University of Mosul

College of Petroleum and Mining Engineering

Department of Mining Engineering

Course Description
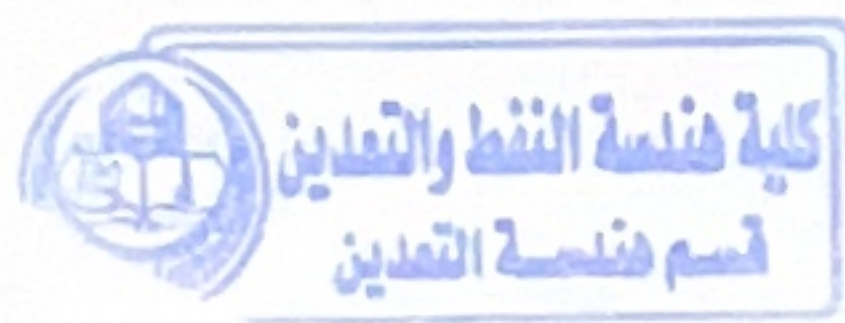
Second Stage/Second Semester (Bologna Track)

E / Prof. Dr. Nabil Youssef Al-Banna

Head of the Scientific Committee

Asst. Prof. Dr. Azealdeen Salih Al-Jawadi

Head of Department

MODULE DESCRIPTION

وصف المادة الدراسية

<table>
<tr><td colspan="3" align="center">Module Information
معلومات المادة الدراسية</td></tr>
<tr><td>Module Title</td><td>Strength of Materials</td><td>Module Delivery</td></tr>
<tr><td>Module Type</td><td>Basic learning activities</td><td rowspan="5">☒ Theory
☒ Lecture
☐ Lab
☒ Tutorial
☐ Practical
☒ Seminar</td></tr>
<tr><td>Module Code</td><td>DME221</td></tr>
<tr><td>ECTS Credits</td><td>6</td></tr>
<tr><td>SWL (hr/sem)</td><td>150</td></tr>
</table>

Module Level	UGII	Semester of Delivery	4
Administering Department	Mining Engineering	College	Petroleum and Mining Engineering
Module Leader	Sarah Mwafaq	e-mail	saraaltaie87@uomosul.edu.iq
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	MSc
Module Tutor	Shahad Salim	e-mail	shahadsibrahim88@uomosul.edu.iq
Peer Reviewer Name	Eman Kassim Yahya	e-mail	**eman.q@uomosul.edu.iq**
Scientific Committee Approval Date	15/09/2024	Version Number	1.0

<table>
<tr><td colspan="4" align="center">Relation with other Modules
العلاقة مع المواد الدراسية الأخرى</td></tr>
<tr><td>Prerequisite module</td><td>Engineering mechanics</td><td>Semester</td><td>1</td></tr>
<tr><td>Co-requisites module</td><td>None</td><td>Semester</td><td></td></tr>
</table>

<table>
<tr><td colspan="2" align="center">Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية</td></tr>
<tr>
<td>Module Objectives
أهداف المادة الدراسية</td>
<td>
1. Understanding the conditions of equilibrium between the external forces and reactions on a member.
2. Understanding the relationships between strains (deformation) in a member and stresses (internal forces) producing them.
3. Understanding the conditions that can lead to failure in structural members and machine elements.
</td>
</tr>
</table>

	4. Analysis to determine the limiting loads that a member can stand before failure or excessive deformation occurs. 5. Understand the classification of materials based on ductility or brittleness. 6. Describe types of beams in their loading conditions. 7. Calculate the shear force required in causing a failure of a loaded beam. 8. Determine the location for bending and the maximum bending moment possible in a particular loading condition. 9. Analysis any form of loaded beams and draw the shear and bending diagrams. 10. Establish the effect of torque on a rotating shaft.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Students who successfully complete this course will have demonstrated an ability to: 1. Understand the concepts of stress and strain at a point as well as the stress-strain relationships for homogenous, isotropic materials. 2. Calculate the stresses and strains in axially-loaded members, circular torsion members, and members subject to flexural loadings. 3. Determine the stresses and strains in members subjected to combined loading and apply the theories of failure for static loading. 4. Determine and illustrate principal stresses, maximum shearing stress, and the stresses acting on a structural member. 5. Design simple bars, beams, and circular shafts for allowable stresses and loads. 6. Demonstrate competence in problem identification, formulation and solution, and critical thinking.
Indicative Contents المحتويات الإرشادية	Revise the cross section properties; general internal forces. [5 hrs.] Normal stress and strain application to the analysis of simple structures; stresses on an oblique plane under axial loading and moment, Normal stresses in elastic bodies for heterogeneous and composite symmetrical and unsymmetrical sections for eccentric axial loading. [10 hrs.] Shear stress and strain ,Shear stresses due to direct and flexural shear. Determination of shear stresses due to shearing force; Transverse loading: Shear flow; shear stresses; stresses under combined loading. Determination of shear stresses on sections and bolts due to torsional. Determination of combined stresses; Principal stresses; maximum shearing stress. [12 hrs.] Bending stresss and Torsional loading of shafts. [10 hrs.]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	● Provision of detailed explanation in class on each topic. ● Provision of adequate illustration on the board. ● Making lecturing periods interactive. ● Giving the students class work during the lecture period. ● Giving take-home assignments at the end of each lecture. ● Solving practical questions.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
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**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Tutorial	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to mechanics of materials
Week 2	Tension, Compression, and Shear.
Week 3	Beams, shear force and bending moment equations.
Week 4	Shear Forces and Bending Moments diagrams
Week 5	Stresses in Beams
Week 6	Elongation, stress and strain for axial loads.
Week 7	Strain
Week 8	Strain transformation plane strain
Week 9	Bending stresses of beams.
Week 10	Bending stresses of composite sections.
Week 11	Shear stress in beams.

Week 12	Shear stress in bolt.
Week 13	Torsion
Week 14	Torsional deformations
Week 15	Statically Indeterminate Beams.
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Mechanics of materials, sixth edition, Ferdinand P. Beer • Mechanics of materials:an integrated learning system,Philpot • Strength of Materials 4th Ed. by Ferdinand L. Singer	Yes
Recommended Texts		No
Websites	https://www.google.com/search?q=strength+of+materials+books&sourceid=chrome&ie=UTF-8	

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

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معلومات المادة الدراسية</td></tr>
<tr><td>**Module Title**</td><td>Project Management for Mining</td><td rowspan="4">**Module Delivery**</td></tr>
<tr><td>**Module Type**</td><td>Core</td></tr>
<tr><td>**Module Code**</td><td>DME223</td></tr>
<tr><td>**ECTS Credits**</td><td>5</td></tr>
<tr><td>**SWL (hr/sem)**</td><td>125</td></tr>
</table>

Module Information		
Module Title	Project Management for Mining	**Module Delivery**
Module Type	Core	☒ Theory
Module Code	DME223	☒ Lecture
ECTS Credits	5	☐ Lab
		☒ Tutorial
SWL (hr/sem)	125	☐ Practical
		☒ Seminar

Module Level	UGII	**Semester of Delivery**	4
Administering Department	DME	**College**	PMEUOM
Module Leader	Dr. Ibrahim Adil Ibrahim	**e-mail**	iibrahim@uomosul.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor	Non	**e-mail**	E-mail
Peer Reviewer Name	Eman Kassim Yahya	**e-mail**	eman.q@uomosul.edu.iq
Scientific Committee Approval Date	15/09/2024	**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	Mining projects are complex. The path to successful project completion is imbedded with situational uncertainties and strewn with obstacles. These course offer practical solutions to remove the obstacles and provide sound insight to cope with the uncertainties. The goal is to bring the project management world into better focus, to place project managers in positions where they can anticipate rather than respond, and to lay out the project execution path in straightforward patterns with understandable success strategies that will achieve the desired outcome. Project Management for Mining provides the originator of a mining idea or mineral opportunity with the necessary guidance to develop that idea or opportunity into a well-defined project that will successfully meet the corporation's business objectives. This course presents a best practice process for steering development of the project through senior management approval and on-site execution. The intent is for this course to serve as a handy reference of proven techniques and winning approaches for effective project management within the mining industry, and to impart knowledge to all those who seek to manage mining project work, not just the project manager.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The target audience of this course includes not only the project manager but also all those mining personnel with an interest in or responsibility for successful project execution, for example, ■ Corporate leaders who have to approve the project. ■ Project sponsors who have to keep stakeholders satisfied with project progress. ■ Geologic discoverers, developers, and entrepreneurs. ■ Project team members who have to execute the project. ■ Mine operators who have to take delivery of the completed project.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – Introduction Definition of a Project. Project Management for Mining provides the originator of a mining idea or mineral opportunity with the necessary guidance to develop that idea or opportunity into a well-defined project that will successfully meet the corporation's business objectives. [8hrs]. Part B – Ethics This chapter apprises the project manager of the conflicts that can arise within a project and how best to approach these issues and "do the right thing" from an ethics viewpoint. [8hrs] Part C – Governance The role of project governance is to provide a decision-making framework that is logical, robust, and repeatable for the control of an organization's capital investments. [8hrs] Part D – Management Review This initial company management review analyzes the results of the scoping evaluation. The project potential is then sufficiently described in a Management Review Submission to allow management to reach a yes or no decision on whether to proceed to the next stage. [8hrs] Part E – Prefeasibility Study

A prime purpose of the prefeasibility study is to undertake all possible trade-offs on the different options that can be sensibly postulated for achieving the project's goals. If there are no alternatives to the scoping evaluation path, then the prefeasibility study may be optional. [8hrs]

Part F – Feasibility Study

The feasibility study is the final, definitive proof of viability, that is, preparation of a bankable quality study that meets all the external financing requirements. The feasibility study is more detailed than the prefeasibility study, providing a more accurate estimate and a higher level of confidence in the probability of project success. The complete project and the installations to be built are fully described. The major risks and the steps for their mitigation are assessed. If approved, the feasibility study and the PEP become the primary control documents for the project. [10hrs]

Part G – Environmental Impact, Permits, Social Acceptance, and Sustainability

This chapter lays out the steps that are required for the project to earn acceptance and approval from those external entities that affect and/or control project progress. [10hrs]

Part H – Risk Management

Risk management encompasses the steps for identification, assessment, and prioritization of project risks. Following these steps is the key follow-up action for coordinated and economical application of resources to mitigate the probability and/or impact of unfortunate events and to maximize the realization of any opportunities. [10hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	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	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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**	2	10% (10)	5 and 13	LO #1- #4 and #8- #11
	Assignments	2	10% (10)	4 and 15	LO #2- #3 and #13, #14
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	10	LO #4, #5 and #6
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction Definition of a Project and its objective. What Is Project Management?. Purpose of Project Management. Project management activities. Project Responsibility and Accountability. The Successful Project Manager. Measurement of a Project's Success. Project stages timeline.
Week 2	Ethics Right and Wrong, Company Code of Conduct. Professional Codes of Ethics.
Week 3	Ethics Personal Code of Ethics. Situational Ethics. Building Trust and Overcoming Hurdles.
Week 4	Governance What Is Project Governance? Components of Project Governance. Three Pillars of Project Governance. Core Principles of Project Governance. Attributes of Good Governance.
Week 5	Governance Project Elements for Good Governance Attainment. Project Governance Roles. Governance Issues That Have Caused Project Problems. Results of Good Governance.
Week 6	Management Review Objective, Stage Gate, Documentation, Review and Approval Process, Result of Review, Management review.
Week 7	Midterm Exam, Management Review. Objective, Stage Gate.
Week 8	Management Review Documentation, Review and Approval Process, Result of Review, Management review.
Week 9	Prefeasibility Study Objective, Scope, Activities Required, Conclusion for Project Continuation,
Week 10	Prefeasibility Study Level of Effort for Prefeasibility Study.
Week 11	Feasibility Study Objective, Scope, Activities Required
Week 12	Feasibility Study Project Definition Rating Index, Key Feasibility Study Deliverables

Week 13	Environmental Impact, Permits.
Week 14	Social Acceptance, and Sustainability
Week 15	Risk Management
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

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

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Project Management for Mining	EBook
Recommended Texts		EBook
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
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Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
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<tr><td>Module Title</td><td colspan="2" align="center">Dynamics Fluid Mechanics</td><td>Module Delivery</td></tr>
<tr><td>Module Type</td><td colspan="2" align="center">B</td><td rowspan="4">☒ Theory
☒ Lecture
☐ Lab
☒ Tutorial
☐ Practical
☐ Seminar</td></tr>
<tr><td>Module Code</td><td colspan="2" align="center">DME224</td></tr>
<tr><td>ECTS Credits</td><td colspan="2" align="center">4</td></tr>
<tr><td>SWL (hr/sem)</td><td colspan="2" align="center">100</td></tr>
<tr><td>Module Level</td><td align="center">2</td><td>Semester of Delivery</td><td>4</td></tr>
<tr><td>Administering Department</td><td>Mining Engineering</td><td>College</td><td>College of Petroleum and Mining Engineering</td></tr>
<tr><td>Module Leader</td><td>Dr. Ibrahim Adil Ibrahim Al-Hafidh</td><td>e-mail</td><td>iibrahim@uomosul.edu.iq</td></tr>
<tr><td>Module Leader's Acad. Title</td><td>Lecturer</td><td>Module Leader's Qualification</td><td>Ph.D.</td></tr>
<tr><td>Module Tutor</td><td>Ali Abdulameer Hussein Al-Zubaidi</td><td>e-mail</td><td>ali.ameer86@uomosul.edu.iq</td></tr>
<tr><td>Peer Reviewer Name</td><td>Eman Kassim Yahya</td><td>e-mail</td><td>eman.q@uomosul.edu.iq</td></tr>
<tr><td>Scientific Committee Approval Date</td><td>15/09/2024</td><td>Version Number</td><td>1.0</td></tr>
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<tr><td colspan="3" align="center">Relation with other Modules
العلاقة مع المواد الدراسية الأخرى</td></tr>
<tr><td>Prerequisite module</td><td>Physics, Mechanics</td><td>Semester</td></tr>
<tr><td>Co-requisites module</td><td></td><td>Semester</td></tr>
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Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	To introduce the concepts of fundamental fluid mechanics. These concepts include characteristics of fluid flow in terms of definition, derivation, equations, and applications. **1 . Fluid Dynamics** 1- Explain the concept dynamics flow, Newton's Second Law. 2- Euler equations of motion 3- Bernoulli's equation. 4- Application of Bernoulli' equation. 5- Flow rate measurements in pipe systems. 6- Energy line and Hydraulic Grade line. 2. **Dimensional Analysis, Simulated and Modeling** 1. Dimensional Analysis of Pipe Flow. 2. Bukingham theorem Pi Analysis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of this course, students will be able to: 1. Discuss the application of Newton's second law to fluid flows. 2. Explain the development, uses, and limitations of the Bernoulli equation. 3. Use the Bernoulli equation (stand-alone or in combination with the continuity equation) to solve simple flow problems. 4. Apply the concepts of static, stagnation, dynamic, and total pressures. 5. Calculate various flow properties using the energy and hydraulic grade lines. 6. Apply the Buckingham pi theorem. 7. Develop a set of dimensionless variables for a given flow situation. 8. Identify and understand various characteristics of the flow in pipes. 9. Discuss the main properties of laminar and turbulent pipe flow and appreciate their differences. 10. Calculate losses in straight portions of pipes as well as those in various pipe system components. 11. Predict the flowrate in a pipe by use of common flowmeters.
Indicative Contents المحتويات الإرشادية	The indicative content of a fluid mechanics module outlines the key topics covered throughout the course. Below is a typical structure of a fluid mechanics syllabus: 1.

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	Effective teaching strategies in fluid mechanics should combine theoretical concepts, problem-solving techniques, practical applications, and hands-on experiences. The goal is to ensure that students grasp fundamental principles while developing critical thinking and engineering problem-solving skills. Below are common learning and teaching strategies used in fluid mechanics course. 1- Problem-Solving and Tutorials a) Step-by-step demonstration of problem-solving techniques.

	b) In-class problem-solving sessions with guided instructor support.	
	c) Assigning problem sets to reinforce concepts and enhance analytical skills.	
	d) daily quizzes and monthly tests to encourage the student to read and analysis	
	2- Laboratory Experiments	
	a- Hands-on experiments to demonstrate key fluid mechanics principles such as hydrostatics, Bernoulli's equation, and pipe flow.	
	b- Measurement of pressure, velocity, and flow rate using instruments like pitot tubes, manometers, and venturi meters.	
	c- Data analysis and interpretation of experimental results.	

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	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	4	20% (20)	2 and 12	
	Classwork	2	5% (5)	2 and 12	
	Lab / Report	4	10% (15)	Continuous	
	Study Sessions	1	5% (5)	13	
Summative assessment	Midterm Exam	2hr	10% (10)	7	
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	1- One-, Two-, and Three-Dimensional Flows 2- Streamlines, Streaklines, and Pathlines 3- Euler's equation.
Week 2	1- Bernoulli's equation 2- Application of Bernoulli' equation.
Week 3	Solving Examples and discussing a problems of use of the Bernoulli Equation.
Week 4	Conservation of mass – the Continuity Equation.
Week 5	Solving Examples and discussing a problems of use of the Continuity Equation.
Week 6	Newton's Second Law—The Linear Momentum and Moment-of- Momentum Equations.
Week 7	Flow rate measurements in pipe systems.
Week 8	Energy line and Hydraulic Grade line.
Week 9	Dimensional Analysis of Pipe Flow. Bukingham Pi Analysis.
Week 10	Solving Examples and discussing a problems of use of the Bukingham Pi theorem.
Week 11	General Characteristics of Pipe Flow. Laminar and Turbulent Flow.
Week 12	Dimensional Anylisis of Pipe Flow. Major Losses, Minor Losses.
Week 13	Pipe Flow Example. Single Pipes, Multiple pipe system.
Week 14	Pipe Flowrate Measurement. Pipe Flowrate Meters. Volume Flowmeters.Fl
Week 15	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Munson, Okiishi, Hubsch, Rothmayer (2013) Fundamentals of Fluid Mechanics, 7th ed., WILEY United State of America	Yes
Recommended Texts	Vennard j. Street R. (1982) Elementary Fluid Mechanics, 6th edition, John Wiley.	Yes
Websites	None	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition

Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	Thermodynamics		**Module Delivery**	
Module Type	Basic		☒ Theory	
Module Code	DME225		☐ Lecture ☐ Lab	
ECTS Credits	6		☒ Tutorial	
SWL (hr/sem)	150		☐ Practical ☐ Seminar	
Module Level	2	**Semester of Delivery**		4
Administering Department	DME	**College**	PMEUOM	
Module Leader	Hudhaifa Raad Hamzah	**e-mail**	hudhaifahamzah@uomosul.edu.iq	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor	Non	**e-mail**	E-mail	
Peer Reviewer Name	Eman Kassim Yahya	**e-mail**	eman.q@uomosul.edu.iq	
Scientific Committee Approval Date	15/09/2024	**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- Understanding the laws of thermodynamics: These laws include the Zeroth law, the first law, and the second law. 2- Analyzing energy and heat transfer: Thermodynamics deals with the transfer of energy and heat between systems and their surroundings. 3- Applying thermodynamic principles to real-world systems: The study of thermodynamics is aimed at applying its principles to real-world systems, such as engines, power plants, refrigeration systems, and chemical processes. 4- Understanding thermodynamic properties and equations of state: Thermodynamic properties, such as temperature, pressure, volume, and entropy, play a crucial role in characterizing systems. 5- Analyzing thermodynamic cycles and processes: Thermodynamic cycles, such as the Carnot cycle, Rankine cycle, and Brayton cycle, are important in power generation and energy conversion. 6- Studying phase equilibrium and phase transitions: Thermodynamics explores phase equilibrium and phase transitions, such as solid-liquid-gas transitions, vapor-liquid equilibrium, and chemical reactions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Students will gain a proper understanding of the fundamental concepts, principles, and laws of thermodynamics. 2- Students will be able to apply thermodynamic principles and equations to analyze and solve problems in various thermodynamic processes and cycles. 3- Students will be able to apply thermodynamic principles to analyze and evaluate the behavior and performance of real-world systems, such as engines, power plants, refrigeration systems, and chemical processes. 4- Students will develop problem-solving skills specific to thermodynamics. 5- Students can develop critical thinking skills to analyze and interpret thermodynamic phenomena and processes. 6- Students can be able to communicate thermodynamic concepts, principles, and solutions effectively. 7- Students can understand the connections between thermodynamics and other related disciplines, such as physics, chemistry, engineering, and materials science.
Indicative Contents المحتويات الإرشادية	The indicative contents of a thermodynamics subject can vary depending on the specific curriculum and the depth of the course. However, here are some common topics that are often covered in a thermodynamics module: 1- Introduction to Thermodynamics: Definition of thermodynamics Basic concepts (system, surroundings, boundary, state and process) Units and dimensions in thermodynamics

	2- <u>Laws of Thermodynamics:</u> Zeroth law of thermodynamics First law of thermodynamics (conservation of energy) Second law of thermodynamics (entropy and irreversibility) 3- <u>Properties of Pure Substances:</u> Temperature, pressure, and volume Phases of matter (solid, liquid, gas) 4- <u>thermodynamic Cycles and Power Plants:</u> Carnot cycle and Carnot heat engine Rankine cycle (steam power plant) Brayton cycle (gas turbine power plant) Combined cycles (gas-steam combined cycle)

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	Learning and teaching strategies play a crucial role in effectively delivering a thermodynamics course and helping students grasp the concepts and principles. Here are some common strategies employed in teaching thermodynamics: 1- Lectures: Lectures are a primary teaching strategy in thermodynamics courses. 2- Problem-Solving Sessions: Problem-solving sessions are essential for students to apply thermodynamic principles and equations to solve numerical problems. 3- Case Studies and Examples: Case studies and real-world examples help students connect thermodynamic principles to practical applications. 4- Interactive Discussions: Interactive discussions encourage active learning and engage students in the subject matter. 5- Visual and Multimedia Resources: Visual and multimedia resources, such as animations, simulations, videos, and interactive software, can enhance students' understanding of complex thermodynamic processes and phenomena. 6- Conceptual Mapping and Visualization: Thermodynamics involves understanding the relationships between various concepts, principles, and equations.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	2	10% (10)	4 and 10	LO #1, #2, #3 and #8, #9
	Assignments	3	10% (10)	6 and 12,14	LO #2 ,#3, #4 and #10, #12, #13.
	Projects / Lab.	0	10% (10)	Continuous	All
	Report	1	10% (10)	15	All
Summative assessment	Midterm Exam	2hr	20% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction and basic concepts of thermodynamics.
Week 2	Energy, Energy Transfer, and General Energy Analysis.
Week 3	The First Law of Thermodynamics.
Week 4	Properties of pure substances + Quizze1.
Week 5	The Ideal-Gas Equation of State +Home work1.
Week 6	Energy Analysis of Closed Systems.
Week 7	Mid-term exam + Mass and Energy Analysis of Control Volumes.
Week 8	Some Steady-Flow Engineering Devices+ Quizze2.

Week 9	The Second Law of Thermodynamics **+Home work2.**
Week 10	Heat engines, Refrigerators and Heat Pumps.
Week 11	The Carnot cycle.
Week 12	The Carnot Heat Engine, Refrigerator and Heat Pump **+Home work3.**
Week 13	The Rankine cycle.
Week 14	The Brayton cycle
Week 15	The Otto and Diesel cycles+ **Discuss reports.**
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Cengel, Y. A., Boles, M. A., & Kanoğlu, M. (2011). *Thermodynamics: an engineering approach* (Vol. 5, p. 445). New York: McGraw-hill.	yes
Recommended Texts	Moran, M. J., Shapiro, H. N., Boettner, D. D., & Bailey, M. B. (2010). *Fundamentals of engineering thermodynamics*. John Wiley & Sons.	No
Websites	https://www.learnthermo.com/index.php	

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

<table>
<tr><td colspan="4" align="center">Module Information
معلومات المادة الدراسية</td></tr>
<tr><td>Module Title</td><td align="center">Mathematics III</td><td colspan="2">Module Delivery</td></tr>
<tr><td>Module Type</td><td align="center">Basic</td><td colspan="2" rowspan="4">☒ Theory
☒ Lecture
☐ Lab
☒ Tutorial
☐ Practical
☐ Seminar</td></tr>
<tr><td>Module Code</td><td align="center">DME226</td></tr>
<tr><td>ECTS Credits</td><td align="center">5</td></tr>
<tr><td>SWL (hr/sem)</td><td align="center">125</td></tr>
<tr><td>Module Level</td><td align="center">Two</td><td>Semester of Delivery</td><td>Four</td></tr>
<tr><td>Administering Department</td><td>Mining Engineering</td><td>College</td><td>Petroleum and Mining Engineering</td></tr>
<tr><td>Module Leader</td><td>Hudhaifa Raad Hamzah</td><td>e-mail</td><td>hudhaifahamzah@uomosul.edu.iq</td></tr>
<tr><td>Module Leader's Acad. Title</td><td>Lecturer</td><td>Module Leader's Qualification</td><td>Ph.D.</td></tr>
<tr><td>Module Tutor</td><td align="right">non</td><td>e-mail</td><td></td></tr>
<tr><td>Peer Reviewer Name</td><td>Eman Kassim Yahya</td><td>e-mail</td><td>eman.q@uomosul.edu.iq</td></tr>
<tr><td>Scientific Committee Approval Date</td><td align="center">15/09/2024</td><td>Version Number</td><td>1.0</td></tr>
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<table>
<tr><td colspan="4" align="center">Relation with other Modules
العلاقة مع المواد الدراسية الأخرى</td></tr>
<tr><td>Prerequisite module</td><td>Nothing</td><td>Semester</td><td></td></tr>
<tr><td>Co-requisites module</td><td>Nothing</td><td>Semester</td><td></td></tr>
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Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	Raising the student's level to reach a state in which he is qualified to relate what he has learned from mathematics linking them in solving engineering problems and engineering and research nature in oil engineering and expanding understanding of the basics and solving the most important equations used in the field of specialization, including about The way to build mathematical models and solve them to reach the results before starting them practically To avoid possible errors that cost economic losses unless they are resolved before starting work
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The course profile of mathematics gives the students with the necessary skills to analyze the financial aspects of mining projects, evaluate investment opportunities, and make informed decisions in the mining industry. It provides a valuable foundation for professionals involved in project management, investment analysis, and economic planning within the mining engineering field.
Indicative Contents المحتويات الإرشادية	The course of mathematics refers to the recent growth in mining field, redistribution of equipment, the course objective is to get interview and basic understanding of production engineering size of mining field, net present value and other indications on whether an investment will be profitable, minig fiscal system and how the value of mining is shared between companies and government, also exploiting material resources also development of production economy. Student will study all the above paragraphs. **Lecture titles** Mathematics analysis Alternative energy International strategy of energy Methods of engineering decision

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	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. * Lectures are conducted by face-to-face education in the classroom, four hours per week, and students' technical reports. * Conducting dialogues and discussions with the request **Methods of assessment for students.** * Quarterly exams. * Discussions and assignments. *The overall assessment for this course is as follows: Annual pursuit of 50 points from the total mark, which includes assignments and oral examinations and quarterly in addition to presentations. *50 marks for the final exam

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	None	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction.
Week 2	Basics of mathematics.
Week 3	Understand the reason behind studying mathematical engineering and its main applications.
Week 4,5 & 6	Sequences, Infinite Series, The Integral Test, Comparison Tests, Absolute Convergence; The Ratio and Root Tests, Alternating Series and Conditional Convergence, Power Series, Taylor and Maclaurin Series, Convergence of Taylor Series, The Applications of Taylor Series.
Week 7 & 8	Parametrizations of Plane Curves, Calculus with Parametric Curves, Polar Coordinates, Contents, Graphing Polar Coordinate Equations, Areas and Lengths in Polar Coordinates.

Week 9, 10 & 11	Three-Dimensional Coordinate Systems, Vectors, The Dot Product, The Cross Product, Lines and Planes in Space, Cylinders and Quadric Surfaces, Curves in Space and Their Tangents Integrals of Vector Functions; Projectile Motion, Arc Length in Space.
Week 12, 13,14	Functions of Several Variables, Limits and Continuity in Higher Dimensions, Partial Derivatives, The Chain Rule, Directional Derivativesand Gradient Vectors, Tangent Planes and Differentials, Extreme Values and Saddle Points, Lagrange Multipliers, Taylor's Formula for Two Variables, Partial Derivatives with Constrained Variables Functions of Several Variables.
Week 15	Preparatory week before the final Exam.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Curriculum and textbook	Yes
Recommended Texts	• Jerrold Marsden and Alan Weinstein, Calculus II second edition 1985 • George B. Thomas, Thomas' calculus, thirteen editions, 2014 Jerrold Marsden and Alan Weinstein, Calculus II second edition 1985	No
Websites	none	

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.

Curriculum update rate = 5%

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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<tr><td colspan="4" align="center">Module Information
معلومات المادة الدراسية</td></tr>
<tr><td>Module Title</td><td align="center">Arabic language II</td><td colspan="2">Module Delivery</td></tr>
<tr><td>Module Type</td><td></td><td colspan="2" rowspan="4">☒ Theory
☐ Lecture
☐ Lab
☐ Tutorial
☐ Practical
☒ Seminar</td></tr>
<tr><td>Module Code</td><td align="center">UOM2012</td></tr>
<tr><td>ECTS Credits</td><td align="center">2</td></tr>
<tr><td>SWL (hr/sem)</td><td align="center">50</td></tr>
<tr><td>Module Level</td><td>2</td><td>Semester of Delivery</td><td>4</td></tr>
<tr><td>Administering Department</td><td>Mining Engineering</td><td>College</td><td>Petroleum and Mining Engineering</td></tr>
<tr><td>Module Leader</td><td>Arwa Issa Mohammed</td><td>e-mail</td><td>arwa.issa.m@uomosul.edu.iq</td></tr>
<tr><td>Module Leader's Acad. Title</td><td>Assistant Lecturer</td><td>Module Leader's Qualification</td><td>Msc.</td></tr>
<tr><td>Module Tutor</td><td>Non</td><td>e-mail</td><td></td></tr>
<tr><td>Peer Reviewer Name</td><td>Eman Kassim Yahya</td><td>e-mail</td><td>eman.q@uomosul.edu.iq</td></tr>
<tr><td>Scientific Committee Approval Date</td><td align="center">15/9/2024</td><td>Version Number</td><td>2.0</td></tr>
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<table>
<tr><td colspan="4" align="center">Relation with other Modules
العلاقة مع المواد الدراسية الأخرى</td></tr>
<tr><td>Prerequisite module</td><td>Arabic I</td><td>Semester</td><td>1</td></tr>
<tr><td>Co-requisites module</td><td>None</td><td>Semester</td><td></td></tr>
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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The aim of this semester is to enable students to read correctly and acquire the ability to use language correctly in communication with others, such as speed, quality of delivery, and eloquence. It also aims to teach students to listen well, develop their literary taste, and accustom them to correct, clear expressions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	CLO1: Introducing the student to the necessity of practicing the rules of writing and speaking in classical Arabic. CLO2: Introducing the student to the levels of the Arabic language system CLO3: Deepening the student's connection with the Arab and Islamic heritage. CLO4: Promote scientific research in the field of Arabic language and its sciences to prepare studies and research. CLO5: Showing the beauty of the Arabic language, the breadth of its meanings and its constructional styles. CLO6: Enabling the student to overcome and correct linguistic errors. CLO7: Developing the student's literary taste to understand the aesthetic aspects of speech style, images and meanings. CLO8: Introducing the most prominent poets of the Abbasid era
Indicative Contents المحتويات الإرشادية	Part One: (6 hours) • Arabic Grammar (Syntax) • Subject and Predicate • Subject and Predicate Rejectors Part Two: (6 hours) • Kana and its Sisters • In and its Sisters • Zan and its Sisters Part Three: (6 hours) • Midterm Exam • Accusative Nouns • Absolute Object Part Four: (4 hours) • Grammatical Mistakes • Spelling Part Five: (8 hours) • Literature in the Abbasid Era

	• The Poet Al-Mutanabbi	
	• The Poet Abu Tammam	
	• The Poet Abu Firas Al-Hamdani	

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The primary goal of Arabic language lessons is to eliminate the difficulty and rigidity that may accompany some of the topics covered in these lessons, in addition to conveying the required ideas and information to students in ways that are understandable and appropriate to their individual differences. The most prominent focus of the lectures is Arabic grammar and literature. The study consists of lectures, exams, in-class assignments, discussions, and homework.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
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	1	10% (10)	4, 8 and 10	All
	Assignments	1	10% (10)	6	CLO4, CLO5, and CLO6
	On-site Assignment	1	10% (10)	10	CLO4, CLO5, and CLO6
	Report	1	10% (10)	12	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Arabic Grammar (Grammar) importance of
Week 2	Subject and Predicate
Week 3	Subject and Predicate Rejectors
Week 4	Kana and its Sisters
Week 5	Inna and its Sisters
Week 6	Zanna and its Sisters
Week 7	Midterm Exam
Week 8	Accidental Nouns
Week 9	Absolute Object
Week 10	Linguistic Mistakes
Week 11	Spelling
Week 12	Literature in the Abbasid Era
Week 13	The Poet Al-Mutanabbi
Week 14	The Poet Abu Tammam
Week 15	The Poet Abu Firas Al-Hamdani
Week 16	Final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Comprehensive Grammar / Abbas Hassan	Yes
Recommended Texts	In Abbasid Literature / Muhammad Mahdi Al-Basir	Yes
Websites	https://uomosul.edu.iq/en/engineering/environmental-engineering-dept/	

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

<table>
<tr><td colspan="4" align="center">Module Information
معلومات المادة الدراسية</td></tr>
<tr><td>Module Title</td><td colspan="2" align="center">Baathist crimes in Iraq</td><td>Module Delivery</td></tr>
<tr><td>Module Type</td><td colspan="2" align="center">Secondary</td><td rowspan="4">☒ Theory
☐ Lecture
☒ Lab
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<tr><td>Module Code</td><td colspan="2" align="center">UOM2050</td></tr>
<tr><td>ECTS Credits</td><td colspan="2" align="center">2</td></tr>
<tr><td>SWL (hr/sem)</td><td colspan="2" align="center">50</td></tr>
<tr><td>Module Level</td><td align="center">2</td><td>Semester of Delivery</td><td align="center">4</td></tr>
<tr><td>Administering Department</td><td align="center">Mining engineering</td><td>College</td><td>petroleum and Mining engineering</td></tr>
<tr><td>Module Leader</td><td align="center">Basma Mohamed Natheer Ahmed</td><td>e-mail</td><td>Bsmam2022@uomosul.edu.iq</td></tr>
<tr><td>Module Leader's Acad. Title</td><td align="center">Lecturer</td><td>Module Leader's Qualification</td><td>MSc.</td></tr>
<tr><td>Module Tutor</td><td align="center">Non</td><td>e-mail</td><td></td></tr>
<tr><td>Peer Reviewer Name</td><td align="center">Eman Kassim Yahya</td><td>e-mail</td><td>eman.q@uomosul.edu.iq</td></tr>
<tr><td>Scientific Committee Approval Date</td><td align="center">15/9/2024</td><td>Version Number</td><td>1</td></tr>
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<tr><td colspan="4" align="center">Relation with other Modules
العلاقة مع المواد الدراسية الأخرى</td></tr>
<tr><td>Prerequisite module</td><td>The law</td><td>Semester</td><td>3</td></tr>
<tr><td>Co-requisites module</td><td>None</td><td>Semester</td><td></td></tr>
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<table>
<tr><td colspan="2" align="center">Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية</td></tr>
<tr><td>Module Aims
أهداف المادة الدراسية</td><td>- The graduate will be able to expand their scientific knowledge.2- The graduate will be able to distinguish between types of crimes and understand the characteristics of each type and the possibility of applying them.3- The graduate will be able to steer behavioral pathways towards positivity.4- The graduate will be able to understand</td></tr>
</table>

	the effects of crimes on nations and the nature of internationally prohibited weapons used against the Iraqi people.5- The graduate will be able to understand the importance of human rights in the context of crimes against humanity.6- The ability to understand the effects of crimes on the population.7- The ability to connect theoretical study with practical reality.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Informing students about the types of crimes, their forms, and their conflict with human rights and its requirements and objectives. The importance of democratic governments, as part of the requirements of human rights, to compensate for the crimes suffered by the people and to rehabilitate areas that have been subjected to war crimes.
Indicative Contents المحتويات الإرشادية	Students will understand the scientific method of inquiry and use it to draw conclusions based on verifiable evidence. It explains to students the impact of crime on society. It will show students critical thinking skills and the analysis of the science of crime.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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	2	10% (10)	4, 12	LO #1, 2, 10 and 11
	Assignments	1	10% (10)	6	LO # 3, 4, 6 and 7
	Projects / Lab.	10	10% (10)	Continuous	All
	Report	1	5% (5)	9	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1.5hr	15% (15)	8	LO # 1-4
	Final Exam	3hr	50% (50)	16	All

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	A general introduction to the concept of crimes
Week 2	Crime departments Types of crimes
Week 3	Social crimes, their mechanisms and effects Human rights violations
Week 4	Psychological crimes, their mechanisms and effects
Week 5	Military and
Week 6	Destruction of cities (scorched earth policy)
Week 7	Drying the marshes
Week 8	Dredging orchards
Week 9	radiation pollution
Week 10	Decisions issued by the Supreme Criminal Court
Week 11	Mass graves
Week 12	Mass grave events
Week 13	Chronological
Week 14	classification of mass graves
Week 15	Chronological classification of mass graves
Week 16	Mass grave sites

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Required textbooks (curricular books, if any)	Yes
	Main references (sources) ➢	
Recommended Texts	➢ Recommended books and references (scientific journals, reports...)	Yes
Websites	Electronic References, 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 is required, but credit is given.
	F – Fail	راسب	(0-44)	A significant amount of work is 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.