University of Mosul

College of Petroleum and Mining Engineering

Department of Mining Engineering

Course Description

Second Stage/First Semester (Bologna Track)

Prof. Dr. Nabil Youssef Al-Banna

Head of the Scientific Committee

Asst. Prof. Dr. Azealdeen Salih Al-Jawadi

Head of Department

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mathematics II**			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DME 211**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level		**2**	**Semester of Delivery**		**3**
Administering Department		**Mining Engineering**	**College**	**Petroleum and Mining Engineering**	
Module Leader	**Abdullah Hussein Ibrahim**		**e-mail**	abdallh.hussen@uomosul.edu.iq	
Module Leader's Acad. Title		**Lecturer**	**Module Leader's Qualification**		Ph. D.
Module Tutor	**None**		**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	**DME113, Applied Mathematics**	**Semester**	First
Co-requisites module	**None**	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This course aims to teach students the basics of differentiation and integration for different types of functions, as well as to study different types of differentiation and higher degrees of multiple differentiation and integration, as well as applications of differentiation and integration.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Increase the students skills to deal with the mathematical engineering questions. 2- Increase the level of students in thinking. 3- Prepare the students to understand more developed materials. 4- Determine the area under curve using integration in which the students can use this method to determine the reservoir volume. 5- Perform a connection between the mathematical equations with the petroleum engineering major. 6- Use the optimum approaches to find the solution of mathematical questions.
Indicative Contents المحتويات الإرشادية	Indicative contents: Module 1: An Introduction of Mathematics. Module 2: Domain and Range of Functions. Module 3: Drawing the Trigonometric functions. Module 4: Limits (Continuous and Discontinuous). Module 5: Transformation functions including Period, Horizontal and Vertical ships, and Amplitude. Module 6: Differentiation and derivative methods. Module 7: Infinite and Finite Integrals. Module 8: Integration Methods. Module 9: An Introduction to Polar Coordinates.

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, homework's, discussion in class, and help session. This will be achieved through classes and interactive tutorials.

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	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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	4	10% (10)	3,5,11,13	LO #3, #5 and #11, #13
	Assignments	4	10% (10)	3,6,10,13	LO #3, #6 and #10, #13
	Projects / Lab.	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	Module 1: Differentiation
Week 2,3	Module 2: Differentiation Rules
Week 3	Module 3: Higher derivative
Week 4	Module 4: derivative Trigonometric function
Week 5	Module 5: derivative of the inverse Trigonometric function
Week 6	Module 6: chain Rule
Week 7	Module 7: Parametric equations
Week 8	Module 8: L-Hopital Rule
Week 9	Module 9: Integration
Week 10	Module 10:Indefinite integrals
Week 11	Module 11 :Definite integrals
Week 12	Module 12: integral of Rational function
Week 13	Module 13:integration factors
Week 14	Module14: Integration by partes
Week 15	Module 15: Application of Definite integrals
Week 16	**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	Calculus I	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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Ore and Oil Exploration by Remote Sensing**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**DME222**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level		**2** UGII	**Semester of Delivery**		**3**
Administering Department		**DME**	**College**	**PMEUOM**	
Module Leader	**Dr. Ryan Ghazi Thanooun**		**e-mail**	rayan.ghazi@uomosul.edu.iq	
Module Leader's Acad. Title		**Professor**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	**Dr. Eman Kassim Yahya**		**e-mail**	eman.q@ uomosul.edu.iq	
Peer Reviewer Name	**Dr. 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. To develop problem solving skills and understanding of remote sensing application of techniques. 2. To understand the methods of satellite working. 3. Education in basic principles witch would apply to any GIS or remote sensing software. 4. Training in the specifics of a particular software package. 5. To provide an understanding of the state –of – the art of remote sensing. 6. To introduce the student to the physical Advanced Satellite of Remote Sensing, Hyperspectral Remote Sensing, LIDAR Remote Sensing and their different application in terrestrial and vegetation mapping. 7. Acquire skills in handling instruments, tools, techniques and modelling while using Remote Sensing Technology
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: 1. Provide an understanding of the principles of electromagnetic radiation pertaining to remote sensing 2. . The students will acquire advanced conceptual knowledge and comprehensive understanding of the fundamental principles in Remote sensing, Geographical Information System (GIS), Global Positioning System (GPS), Digital Image processing (DIP), Geo-Science and their different filed applications 3. They will be prepared to take up challenges as globally competitive Geo Scientists/researchers in diverse areas of theoretical as well as experimental GIS. 4. They will be equipped with enough technical and analytical skilled to pursue their further studies and develop continuous learning through their professional career. 5. They will trained to appear national level tests like UGC-CSIR NET, GATE, etc., successfully. 6. They will acquire the sense of academic and social ethics. 7. On completion of this course, the student shall be able to 8. Understand concepts of passive and active microwave system 9. Gain knowledge in the principles of Microwave image analysis and interpretation 10. 4. Understand the various application domains of microwave satellite data 11. 5. Acquire skills in analysing Thermal and Hyperspectral Remote Sensing data for various 12. Thematic mapping and its applications. 13. 6. Provides employability opportunity in space organization

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Theory Principles of Remote sensing, Mapping Hydrothermal Alteration with Landsat Thematic Mapper Data, The Atmosphere. [15 hrs] Passive and active images, The Interaction of Electromagnetic Energy with Object Surfaces on the Earth Global navigation satellite system Customization of geospatial tools, [15 hrs] Role of Spectral Reflectance Curves in Remote Sensing, Remote Sensing Systems [10 hrs] Remote Sensing Image Analysis Techniques, Remote Sensing in Exploration Geology. Remote sensing of petroleum exploration, Remote sensing of ore exploration [15 hrs] Arial photographs , Drones [6 hrs] Part B – practical Maps, Stereoscopic analysis, Arial photograph analysis . [15 hrs] Image process, Image process. [7 hrs] Photogrammetry and cartography. [15 hrs]

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 أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	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	Principles of Remote sensing
Week 2	Mapping Hydrothermal Alteration with Landsat Thematic Mapper Data
Week 3	The Atmosphere
Week 4	Passive and active images
Week 5	The Interaction of Electromagnetic Energy with Object Surfaces on the Earth
Week 6	Global navigation satellite system
Week 7	Customization of geospatial tools
Week 8	Role of Spectral Reflectance Curves in Remote Sensing
Week 9	Remote Sensing Systems
Week 10	Remote Sensing Image Analysis Techniques
Week 11	Remote Sensing in Exploration Geology

Week 12	Remote sensing of petroleum exploration
Week 13	Remote sensing of ore exploration
Week 14	Arial photographs
Week 15	Drones
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Maps
Week 2	Lab 2: Stereoscopic analysis
Week 3	Lab 3: Arial photograph analysis
Week 4	Lab 4: Image process
Week 5	Lab 5: Digital Image processing
Week 6	Lab 6: Image statistics
Week 7	Lab 7: Photogrammetry and cartography

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
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 Surveying (Geomatic)**			**Module Delivery**	
Module Type	**S**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**DME213**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level		**2**	**Semester of Delivery**		3
Administering Department		**DME**	**College**	PMEUOM	
Module Leader	**Ali A. Hussein Al-Zubaidi**		**e-mail**	ali.ameer86@uomosul.edu.iq	
Module Leader's Acad. Title		**Assistant Lecturer**	**Module Leader's Qualification**		M.Sc.
Module Tutor	**Zina Nofel**		**e-mail**	zinanaufal@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	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics 1	**Semester**	1
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. To discuss the importance of surveying as a profession. 2. Identify and apply the theory and practice of basic surveying skills. 3. To cover some basic concepts regarding measurement, computation, and surveying mathematics. 4. To give the beginning student a foundation for effective study of the traditional and modern surveying instruments, and the practical applications related to each instrument alongside with field and office procedures,

	5. Use application of modern computer programs to reduce data and the plotting of details and contour plans. 6. Recognize the role of the professional surveying, and modern development in surveying.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write a Learning Outcomes, better to be equal to the number of study weeks. Surveying may be defined as the science of determining the position, in three dimensions, of natural and man-made features on or beneath the surface of the Earth. These features may be represented in analogue form as a contoured map, plan or chart, or in digital form such as a digital ground model (DGM). In engineering surveying, either or both of the above formats may be used for planning, design and construction of works, both on the surface and underground. At a later stage, surveying techniques are used for dimensional control or setting out of designed constructional elements and also for monitoring deformation movements.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Geometry is an applied science that depends very much on mathematics for solutions to many problems. But most surveying problems do not require the use of mathematics beyond the level of algebra, geometry, and trigonometry. It is generally assumed that surveying students have a good background in these subjects and are prepared to apply that knowledge. Many, though, can benefit from a brief review of fundamentals, particularly those who may have been out of school for a while before beginning their study of surveying. [4 hrs.] Horizontal Distances: The tasks of determining the horizontal distance between two existing points and of setting a new point at a specified distance from some other fixed positions are fundamental surveying operations. The surveyor must select the appropriate equipment and apply suitable field procedures to determine or set and mark distances with the required degree of accuracy. [15 hrs.] Vertical Distances: The vertical direction is parallel to the direction of gravity; at any point, it is the direction of a freely suspended plumb-bob cord. The vertical distance of a point above or below a given reference surface is called the elevation of the point. The most commonly used reference surface for vertical distance is mean sea level (MSL). (The words altitude and height are sometimes used in place of elevation.) Vertical distances are measured by the surveyor to determine the elevations of points, in a process called running levels or, simply, leveling. The importance of leveling cannot be overestimated; [15 hrs.]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Classes are given in weekly mode and include workshops by online classes. The workshops are supported by videos, problem solving exercises and class notes. Students will also be provided the using surveying equipment. The subject comprises active learning modules for students whereby demonstrations in using surveying equipment, taking measurements and completing field reports will be showcased, as practical skills are an essential component of the learning and assessment of this subject. Each active learning session is also supported by information on online classes including videos, which will need to be consulted/previewed prior to attending class, and where necessary, pre-class quizzes

	need to be completed. The completion of these quizzes allows for feedback to be provided to students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	100	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	50	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

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)		

Theoretical - Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Engineering Surveying
Week 2	Units of Measurements
Week 3	Scale and Mapping
Week 4	Geometry
Week 5	Geometry
Week 6	Vertical Measurements (Leveling): Introduction
Week 7	Vertical Measurements (Leveling): Methods and Procedure
Week 8	Mid-Term Exam

Week 9	Profile Leveling
Week 10	Topographic Surveying: Introduction
Week 11	Topographic Surveying: Procedures
Week 12	Earthworks: Areas and Volumes
Week 13	Angles and Directions
Week 14	Angels and Directions
Week 15	Total Station and GPS
Week 16	**Preparatory week before the final Exam**

Practical - Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي العملي	
	Material Covered
Week 1	Introduction to Surveying Instruments
Week 2	Horizontal Distances: Introduction
Week 3	Taping: Applications
Week 4	Taping: Applications
Week 5	Taping: Applications
Week 6	Vertical Measurements (Leveling): Level Instrument
Week 7	Vertical Measurements (Leveling): Application
Week 8	Med-Term Exam
Week 9	Profile Leveling: Application
Week 10	Topographic Surveying: Grid Leveling
Week 11	Topographic Surveying: Application
Week 12	Earthworks: Application
Week 13	Angles and Directions: The Theodolite
Week 14	Angels and Directions: Application
Week 15	Total Station and GPS
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	- Surveying Fundamentals and Practices, 6th Ed (Nathanson, Jerry A. et.al.) (2011) - Surveying Problem Solution With Theory and Objective Type Questions (Chandra, A M) (2005) - Engineering Surveying, 6th Ed. (Schofield, W & Breach, Mark) (2007)	No
Recommended Texts		No
Websites	https://www.sundersurveying.com/list-of-surveying-instruments-and-their-uses/ https://civiconcepts.com/blog/surveying-instruments https://theconstructor.org/surveying/types-of-leveling-methods/14679/	

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

(Fluid Mechanics “Static”)

نموذج وصف المادة الدراسية

ميكانيك الموائع الساكن

Module Information معلومات المادة الدراسية					
Module Title	**Static Fluid Mechanics**			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DME214**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level		UGII	**Semester of Delivery**		3
Administering Department		Mining Engineering	**College**	College of Petroleum and Mining Engineering	
Module Leader	Dr. Ibrahim Adil Ibrahim Al-Hafidh		**e-mail**	iibrahim@uomosul.edu.iq	
Module Leader’s Acad. Title		Lecturer	**Module Leader’s Qualification**		Ph.D.
Module Tutor	Ali Abdulameer Hussein Al-Zubaidi (Lab lecturer)		**e-mail**	ali.ameer86@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	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Physics, Mechanics	**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 concepts of fundamental fluid mechanics. These concepts include characteristics of fluid flow in terms of definition, derivation, equations, and applications. **Fundamental Understanding of Fluids** 1- Introduce the basic concepts and properties of fluids, including density, viscosity, surface tension, and compressibility. 2- Differentiate between liquids and gases and their behavior under different conditions. **2. Fluid Statics (Hydrostatics)** 1- Explain the concept of pressure in a static fluid and its variations with depth. 2- Apply Pascal's Law and Archimedes' Principle to engineering problems. 3- Analyze forces on submerged and floating bodies, including stability considerations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of this course, students will be able to: 1- Determine the dimensions and units of physical quantities. 2- Identify the key fluid properties used in the analysis of fluid behavior. 3- Calculate common fluid properties given appropriate information. 4- Explain the effects of fluid compressibility. 5- Use the concepts of viscosity, vapor pressure, and surface tension. 6- Determine the pressure at various locations in a fluid at rest. 7- Explain the concept of manometers and apply appropriate equations to determine pressures. 8- Calculate the hydrostatic pressure force on a plane or curved submerged surface.
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. Characteristics of Fluids 2. Dimensions, Dimensional Homogeneity, and Units 3. Analysis of Fluid Behavior. 4. Measures of Fluid Mass and Weight a) Density b) Specific Weight c) Specific Gravity 5. Ideal Gas Law 6. Viscosity 7. Compressibility of Fluids a) Bulk Modulus b) Compression and Expansion of Gases 8. Vapor Pressure 9. Surface Tension 10. Pressure at a Point (Pascal's law) 11. Pressure Variation in a Fluid at Rest a) Incompressible Fluid

	b) Compressible Fluid 12. Standard Atmosphere 13. Measurement of Pressure 14. Manometer a) Piezometer Tube b) U-Tube Manometer c) Inclined-Tube Manometer 15. Mechanical and Electronic Pressure-Measuring Devices 16. Hydrostatic Force on a Plan Surface. 17. Pressure Prism.

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	Characteristics of Fluids
Week 2	Measures of Fluid Mass and Weight
Week 3	1- Viscosity 2- Compressibility of Fluids (Bulk Modulus).
Week 4	1- Vapor Pressure. 2- Surface Tension.
Week 5, 6	Measurement of Pressure.
Week 7,8	Mechanical and Electronic. Pressure-Measuring Devices.
Week 9,10	Hydrostatic Force on a Plane Surface.
Week 11	Pressure Prism + Solving examples
Week 12, 13	Hydrostatic Force on a Curved Surface.
Week 14, 15	Hydrostatic Force on a Curved Surface examples.

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
	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	**Hydrogeology**			**Module Delivery**	
Module Type	**S**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DME215**				
ECTS Credits	4				
SWL (hr/sem)	100				
Module Level	**1**		**Semester of Delivery**	3	
Administering Department	**Mining engineering**		**College**	**Mining and petroleum engineering**	
Module Leader	**Azealdeen Al-Jawadi**		**e-mail**		
Module Leader's Acad. Title	**Asst. Professor**		**Module Leader's Qualification**	**Ph.D.**	
Module Tutor	**Azealdeen Al-Jawadi**		**e-mail**	**azealdeenaljawadi@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**	

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	The objectives of a Hydrogeology module may vary depending on the specific course or program. However, here are some common objectives that are often covered in such modules: 1. Understanding Hydrogeology methods: The module aims to provide students with a comprehensive understanding of different Hydrogeology methods used in the mining. This includes open-pit mining, quarries, underground mining. 2. Aquifer planning and design: Students learn how to plan and design wells efficiently and effectively. This involves topics such as pit optimization, equipment selection, and road design. 3. Geotechnical considerations: The module addresses the geotechnical aspects related to surface and ground water, including slope stability analysis, rock mechanics, and ground control. Students learn how to assess and mitigate risks associated with geotechnical hazards in Hydrogeology operations. 4. Equipment and technology: Students gain knowledge about the various types of equipment and technology used in Hydrogeology operations. This includes drilling techniques, and automation technologies for improving productivity and safety. 5. Environmental and social considerations: The module covers the environmental and social impacts of aquifers 6. Safety and risk management: Safety is a crucial aspect of surface and groundwater aquifers. The module emphasizes the importance of safety protocols, hazard identification, risk assessment, and emergency response planning in well operations. Students learn how to develop and implement safety programs to ensure a safe working environment. 7. Economic and financial aspects: Hydrogeology operations involve significant investments, and it is important to understand the economic and financial considerations. Students learn about cost estimation, financial analysis, aquifer valuation, and project evaluation techniques to make informed decisions regarding mining investments. 8. Sustainable water practices: The module highlights the importance of sustainable water practices and responsible water extraction. Students explore topics such as energy efficiency, water management, waste reduction, and reclamation strategies to promote sustainable development in water aquifers.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After completing the module, students may attain the following potential learning outcomes: 1. Knowledge of Hydrogeology methods: Students should have a comprehensive understanding of various Hydrogeology methods, including their advantages, limitations, and applicability to different geological and operational conditions.

	2. Ability to plan and design wells: Students should be able to develop water plans and designs considering factors such as well, equipment selection that maximize productivity while minimizing costs and environmental impacts. 3. Competence in geotechnical considerations: Students should be competent in evaluating geotechnical risks associated with Hydrogeology operations. They should be able to analyze slope stability, assess rock mechanics, and develop appropriate ground control measures to ensure safe and stable ground water operations. 4. Familiarity with drilling equipment and technology: Students should be familiar with the types of equipment and technology used in well boring, including their functions, capabilities, and maintenance requirements. They should understand how to select and utilize equipment effectively to optimize mining operations. 5. Understanding of environmental and social aspects: Students should have an understanding of the environmental and social impacts of Hydrogeology and be able to apply mitigation strategies. They should be familiar with environmental regulations, reclamation techniques, and community engagement practices to promote sustainable mining operations. 6. Proficiency in safety and risk management: Students should possess the knowledge and skills to identify and assess safety hazards in Hydrogeology and well drilling operations. They should be able to develop and implement safety programs, conduct risk assessments, and respond effectively to emergencies, ensuring a safe working environment for all personnel. 7. Application of sustainable water practices: Students should be able to apply sustainable water practices in Hydrogeology operations. They should have an understanding of energy-efficient practices, water management strategies, waste reduction techniques, and reclamation principles to minimize environmental impacts.
Indicative Contents المحتويات الإرشادية	These indicative contents provide a general framework for a Hydrogeology module. The specific topics covered and the depth of coverage may vary depending on the academic institution, course level, and duration of the module. Introduction to Hydrology: Overview of the aquifer Types of aquifers Historical development of water managements Hydrogeology Methods: Hydrology: planning, design, and operations Testing techniques and considerations Placer hydrology In-situ leaching and solution mining borehole Planning and Design: Water exploration and resource estimation Well optimization

	Drilling layout and equipment selection Waste water management and disposal techniques Water transportation systems Geotechnical Considerations: Rock mechanics and properties of rocks Slope stability analysis and monitoring Ground control methods and techniques drilling principles and techniques Hydrogeology Equipment and Technology: Types and selection of drill equipment Drilling techniques Test machinery and equipment Water transport systems Automation and digital technologies in surface and underground water Environmental and Social Aspects of Water: Environmental impact assessment and management Reclamation and land rehabilitation Water management in mining operations Community engagement and social responsibility Sustainable Water Practices: Energy efficiency and renewable energy sources Water conservation and management Waste reduction and recycling Biodiversity conservation and ecosystem restoration Corporate social responsibility and sustainable development

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	A combination of various learning and teaching strategies can be employed to effectively deliver a Hydrogeology module. Here are some strategies that can be used to enhance student engagement and promote effective learning: 1. Lectures: Lectures provide a structured overview of the key concepts and theories related to Hydrogeology. Instructors can present theoretical knowledge, case studies, and examples to introduce students to the subject matter. 2. Field Trips: Organizing field trips to active mining sites or mine museums gives students the opportunity to witness Hydrogeology operations firsthand. It allows them

	to observe mining practices, interact with industry professionals, and gain a practical understanding of the challenges and considerations in the field. 3. Group Discussions: Group discussions promote student engagement and encourage peer-to-peer learning. Students can analyze and discuss various Hydrogeology topics, share their perspectives, debate different approaches, and develop their communication and critical thinking skills. 4. Case Studies and Projects: Assigning case studies and projects related to Hydrogeology allows students to delve deeper into specific topics or real-world challenges. They can conduct research, analyze data, and develop solutions, fostering independent learning and problem-solving skills. 5. Guest Lectures and Industry Experts: Industry experts can share their experiences, discuss current industry practices, and address emerging trends and challenges. 6. Multimedia Resources: Utilizing multimedia resources such as videos, documentaries, and online tutorials can enhance student engagement and facilitate visual and auditory learning. These resources can be used to supplement lectures, provide visual demonstrations, or showcase industry best practices. 7. Assessments and Feedback: Regular assessments, such as quizzes, tests, and assignments, help students evaluate their understanding and progress. Providing timely feedback on their performance enables students to identify areas of improvement and reinforce their learning. It is important to use a combination of these strategies to cater to different learning styles and promote active participation from students. Additionally, incorporating real-world applications, industry examples, and current research advancements can help students connect theoretical concepts to practical applications in the field of Hydrogeology.

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	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)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	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 Hydrology Overview of the hydrology and its significance Types of aquifers Historical development of hydrology
Week 2	The geological and geomorphological framework
Week 3	Hydrological methods
Week 4	Hydrochemical methods
Week 5	Geophysical methods
Week 6	Modelling karst hydrodynamics
Week 7	Field Hydrogeology
Week 8	Quaternary deposits and hydrogeology
Week 9	water resources
Week 10	physical geography and climatic constraints on water resources
Week 11	Well drilling
Week 12	Equipment of well drilling
Week 13	Managements of hydrogeology aquifers
Week 14	Environmental aspects of hydrogeology
Week 15	Group Projects and Presentations
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	Manual of Applied Field Hydrogeology Willis D. Weight, John L. Sonderegger McGraw-Hill professional engineering 2001	Yes
Required Texts		Yes
Recommended Texts		No
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	**Transport and circulation of raw materials**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DME216**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	**2**	**Semester of Delivery**	**3**		
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	Petroleum and Gas Transport and Exchange	**Semester**	6

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- Understand the importance of transport and circulation in the supply chain. 2- Identify various modes of transportation. 3- Analyze factors influencing transportation decisions. 4- Explore global supply chains by examining the complexities involved in international trade, including customs regulations, tariffs, logistics, and cultural considerations. 5- Investigate the role of technology in transportation and circulation. 6- Examine sustainability and environmental impacts by exploring sustainable practices, alternative fuels, carbon footprints, and ways to minimize the environmental consequences associated with the movement of raw materials. 7- Understand the role of government and policy in transportation.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The module on the transport and circulation of raw materials aims to achieve the following learning outcomes for students: 1- <u>Knowledge and Understanding:</u> - Gain a solid understanding of the importance of transportation and circulation in the supply chain of raw materials. - Acquire knowledge about various modes of transportation used for the movement of raw materials and their advantages and disadvantages. - Understand the factors that influence transportation decisions, including cost, distance, accessibility, infrastructure, and environmental impact. - Comprehend the complexities involved in global supply chains and international trade of raw materials. 2- <u>Analysis and Evaluation:</u> - Develop the ability to analyze transportation scenarios and make informed decisions based on cost-effectiveness, efficiency, and sustainability considerations. - Evaluate the environmental impacts associated with transportation systems and propose measures to mitigate them. - Assess the role of technology in enhancing transportation and circulation processes and their impact on efficiency and effectiveness. - Evaluate the impact of government regulations and policies on transportation and circulation systems. 3- <u>Application and Problem-Solving:</u> - Apply knowledge of transportation modes and factors to solve transportation challenges encountered in real-world scenarios. - Utilize critical thinking skills to evaluate transportation options and propose optimized solutions for the movement of raw materials. - Apply principles of sustainability to design and optimize environmentally friendly transportation and circulation systems. - Analyze logistical and supply chain challenges related to transportation and circulation and propose strategies to overcome them.

Indicative Contents المحتويات الإرشادية	The indicative contents for a module on the transport and circulation of raw materials include the following topics: 1- <u>Introduction to Transport and Circulation:</u> - Importance of transportation and circulation in the supply chain. - Overview of the movement of raw materials from source to destination. 2- <u>Factors Influencing Transportation Decisions:</u> - Cost considerations: fuel, labor, maintenance, and infrastructure costs - Distance considerations: short-haul vs. long-haul transportation - Accessibility considerations: road conditions, port facilities, and warehouse locations - Infrastructure considerations: road networks, railways, ports, and airports - Environmental impact considerations: emissions, carbon footprint, and sustainability 3- <u>Technology in Transportation and Circulation:</u> - Automation and robotics in logistics and supply chain management. - Tracking systems and real-time monitoring. - Supply chain management software and technologies. - Digital platforms and data analytics for transportation optimization. 4- <u>Collaboration and Communication Skills</u>: - Group discussions and activities to explore transportation scenarios - Collaborative problem-solving exercises - Presenting findings and solutions to peers

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Lectures and Presentations: Conducting informative lectures and presentations can provide students with an overview of key concepts, theories, and principles related to transportation and circulation. Use visual aids, case studies, and real-world examples to engage students and facilitate their understanding. 2- Interactive Discussions: Foster interactive discussions to encourage active student participation. Pose questions, encourage critical thinking, and facilitate debates to explore different perspectives on transportation and circulation challenges. 3- Case Studies and Problem-Solving: Present real-life case studies that involve transportation and circulation issues. Engage students in analyzing and solving

	problems related to logistics, supply chain management, and transportation decisions. 4- Group Projects and Collaborative Learning: Assign group projects that require students to work together in teams. Each team can be given a specific transportation or circulation scenario to analyze, propose solutions, and present their findings. 5- Technology Integration: Utilize technology tools and resources to enhance the learning experience. 6- Assessment through Projects and Presentations: Design assessments that require students to demonstrate their understanding through projects, presentations, or reports.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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**	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 to Materials Handling
Week 2	Principles of Materials Handling
Week 3	Unit Load Concept
Week 4	Classification of Materials Handling Equipment **+ Quizze1.**
Week 5	Belt Conveyors **+Home work1.**
Week 6	Chain Conveyors.
Week 7	**Mid-term exam** + Haulage, Cable, Bucket, Roller and Screw Conveyors.
Week 8	Pneumatic Conveyors **+ Quizze2.**
Week 9	Hydraulic Conveyors **+Home work2.**
Week 10	Hoisting Equipment
Week 11	Bulk Handling Equipment and Systems
Week 12	Robotic Handling **+Home work3.**
Week 13	Piping System Part I
Week 14	Piping System Part II
Week 15	Organization, Maintenance and Safety + **Discuss reports.**
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Ray, S. (2008). *Introduction to materials handling*. New Age International (P) Ltd., Publishers.	No
Recommended Texts	Fruchtbaum, J. Bulk Materials Handling Handbook [electronic resource].	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
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	C - Good	جيد	70 - 79	Sound work with notable errors
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	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 II**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOM 2032**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level		**Two**	**Semester of Delivery**		**Three**
Administering Department		**Mining Engineering**	**College**	**Petroleum and Mining Engineering**	
Module Leader	**Shatha Muhamad**		**e-mail**	**@uomosul.edu.iq**	
Module Leader's Acad. Title		**Assistant Lecturer**	**Module Leader's Qualification**		**MSc**
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	Students successfully completing this course will be able to: 1. Utilize the computer for fundamental tasks. 2. Identify and discuss the hardware components of the computer system. 3. Creating documents using a word processor and creating presentations. 4. Conducting research on the Internet. 5. An introduction to Artificial Intelligence
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Apply Computer Basics: Demonstrate a fundamental understanding of computer components, software types, and operating systems. Troubleshoot basic computer issues independently. Excel Proficiency: Create and format spreadsheets with clarity and precision. Analyze data effectively using advanced Excel functions and tools. Word Mastery: Generate professional documents with advanced formatting. Collaborate on documents using review tools and integration of multimedia. Access Competence: Develop and manage relational databases using Microsoft Access. Implement queries, forms, and reports for data manipulation. Email and Internet Skills: Manage email accounts efficiently and apply advanced features. Navigate the internet securely and utilize online collaboration tools. Advanced Technology Integration: Understand cloud computing concepts and utilize file-sharing platforms. Effectively use project management tools for task organization. Holistic Application: Integrate knowledge from various software applications into a final project. Apply computer fundamentals to solve real-world problems effectively
Indicative Contents المحتويات الإرشادية	Week L-T: Introduction to Computers • Computer hardware: CPU, RAM, storage devices. • Computer software: System software vs. application software. • Operating systems: Windows, macOS, Linux. • Basic troubleshooting techniques. Week √-³: Microsoft Excel Basics • Excel interface and navigation. • Creating and formatting spreadsheets. • Basic calculations: SUM, AVERAGE, MAX, MIN. • Data presentation: charts and graphs. Week O-1: Advanced Excel Functions • Advanced formulas: VLOOKUP, HLOOKUP, INDEX, MATCH. • Pivot tables and pivot charts. • Data import/export techniques. • Automation with Macros. Week V-^: Microsoft Word Basics • Word interface and document formatting. • Document creation and editing. • Headers, footers, and page layouts. • Collaboration tools and multimedia integration.

	Week 9-L·: Advanced Word Features • Mail merge for personalized documents. • Document protection and encryption. • Advanced formatting: styles and themes. • Document review tools: track changes, comments. Week LL-LT: Microsoft Access Basics • Introduction to database design principles. • Creating tables, queries, forms, and reports. • Data manipulation and relationship management. Week LV-L³: Email and Internet Usage • Email etiquette and best practices. • Managing email accounts and organizing messages. • Internet browsing, search engines, and online communication. • Online collaboration tools: Google Docs, SharePoint. Week LO: Advanced Topics and Review • Cloud computing basics: Google Drive, OneDrive. • Introduction to project management tools: Trello, Asana. • Review of key concepts from the entire module. • Final project incorporating multiple software applications.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	L. Interactive Lectures: • Engage students with discussions, questions, and multimedia presentations. 2. Hands-On Practice: • Conduct practical workshops for hands-on application of software skills. • Assign exercises and projects to reinforce learning. 3. Flipped Classroom: • Use the flipped classroom model, providing pre-class materials and using class time for active learning. 4. Problem-Based Learning: • Introduce real-world problems for collaborative problem-solving activities. 0. Assessments: • Utilize both formative and summative assessments for evaluating understanding. 1. Technology Integration: • Leverage technology tools, online tutorials, and virtual labs for enhanced learning. V. Industry Insights: Invite guest speakers to share insights into computer fundamentals and industry trends

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	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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**	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	Security and Networking
Week 2,3	E-Commerce
Week 4,5	Introduction to AI, AI in Our Daily Lives
Week 6,7	AI and Society
Week 8, 9, 10, 11	Applications of AI ,
Week 12, 13,14	Ethical Challenges in AI ,
Week 15	Computer Troubleshooting

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	David Watson , Graham Brown , Cambridge IGCSE Information and Communication Technology Third Edition	No
Recommended Texts		
Websites	Non	

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	**English language**			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOM2022**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	2		**Semester of Delivery**	**3**	
Administering Department	**mining engineering**		**College**	**Petroleum and mining engineering**	
Module Leader	**Amira Rifae Hannawi**		**e-mail**	amira.rifae@uomosul.edu.iq	
Module Leader's Acad. Title	**Assist. Lecturer**		**Module Leader's Qualification**	**Msc.**	
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. to enable the learner to communicate effectively and appropriately in real life situation. 2. to use English effectively for study purpose across the curriculum. 3. to develop interest in and appreciation of language 4. to develop and integrate the use of the language skills i.e. Reading, Speaking and Writing . 5. to revise and reinforce structure and grammar already learnt.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Define The ability to read English with understanding the student is able to understand the total content 2. Identify the ability to understand English when it is spoken. 3. Promote the ability to write English correctly . 4. Outline the correct usage of the grammatical items. 5. Describing and Identify some concepts of petroleum and mining study to enhance students' lexicon of specific terms . 6. List students' weaknesses in an attempt to strengthen and overcome them 7. Encourage student to write reports about different topics . 8. Enforce their language by giving them assignment that strengthen the method of research and writing
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>types of sentences</u> An affirmative sentence (a declarative or assertive) sentence, and it can be either a simple, complex or compound sentence as long as it is positive , Negative and interrogative sentences . [15hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering English language is to encourage students' participation in the exercises, discussion and use brainstorming

	by asking many questions to keep in touch with the students .In this course we will also encourage students how to write , read and discuss different scientific topics . while at the same time refining and expanding their critical thinking skills and give and receive feedback from the students. 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		**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	6 and 12	LO #3 #4and #6
	Assignments	2	10% (10)	2 and 12	LO #1 #2 and #5 #8
	Report	1	10% (10)	13	LO #1#2 and #4 #7
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	All
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered

Week 1	Conditional sentence + vocabularies
Week 2	Passive voice + vocabularies
Week 3	Direct and Indirect speech + vocabularies
Week 4	Adjective , types and uses + vocabularies
Week 5	Adverb , types and uses + vocabularies
Week 6	Examination
Week 7	Simple sentence , reading and listening + vocabularies
Week 8	Compound sentence , reading and listening + vocabularies
Week 9	Complex sentence , reading and listening + vocabularies
Week 10	Affirmative sentence (Declarative and Assertive) , reading and listening + vocabularies
Week 11	Positive , negative and interrogative sentence , reading and listening + vocabularies
Week 12	Quiz
Week 13	Patterns of possibilities + Reading scientific passages
Week 14	Countable and uncountable nouns , , reading and listening + vocabularies
Week 15	Conditional verbs , reading and listening + vocabularies
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	Levrai. P (2020) English for Oil and Gas FOUNDATION COURSE .TTLINTERNATIONAL Frendo.E with Bonamy, D(1997) English for the Oil industry , PEARSON LONGMAN .	No
Recommended Texts	Textbook and curriculums approved by the scientific committee and academic accreditation committee .	No
Websites	https://academicguides.waldenu.edu/writingcenter/scholarlyvoice/sentencestructure https://byjus.com/english/types-of-sentences/	

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