning experiences will not only make the subject matter more interesting and relatable but also provide opportunities for practical application of the concepts taught in the course. Furthermore, the inclusion of case studies and real-world examples will enable students to analyze and apply their knowledge in practical scenarios, thereby enhancing their problem-solving and decision-making skills. Additionally, collaborative activities and group exercises will promote teamwork and foster effective communication among students. Through these strategies, we aim to create an engaging and dynamic learning environment that encourages active learning, critical thinking, and the application of knowledge in the field of integrated reservoir management.</p>
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	72	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	78	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية



		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Integrated Reservoir Management
Week 2	Appraisal of Oil and Gas Fields: Comparison of Laboratory and Field PVT data
Week 3	Appraisal of Oil and Gas Fields: Field Unitization/Equity Determination, Joint Operating Agreement (JOA)
Week 4	Appraisal of Oil and Gas Fields: Comparison of Fluid Contacts from Pressure-Depth Measurements with Fluid Pressure Gradients from PVT Lab Data
Week 5	Appraisal of Oil and Gas Fields: Appraisal Well Testing, Extended Well Testing
Week 6	Analysis of Reservoir Performance: Applying Material Balance to Field Cases
Week 7	Mid-semester exam (covering material from weeks 1-5)
Week 8	Analysis of Reservoir Performance: Well Testing and Decline Curve Analysis to Field Cases
Week 9	Reservoir Management Economics: Economic Criteria



Week 10	Reservoir Management Economics: Economic Evaluation, Risk and Uncertainties
Week 11	Reservoir Management Economics: Economic Optimization
Week 12	Reservoir Management Case Studies
Week 13	Reservoir Management Case Studies
Week 14	Reservoir Management Case Studies
Week 15	Reservoir Management Case Studies
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		



Recommended Texts	<p>1. Fundamentals of Reservoir Engineering by LP Dake, ISBN 044441830X</p> <p>2. Applied Petroleum Reservoir Engineering by BC Craft and MF Hawkin ISBN 0130398845</p> <p>3. Applied Reservoir Engineering Vol. I & II by Charles Robert Smith, GW Tracy, ISBN 0930972155</p> <p>4. Oil Reservoir Engineering by Sylvai Joseph Pirson, ISBN 0882755005</p> <p>5. Fundamentals of Reservoir Engineering by Ben H Caudle ASIN B0007GPIIQ</p> <p>6. Reservoir Engineering Manual by Frank W Cole Asin B003AA4LKW</p> <p>7. A Generalized Approach to Primary Hydrocarbon Recovery of Petroleum Exploration & Production by M Walsh & LW Lake ISBN 0444506837</p> <p>8. Natural Gas Production Engineering by Chi U Ikoku ISBN 0894646397</p>	
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group	A - Excellent	امتياز	90 - 100	Outstanding Performance



(50 - 100)	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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Well Control		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1183		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIV	Semester of Delivery	Eight
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives</p> <p>أهداف المادة الدراسية</p>	<p>Class Objective:</p> <p>The objective of this class is to provide students with a solid understanding of the fundamental principles of well control. By the end of the course, students will be able to identify the causes of kicks and effectively utilize kick indicators. They will learn the procedures for handling kicks and gain knowledge about various methods of well control, including general kill methods, constant bottom hole pressure kill methods, the driller's method, the wait and weight method, and volumetric well control. Students will also become familiar with well control equipment and techniques for kick detection, including the challenges specific to deviated and horizontal wells. Additionally, the class will cover the concept of kick tolerance. The computer lab component will involve utilizing the WELLPLAN software from Landmark_Halliburton to gain practical experience in well control planning and analysis. Overall, students will develop the necessary skills and knowledge to effectively manage well control situations in the oil and gas industry.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>By the end of this class on the Fundamental Principles of Well Control, students will be able to:</p> <ol style="list-style-type: none"> 1. Identify and explain the causes of kicks during drilling operations. 2. Demonstrate a thorough understanding of kick indicators and their significance in detecting kicks. 3. Implement proper shut-in procedures in response to a kick occurrence. 4. Describe and compare various methods of well control, including general kill methods, constant bottom hole pressure kill methods, the driller's method, the wait and weight method, and volumetric well control. 5. Familiarize themselves with the well control equipment used in managing kicks. 6. Apply effective kick detection techniques, particularly in the context of deviated and horizontal wells. 7. Evaluate and determine the kick tolerance for different well scenarios. 8. Utilize the WELLPLAN software from Landmark_Halliburton to perform well



	<p>control planning and analysis in computer lab exercises.</p> <p>9. Analyze and solve well control problems using critical thinking and problem-solving skills.</p> <p>10. Demonstrate an understanding of the importance of well control in maintaining operational safety and preventing blowouts in the oil and gas industry.</p> <p>These learning outcomes will ensure that students have a comprehensive understanding of well control principles, techniques, and their practical applications in the industry.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Fundamental Principles of Well Control, Causes of Kicks, Kick Indicators, Shut-in Procedures,</p> <p>Methods of Well Control [Kill Methods General, Constant Bottom Hole Pressure Kill Methods,</p> <p>the Driller's Method, the Wait and Weight Method, Volumetric Well Control], Well Control</p> <p>Equipment, Kick Detection and Well Control Problems on Deviated and Horizontal Wells,</p> <p>Kick Tolerance.</p> <p>Computer lab material: [WELLPLAN from Landmark _Halliburton]</p>

<p style="text-align: center;">Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>	
<p>Strategies</p>	<p>Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.</p>



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction - Difference between Circuit Theory and Field Theory
Week 2	Basics of Network Elements
Week 3	Resistance and Resistivity, Ohm's Law and Inductance, Capacitance
Week 4	Review of Kirchhoff's Laws, Circuit Analysis - Nodal and Mesh
Week 5	Linearity and Superposition, Source Transformations, Thévenin and Norton Equivalents
Week 6	Review of Inductor and Capacitor as Circuit Elements, Source-free RL and RC Circuits, Transient Response
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Sinusoidal Forcing, Complex Forcing, Phasors, and Complex Impedance, Sinusoidal Steady State Response
Week 9	Nodal and Mesh Revisited, Average Power, RMS, Introduction to Polyphase Circuits
Week 10	Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance
Week 11	Frequency Response of Series/Parallel Resonances, High-Q Circuits
Week 12	Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots
Week 13	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 14	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 15	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	



Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>1. Watson, D., Brittenham, T., & Moore, P. L., "Advanced well control", Vol. 10, Society of Petroleum Engineers, 2003.</p> <p>2. Jerome J. Schubert, "Well Control", Texas A&M University, 1995/latest edition</p>	
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Enhanced Oil Recovery		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1184		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIV	Semester of Delivery	Eight
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	To enable the students to understand how to maximize recovery by applying external energy sources.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>After studying this course, the learners will be able to: -</p> <ol style="list-style-type: none"> 1. Describe and discuss the fundamentals of water and immiscible gas injection and related selection criteria. 2. Explain the physical mechanisms of Enhanced Oil Recovery methods. 3. Design and conduct experiments/mathematical models to evaluate the feasibility of proposed flooding project. <p>103</p> <ol style="list-style-type: none"> 4. Compute the microscopic and macroscopic efficiencies of the flooding project. 5. Design typical EOR projects workflow and related screening criteria and compute economics. 6. Use relevant software for analysis and estimations.
Indicative Contents المحتويات الإرشادية	<p>Introduction (Definition of EOR, Past and Current Applications of EOR, Potential Role of EOR), Water flooding (Characteristics of Immiscible Processes, Mobility Ratios, Sweeping Efficiencies, Recovery Efficiencies, Trapped Oil Saturation, Frontal Displacement Theory,</p>



	<p>Buckley-Leverett, Welge Method, Effects of Heterogeneity and Wettability, Dysktra-Parson</p> <p>Method, Injection Patterns, Estimation of Recoveries for 5 Spot Pattern, Inverted 5 Spot and</p> <p>Line Drive), Immiscible Gas Injection (Sweep Efficiency and Its Monitoring, Application of</p> <p>Frontal Displacement Theory, Miscible Gas Drive (Miscible Drive Methods, Difusion and</p> <p>Dispersion Mechanisms, The Ternary Diagram, Minimum Miscibility Pressure (MMP)</p> <p>Correlations and Estimation, Instability Phenomena, Performance Evaluation), Thermal</p> <p>Recovery Methods (Cyclic and Continuous Steam Injection, Thermal Properties of Fluids and</p> <p>Solids, Temperature Efect on Reservoir and Fluid Properties, Recovery Mechanisms:</p> <p>Viscosity Reduction and Thermal Expansion, Prediction of Steam Flood Performance, Steam</p> <p>Injection Facilities, In-Situ Combustion, Chemical Recovery Methods (Types of CEOR, Properties of Injectants, Loss of Chemicals, HSE Issues, Performance Evaluation</p>
--	--

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>The main strategy for delivering this module is to foster active student participation and enhance their critical thinking skills. This will be accomplished through a combination of classroom lectures, interactive tutorials, and engaging in simple experiments that involve hands-on sampling activities. By encouraging students to actively participate in exercises and discussions, we aim to refine and expand their critical thinking abilities. These interactive learning experiences will not only make the subject matter more interesting and relatable but also provide opportunities for practical application of the concepts taught in the course.</p>
-------------------	---



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction: Definition of EOR, Past and Current Applications of EOR, Potential Role of EOR
Week 2	Water flooding: Characteristics of Immiscible Processes, Mobility Ratios, Sweeping Efficiencies, Recovery Efficiencies, Trapped Oil Saturation
Week 3	Water flooding (cont.): Frontal Displacement Theory, Buckley-Leverett, Welge Method, Effects of Heterogeneity and Wettability
Week 4	Water flooding (cont.): Dykstra-Parson Method, Injection Patterns, Estimation of Recoveries for 5 Spot Pattern, Inverted 5 Spot and Line Drive
Week 5	Immiscible Gas Injection: Sweep Efficiency and Its Monitoring, Application of Frontal Displacement Theory
Week 6	Immiscible Gas Injection (cont.): Miscible Gas Drive, Diffusion and Dispersion Mechanisms
Week 7	Mid-semester exam (covering material from weeks 1-6)
Week 8	Immiscible Gas Injection (cont.): The Ternary Diagram, Minimum Miscibility Pressure (MMP) Correlations and Estimation
Week 9	Immiscible Gas Injection (cont.): Instability Phenomena, Performance Evaluation
Week 10	Thermal Recovery Methods: Cyclic and Continuous Steam Injection, Thermal Properties of Fluids and Solids
Week 11	Thermal Recovery Methods (cont.): Temperature Effect on Reservoir and Fluid Properties, Recovery Mechanisms: Viscosity Reduction and Thermal Expansion
Week 12	Thermal Recovery Methods (cont.): Prediction of Steam Flood Performance, Steam Injection Facilities
Week 13	In-Situ Combustion: Introduction, Mechanisms, Advantages, and Challenges
Week 14	Chemical Recovery Methods: Types of CEOR, Properties of Injectants
Week 15	Chemical Recovery Methods (cont.): Loss of Chemicals, HSE Issues, Performance Evaluation
Week 16	Preparatory week before the final Exam



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	<p>a. Tarek Ahmed, "Reservoir Engineering Handbook", Third Edition, Elsevier, 2006.</p> <p>b. Don W. Green and G. Paul Willhite, "Enhanced Oil Recovery", 22nd Edition, Volume 6, Society of Petroleum Engineers Richardson Texas, 1998.</p> <p>c. Larry W. Lake, "Enhanced Oil Recovery", Society of Petroleum Engineers Richardson Texas, 2010.</p> <p>d. Marcel Latil, "Enhanced oil Recovery" ISBN: 0872017753</p> <p>e. Rafael Sandrea, Ralph Nielsen, "Dynamics of Petroleum</p>	



	Reservoirs under Gas Injection”, ISBN: 0872012190	
Websites		

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Oil and gas engineering electives		Module Delivery
Module Type	E		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1185		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIV	Semester of Delivery	Eight
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	44	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction - Difference between Circuit Theory and Field Theory
Week 2	Basics of Network Elements
Week 3	Resistance and Resistivity, Ohm's Law and Inductance, Capacitance
Week 4	Review of Kirchhoff's Laws, Circuit Analysis - Nodal and Mesh
Week 5	Linearity and Superposition, Source Transformations, Thévenin and Norton Equivalents
Week 6	Review of Inductor and Capacitor as Circuit Elements, Source-free RL and RC Circuits, Transient Response
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Sinusoidal Forcing, Complex Forcing, Phasors, and Complex Impedance, Sinusoidal Steady State Response
Week 9	Nodal and Mesh Revisited, Average Power, RMS, Introduction to Polyphase Circuits
Week 10	Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance
Week 11	Frequency Response of Series/Parallel Resonances, High-Q Circuits
Week 12	Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots
Week 13	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 14	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 15	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE



Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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: Marks 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.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Oil and gas engineering electives		Module Delivery
Module Type	E		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WUC1186		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGIV	Semester of Delivery	Eight
Administering Department	Oil and Gas Engineering	College	Oil and Gas Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	



Co-requisites module		Semester	
-----------------------------	--	-----------------	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.</p>
-------------------	---



Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	70	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.		10% (10)	Continuous	All
	Report		10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري



	Material Covered
Week 1	Introduction - Difference between Circuit Theory and Field Theory
Week 2	Basics of Network Elements
Week 3	Resistance and Resistivity, Ohm's Law and Inductance, Capacitance
Week 4	Review of Kirchhoff's Laws, Circuit Analysis - Nodal and Mesh
Week 5	Linearity and Superposition, Source Transformations, Thévenin and Norton Equivalents
Week 6	Review of Inductor and Capacitor as Circuit Elements, Source-free RL and RC Circuits, Transient Response
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Sinusoidal Forcing, Complex Forcing, Phasors, and Complex Impedance, Sinusoidal Steady State Response
Week 9	Nodal and Mesh Revisited, Average Power, RMS, Introduction to Polyphase Circuits
Week 10	Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance
Week 11	Frequency Response of Series/Parallel Resonances, High-Q Circuits
Week 12	Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots
Week 13	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 14	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 15	Two Port Networks, Admittance, Impedance, Hybrid, and Transmittance Parameters
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE



Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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: Marks 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.

References

Caddick, S. Back to Bologna: The long road to European higher education reform. *EMBO reports*, 9(1), 18–21(2008).

Furuzan, V. G. Adaptation to the Bologna process: The case of Turkey. *Excellence in Higher Education*, 3, 104-110 (2012). doi: 10.5195/ehe.2012.71

Mete Sipahioğlu, Eray Demirçelik. Restructuring of Higher Education in the Context of Bologna Process: Reflections on Turkey. *Political Economy and Management of Education* (1)2, 37 48(2020).

Kehm, B. M. The future of the Bologna process-the Bologna process of the future. *European Journal of Education*, 45(4), 529-534.(2010).

Lazetic, P. Managing the Bologna process at the European level: Institution and actor dynamics. *European Journal of Education*, 45(4), 549-562 (2010).

Nick Clark. The Bologna Process as a Model for Regional Integration, *World Education News & Reviews*, June 3, 2014