	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Calculus I			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	ENG113				
ECTS Credits	**5**				
SWL (hr/sem)	**150**				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	OGE		**College**	Engnieering	
Module Leader	Hawraa majeed		**e-mail**	hawraa.majeed@uowa.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	MS.c	
Module Tutor	2		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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 Aims أهداف المادة الدراسية	1-Developing and strengthening students' problem-solving skills. In particular, students 2- Teaching them to read, write, speak, and think in the language of mathematics. 3- Learning how to apply calculus tools to a variety of problem situations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Developing and strengthening students' problem-solving skills. In particular, students 2- Teaching them to read, write, speak, and think in the language of mathematics. 3- Learning how to apply calculus tools to a variety of problem situations.
Indicative Contents المحتويات الإرشادية	• The area of mathematics known as calculus is primarily concerned with limits, functions, derivatives, trigonometric functions, and infinite series. An important component of modern mathematics education in this subject. Using derivatives to solve related rates problems • Using derivatives to approximate points (linearization) • Evaluating limits using L'Hopital's law • Locating critical points using the first derivative • Identifying increasing/decreasing values using the first derivative • Locating critical points using the second derivative • Identifying concavity and inflection points using the second derivative • Using the first/second derivative tests to find local and global extrema • Using derivatives to solve optimization problems

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	• Give emphasis on conceptual understanding. • Set challenging homework that expands on what you learned in class.

	• Cooperative learning techniques should be used. • Ask thoughtful questions. • Concentrate on logical thinking and actual problem-solving. • Use a variety of assessment methods.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects /	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Exponential and logarithm functions
Week 2	Application of Exponential and logarithm functions
Week 3	The relationship between the Exponential function and the logarithm function
Week 4	Trigonometric functions
Week 5	The inverse of Trigonometric functions
Week 6	Hyperbolic functions

Week 7	The inverse of Hyperbolic functions
Week 8	Derivative
Week 9	Implicit differentiation Exponential functions derivative
Week 10	Maximum and Minimum using Derivatives
Week 11	The logarithm functions derivative
Week 12	Derivative of hyperbolic functions
Week 13	Applications of differentiation
Week 14	Increasing and decreasing functions
Week 15	**Preparatory week before the final Exam**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	George B. Thomas, "THOMAS' CALCULUS ", Eleventh Edition 2011, Dorling Kindersley (India). • Murry R. Spiegel," Mathematical Handbook of formulas and tables",1968.	
Recommended Texts	• 2-Ford , S.R. and Ford , J.R. " Calculus " , (1963) McGraw-Hill. • 3-K.Back house and S.P.T. Houldsworth " Pure Mathematics a First Course " (1979) , S1 Edition , Longman Group .	
Websites	• https://tutorial.math.lamar.edu/classes/calci/calci.aspx • https://learn.saylor.org/course/MA005	

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

Module Information
معلومات المادة الدراسية

Module Title	Calculus II	**Module Delivery**	
Module Type	**Basic**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	ENG123		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		

Module Level	UGI	**Semester of Delivery**	2
Administering Department	OGE	**College**	Engineering
Module Leader	Nihad Abdul Jalil	**e-mail**	Nihad.Abduljalil@uowa.edu.iq
Module Leader's Acad. Title	Pro.	**Module Leader's Qualification**	Ph.D
Module Tutor	2	**e-mail**	E-mail
Peer Reviewer Name	Hawraa Majeed	**e-mail**	hawraa.majeed@uowa.edu.iq
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	ENG113	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	**1-The main objective is to understand the process of integration and its benefits in practical life and to enable the student to solve various problems of integration** **2-Study different matrices and explain the usefulness of matrices in petroleum industry** **3-Study and draw complex numbers so that the student can understand the purpose of complex numbers**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1- Teaching the student, the scientific basis and the benefits of integration** **2- Carry out the integration process using integration methods** **3- Integration of trigonometric and quadrilateral functions** **4- Study definite integration and its applications in calculating areas and volumes** **5- Studying matrices, knowing their properties, mathematical operations related to them, and how to benefit from them in practical life** **6- Studying Complex Number, knowing their properties, mathematical operations related to them, and how to benefit from them in practical life**
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: **Part I: fundamentals of integration** **Technique of Integral, Defined integral, Mode of Integral, Integral the Odd and even powers of sine and cosine.** (10 hrs) **Part II: method of integration** Method of integration: Integration by Part, Integral by trigonometric substitutions, Integral by completing the square, Integral by reducing an improper fraction, Integral by partial fraction Integral by Rational function. (30 hrs) **Part III: Definite Integral** Application of Definite Integral, Areas and Volume. (5 hrs) **Part IIII: Matrices** **Determinants and Introduction to Matrices, Determine the inverse of matrices.** (10 hrs) **Part IIIII: Complex Number** Polar Coordinates, Complex Number, Complex Variables, Draw the complex function. (20 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The major technique for delivering this module will be a lot of homework and solved exercises, as well as attempting to connect mathematical operations to real life for the purpose of enhancing interest and solidifying knowledge.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 16 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	96	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	54	**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)	4, 11	1,2,3,4 and 5
	Assignments	2	10% (10)	3, 10	1,2,3,4 and 5
	Projects /	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	1,2,3,4,5 and 6
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	1,2, and 3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Technique of Integral, Defined integral, Mode of Integral**
Week 2	**Method of integration: Integration by Part**
Week 3	**Integral the Odd and even powers of sine and cosine**
Week 4	**Integral by trigonometric substitutions**
Week 5	**Integral by completing the square**
Week 6	**Integral by reducing an improper fraction**
Week 7	**Integral by partial fraction**
Week 8	**Integral by Rational function**
Week 9	**Application of Definite Integral, Areas and Volume**
Week 10	**Determinants and Introduction to Matrices**
Week 11	**Determine the inverse of matrices**
Week 12	**Polar Coordinates**
Week 13	**Complex Number**
Week 14	**Complex Variables**
Week 15	**Draw the complex function**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Strang, G. (2017). Calculus. United States: Wellesley-Cambridge Press.	yes
Recommended Texts		
Websites	https://www.geogebra.org/3d?lang=en https://www.wolframalpha.com/	

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Chemistry			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOW121**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	OGE		**College**	Enginering	
Module Leader	Mujtaba Mahdi		**e-mail**	Email: mujtaba.mahdi@uowa.edu.iq	
Module Leader's Acad. Title	Ass. Lect.		**Module Leader's Qualification**	M.Sc.	
Module Tutor	NA		**e-mail**	E-mail	
Peer Reviewer Name	Yahya Hadi		**e-mail**	Email: yahya.hadi@uowa.edu.iq	
Scientific Committee Approval Date	01/06/2023		**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 Aims أهداف المادة الدراسية	Principles of Chemistry is a course designed to provide a general chemistry background to environmental studies majors. Chemistry is a rapidly growing field and is essential in understanding our natural environment. Having a basic knowledge on the atom and its structure, the way atoms connect to form molecules, the properties of chemical substances and the way they react helps students understand the science in their everyday life and provides an essential background and tool for students. Additionally, it provides knowledge of organic substances and compounds - that is, those that contain carbon in their molecular structure, along with other elements such as hydrogen, nitrogen, oxygen, and sulfur. As well as, it will provides with the principles of green technologies and a deep understanding of sustainability issues that will lead to the reduction or elimination of hazardous substances involved in the design, manufacture and application of chemical products. Also examine the environmental, economic and social benefits arising from the transformation of the chemical industries of the future.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Know the fundamentals of the physical and chemical properties of matter, and explain the theoretical principles and important applications of classical analytical methods. 2-Classify and give the nomenclature of organic compounds , and explain in details the qualitative and quantitative aspects of organic compounds 3-Students will be able to explain why chemistry is an integral activity for addressing economic, and environmental problems.
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following:** **Part I: General Chemistry** In this part explains that the chemistry is the branch of science that deals with the properties, composition, and structure of elements and compounds, how they can

	change, and the energy that is released or absorbed when they change**Part II : Analytical Chemistry** In this part It is designed to provide a basic overview of analytical chemistry, as a field responsible for characterizing the composition of matter, in qualitative terms (what is there) and Quantitatively (how much is present). Nearly all chemists routinely make qualitative or quantitative measurements. **Part III. Organic Chemistry** In this part II is designed to provide a fundamental overview of organic chemistry to students interested in pursuing a career in the sciences. It is focusing primarily on the basic principles to understand the structure, properties, composition, and preparation (by Synthesis or by other means) of Carbon-based compounds, Hydrocarbons, and their derivatives. These compounds may contain any number of other elements, including Hydrogen, Nitrogen, Oxygen, the Halogens as well as Phosphorus, Silicon, and Sulfur, and reactivity of organic molecules. Emphasis is on substitution and elimination reactions and chemistry of the alkyl group. **Part IV sustainable Chemistry** This part it provides an overview of sustainable chemistry and will equip the students with an understanding of how to assess chemical syntheses and processing routes as well as to design sustainable materials and chemicals.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Teaching and learning strategies can include a range of whole class, group and individual activities to accommodate different abilities, skills, learning rates and styles that allow every student to participate and to achieve some degree of success.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 16 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	96	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	54	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**	5	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	4	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**What Is Chemistry?** Some Basic Definitions Chemistry as a Science
Week 2	**Atoms, Molecules, and Ions** Atomic Theory Molecules and Chemical Nomenclature Masses of Atoms and Molecules Ions and Ionic Compounds Acids
Week 3	**Chemical Reactions and Equations** The Chemical Equation Types of Chemical Reactions: Single- and Double-Displacement Reactions Ionic Equations: A Closer Look Composition, Decomposition, and Combustion Reactions Neutralization Reactions Oxidation-Reduction Reactions
Week 4	**Stoichiometry and the Mole** Stoichiometry The Mole The Mole in Chemical Reactions Mole-Mass and Mass-Mass Calculations
Week 5	**Analytical Chemistry:** Fundamental way of expressing the concentration of solution: -Molality, Normality, Molality and Tutorial
Week 6	**Equilibrium-Constant Expressions** Weak acids and base Dissociation Constants for Conjugate Acid / Base Pairs

	Relationship between Ka and Kb Hydronium Ion Concentration of Solutions of Weak Acids
Week 7	**Analytical Methods of Analysis:** a-Qualitative Analysis b-Quantitative Analysis **Volumetric Analysis** (Titrimetric) & Analysis, Acid- Base, Redox, Precipitation, Complex Titration, Methods of Calculation, Titration Curves **Gravimetric Analysis** Precipitation Reactions, Direct and Indirect Methods of Analysis, Ksp. Instrumental Methods of Analysis.
Week 8	**Acids and Bases** Arrhenius Acids and Bases Brønsted-Lowry Acids and Bases Acid-Base Titrations Strong and Weak Acids and Bases and Their Salts Auto-ionization of Water.
Week 9	**Buffer Solutions:** Calculating the pH of buffer solutions The Henderson-Hasselbalch Equation Properties of Buffer Solutions The Composition of Buffer Solutions as a Function of pH: Alpha Values Preparation of Buffer
Week 10	**Organic Chemistry:** Classification of organic compounds: -Aliphatic compounds (Akane, Alkene, Alkyne) and cycloalkane -Aromatic compounds -Functional group: Alkyl halide, Alcohols, Ethar, Aldehydes, Ketones, Esters, Carboxylic acids, Thiophen, Disulphide
Week 11	**Aromatic Compounds**: Structural formula of benzene ring, nomenclature, preparation, properties, chemical reaction, nitration, halogenation -Chemical reaction of Toluene, Xylene, Ethyle benzene, Styrene, Aniline.
Week 12	**Hydrocarbons from Petroleum:**

	Fossil Fuels, Refining, Alkanes from Natural Gas, Crude Oil Refining, Fractional Distillation, Cracking, Octane Number
Week 13	**Green Chemistry** Introduction Pollution Prevention Sustainability/Real world Green Chemistry Renewable energy
Week 14	**Preparatory week before the final Exam**
Week 15	**Final exam**

Delivery Plan (Weekly Lab. Syllabus) **المنهاج الاسبوعي للمختبر**	
	Material Covered
Week 1	**Introduction of Analytical Chemistry**
Week 2	**Preparation the standard solutions : Primary standard solution and secondary standard solution**
Week 3	**Volumetric Analysis: Titration of hydrochloric acid with sodium carbonate**
Week 4	**Titration of Mixture (base strong and base weak) with acid strong**
Week 5	**Acidity of Vinegar, Quiz**
Week 6	**Introduction of Organic chemistry**
Week 7	**Measurements the physical properties of organic compounds: Boiling point**
Week 8	**Measurements the physical properties of organic compounds: Melting point**
Week 9	**Simple Distillation, Quiz**
Week 10	**Preparation of organic compounds (ester)**
Week 11	**Identification of functional groups :Saturated and Unsaturated Aliphatic Compound.**
Week 12	**Identification of functional groups :Aldehyde and ketone**
Week 13	**Final Examination Lab**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Text book : R.T. Morrison, R.N. Boyd and S.K. Bhattacharjee; "Organic Chemistry" 7th edition, Prentice Hall of India, copy right 2011.	Yes
Recommended Texts	1) R.T. Morrison and R.N. Boyd; "Organic Chemistry" 6th edition Prentice. Hall . Inc, New Jersey (1992). 2) K.S. Tewari, S.N. Mehrotra and N.K., Vishnoi; A Text book of Organic Chemistry, Vikas, Pub . Ltd, New Delhi (1979). 3) Douglas A. Skoog, Donald M. West, F. James Holler and Stanley R. Crouch, "Fundamental of Analytical Chemistry", ninth editions, Brooks/cole, 2014 . 4)ary D. Christian, Purnendu K. (Sandy) Dasgupta and Kevin A. Schug, "Analytical Chemistry", Seventh edition, John Wiley & Sons, Inc,2014.	Yes
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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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Computer Programming I			**Module Delivery**	
Module Type	Support or related learning activity			☒ Theory	
Module Code	UOW115			☐ Lecture	
ECTS Credits	5			☒ Lab	
SWL (hr/sem)	125			☐ Tutorial ☐ Practical ☐ Seminar	
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	OGE		**College**	Engineering	
Module Leader	Alaa Akram		**e-mail**	alaa.ak@uowa.edu.iq	
Module Leader's Acad. Title	Asst. Lect.		**Module Leader's Qualification**	MS.c.	
Module Tutor	NA		**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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 Aims أهداف المادة الدراسية	is an inevitable part of commerce education. The course is aiming to equip all the commerce aspirants to have basic skills as well as hands on experience on word processing, for creating excel spreadsheets, for building databases through the use of Microsoft Office Word, Excel, and VBA .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- To familiarize students with the use of Microsoft Word 2- To familiarize students with the use of MS Excel 3- To familiarize students with the use of Excel Visual basic application
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Part I: fundamentals of Microsoft word In Part 1 we will provide students with the skills to create documents using Microsoft Word. It will also provide knowledge of how to create your own document for work, college, or home. Students will learn the basics, creating documents, formatting text, adding graphics, images, Word chart, and many other features available. You will see a full list of course content below. You'll also cover charts and tables, as well as using forms and mail merge. Part II: fundamentals of Microsoft Excel this part provides all the tools necessary to create and use basic spreadsheets. Participants will receive an overview of the interface and learn the various methods for entering and editing data. Additionally, participants will learn the various ways to write formulas, Create Worksheets and Workbooks, data analysis, create charts. Apply Custom Data Formats and Layouts, and others which will used to streamline reporting, turn raw data into presentation-ready graphs or chart. where One of the most common uses of Excel in petroleum engineering is for organizing and analyzing data related to well production data. Part III: Visual basic Application In Part 3 we will provide students with the skills to create & develop vb applications, where that allow Engineers to develop engineering applications that run in the Windows environment. VB provides the engineer a programming tool to write simple programs quickly that meet their needs. Example programs written using VB include gas and oil fluid correlations, interpolation software, gas well bottom hole pressure

	from surface conditions, volumetric reserve calculations, simple log analysis, water pattern analysis and bottom hole pressure analysis.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to Encourage students to ask and answer questions, as well as training students to implement many practical exercises in the laboratory (which covers most of what is studied in theoretical lectures), which in turn gives students the ability to carry out the work required of them in the future in their practical life.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	• Microsoft Word Create and Manage Documents: Create a Document, Navigate Through Document, Format a Document, Customize Options and Views for Documents, Print and save documents.
Week 2	Format Text, Paragraphs, and Sections: Insert Text and Paragraphs, Format Text and Paragraphs, Order and Group Text and Paragraphs
Week 3	Create Tables and Lists: Create a Table, modify a Table, Create and Modify a List.
Week 4	Insert and Format Graphic Element: Insert Graphic Elements, Format Graphic Elements, Insert and Format SmartArt Graphics
Week 5	**Microsoft Excel** : Manage Workbook Options and Setting: Create Worksheets and Workbooks, Navigate in Worksheets and Workbooks, Format Worksheets and Workbooks, Customize Options and Views for Worksheets and Workbook, Configure Worksheets and Workbooks for Distribution
Week 6	Apply Custom Data Formats and Layouts: Apply Custom Data Formats and Validation, Apply Advanced Conditional Formatting and Filtering, Create and Modify Custom Workbook Elements,Create Table: Create and Manage Table, Manage Table Styles and Options, Filter and Sort a Table
Week 7	Perform Operations with Formulas and Functions: Summarize Data by using Function, . Perform Conditional Operations by using Functions, Format and Modify Text by using Functions
Week 8	Create Charts and Objects: Create Charts, Format Charts, . Insert and Format Object,Manage Workbook Options and Settings
Week 9	**Excel VBA:**Introducing Visual Basic for Applications Displaying the Developer Tab in the Ribbon Recording a Macro
Week 10	Working with Procedures and Functions: Understanding Modules Creating a Standard Module,Understanding Procedures,Creating a Sub Procedure Calling Procedures,Using the Immediate Window to Call Procedures Creating a Function Procedure
Week 11	Understanding Objects: Understanding Objects,Navigating the Excel Object HierarchyUnderstanding Collections,Using the Object Browser,Working with Properties Using the With Statement,Working with Methods

Week 12	Using Expressions, Variables, and Intrinsic Functions: Understanding Expressions and Statements,Declaring,Variables,UnderstandingDataTypes,Working with Variable Scope
Week 13	Controlling Program Execution: Understanding Control-of-Flow Structures Workingwith Boolean Expressions,Using the If...End If Decision Structures,Using the Select Case...End Select Structure
Week 14	,Using the Do...Loop Structure,Using the For...To...Next Structure,Using the For Each...Next Structure
Week 15	Working with Forms and Controls: Understanding UserForms,Using the Toolbox Working with UserForm Properties, Events, and Methods,, Understanding Controls
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	practical exercises to Create and Manage Documents: Save & open document, Format a Document, Customize Options and Views for Documents, Print and save as documents.
Week 2	practical exercises about the Format Text, Paragraphs, and Sections: Insert Text and Paragraphs, Format Text and Paragraphs, Order and Group Text and Paragraphs
Week 3	practical exercises to Create Tables and Lists: Create a Table, modify a Table, Create and Modify a List.
Week 4	Insert and Format Graphic Element: Insert Graphic Elements, Format Graphic Elements, Insert and Format SmartArt Graphics (practical exercises + homework)
Week 5	(practical exercises + homework) about Microsoft Excel :introduction to interface , Create Worksheets and Workbooks, Import data from a delimited text file ▪ Add a worksheet to an existing workbook ▪ Copy and move a worksheet
Week 6	practical exercises to :▪ Change worksheet tab color ▪ Rename a worksheet ▪ Change worksheet order ▪ Insert and delete columns or rows ▪ Change workbook themes ▪ Adjust row height and column width ▪ Insert headers and footers

Week 7	practical exercises with homework about Customize Options and Views for Worksheets and Workbooks:▪ Hide or unhide worksheets ▪ Hide or unhide columns and rows ▪ Customize the Quick Access toolbar ▪ Modify document properties ▪ Display formulas
Week8	(practical exercises + homework) to Create Charts and Objects: Create Charts, Format Charts, . Insert and Format Object,Manage Workbook Options and Settings
Week9	Excel VBA:Introducing Visual Basic for Applications Displaying the Developer Tab in the Ribbon Recording a Macro (practical)
Week10	(practical exercises + homework): about Working with Procedures and Functions: Creating a Sub ProcedureCalling Procedures, Creating a Function Procedure
Week11	Using Expressions, Variables, and Intrinsic Functions: Understanding Expressions and Statements,Declaring,Variables,UnderstandingDataTypes,Working with Variable Scope(practical exercises + homework)
Week12	Working with Boolean Expressions, Using the If...End If Decision Structures, Using the Select Case...End Select Structure(practical exercises + homework):
Week13	Working with Do...Loop Structure,Using the For...To...Next Stru Working with Boolean Expressions, Using the If...End If Decision Structures, Using the Select Case...End Select Structure Working with Boolean Expressions, Using the If...End If Decision Structures, Using the Select Case...End Select Structure cture,Using the For Each...Next Structure(practical exercises + homework)
Week14	Working with Forms and Controls: How insert data to Worksheets and Workbooks, create function, perform arithmetic operation using VBA (practical exercises + homework)
Week15	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Microsoft Office for Beginners,by , M.L. Humphrey, 2020. • MICROSOFT WORD & POWERPOINT FOR BEGINNERS & POWER USERS 2021: The Concise Microsoft Word & PowerPoint A-Z Mastery Guide for All Users Paperback by Tech Demystified,2021. • Microsoft Excel 2019 VBA and Macros ,By Bill Jelen, Tracy Syrstad · 2019	Yes No No

Recommended Texts		
Websites		

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

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

Ministry of Higher Education and Scientific Research - Iraq

University of Warith Al_Anbiyaa....
College of Engineering
Oil and Gas Department

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Engineering Ethics			**Module Delivery**	
Module Type	**Support**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	ENG106				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	OGE		**College**	Engineering	
Module Leader	Dheiaa AL farge		**e-mail**	dheiaa.al@uowa.edu.iq	
Module Leader's Acad. Title	Asst.Pro.		**Module Leader's Qualification**	Ph.D	
Module Tutor	NA		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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 Aims أهداف المادة الدراسية	This course deals with the understanding and importance of integrity and responsible, ethical and scientific behavior towards engineering work and the most important associations concerned with these important topics and their impact on the future of engineering work
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Develop the student's professional history and engineering development 2- Develop the student's the importance of professional behavior and a sense of responsibility 3- The most important professional associations and codes of ethics
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following:** **Part I: Introduction** • Know why it is important to study engineering ethics • Understand the distinction between professional and personal ethics • See how ethical problem solving and engineering design are similar. **Part II : Professionalism and Codes of Ethics** • Determine whether engineering is a profession •Understand what codes of ethics are, and • Examine some codes of ethics of professional engineering societies. **Part III: Understanding Ethical Problems** • Discuss several ethical theories • See how these theories can be applied to engineering situations. **Part IV: Ethical Problem Solving Techniques** • Apply ethical problem solving methods to hypothetical and real cases • See how flow charting can be used to solve ethical problems • Learn what bribery is and how to avoid it.

	Part V: Risk, Safety, and Accidents • Know the definitions of risk and safety • Discover different factors that affect the perception of risk • Study the nature of accidents • Know how to ensure that your designs will be as safe as possible.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Teaching and learning strategies can include a range of whole class, group and individual activities to accommodate different abilities, skills, learning rates and styles that allow every student to participate and to achieve some degree of success.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ **16** اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.5
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects /	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	The Profession of Engineering
Week 2	Professionalism and Codes of Ethics
Week 3	Personal VS. Professional Ethics
Week 4	Understanding Ethical Problems
Week 5	Ethical Theories
Week 6	Utilitarianism
Week 7	Types of Issues in Ethical Problem Solving
Week 8	Line Drawing
Week 9	Flow Charts

Week 10	Ethical Problem-Solving Techniques
Week 11	Risk, Safety, and Accidents.
Week 12	The Rights and Responsibilities of Engineers
Week 13	Ethics in Research and Experimentation
Week 14	Global Issues.
Week 15	**Preparatory week before the final Exam**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	1- Michael E. Gorman, Matthew M. Mehalik, and Patricia H. Werhane, Ethical end Environmental Challenges to Engineering, Prentice Hall, Englewood Cliffs, NJ, 2000. 2- Kenneth K. Humphreys, What Every Engineering Should Know About Ethics, Marcel Dekker, Inc., New York, 1999. 3- John D. Kemper and Billy R. Sanders, Engineers and Their Profession, 5th ed., Oxford University Press, New York, 2001. 4- Edmund G. Seebauer and Robert L. Barry, Fundamentals of Ethics for Scientists and Engineers, Oxford University Press, New York, 2001.	
Recommended Texts	1- Joe Morgenstern, “The Fifty-nine Story Crisis,” The New Yorker Magazine, May 29, 1995, p. 45. 2- Kenneth R. Foster and John E. Moulder, “Are Mobile Phones Safe?” IEEE Spectrum, August 2000, pp.23–28.	
Websites	5- http://radburn.rutgers.edu/andrews/projects/ssit/default.htm 6- http://www.nspe.org/Ethics/EthicsResources/BER/index.html#2009	

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.

Ministry of Higher Education and Scientific Research - Iraq

University of Warith Al_Anbiyaa....
College of Engineering
Oil and Gas Department

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Engineering Mechanics and Strength of Material			**Module Delivery**	
Module Type	**Basic**			☒ **Theory**	
Module Code	ENG114			☐ **Lecture**	
ECTS Credits	**6**			☒ **Lab**	
SWL (hr/sem)	**150**			☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	OGE		**College**	Engineering	
Module Leader	Dr.Dheyaa Hamdi		**e-mail**	Dheiaa.ha@uowa.edu.iq	
Module Leader's Acad. Title	Asst. Professor		**Module Leader's Qualification**	Ph.D	
Module Tutor	NA		**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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 Aims أهداف المادة الدراسية	This module covers two main parts: •Fundamental principles, about the motion, velocity, newton's laws, statistic inertia, fluid inertia, sliding fraction, rolling fraction and help the student to solve and understand the problems. •Strength of material is the discipline of investigating the relationships that exist between the structures and properties of materials. Engineering material is designing or engineering the structure of a material to produce a predetermined set of properties. This part covers principles of stress and strain. Develops understanding of force, heat deformation, material properties, allowable strength, young modulus Poisson ratio. It also covers hook laws, shear stress, Moher circles, and the general strain energy equation.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- The program prepares students for research and development in many frontier areas of engineering, including such as newton's laws, statistic and dynamic mechanic. 2-All students study the core theoretical subjects of fluid mechanics, dynamics, supplemented by courses in mathematics. 3- The program can be tailored to a student's interests through electives in engineering, mechanic or other applied sciences. 4 The program learn students the fundamental concepts of stress and strain. 5- Explain the concepts of shear and bearing stress. 6- Learn the Allowable force and safety factor for design materials. 7- Analysis and draw the Mohr's circle with bending diagrams
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: **Part I: fundamentals of Engineering Mechanics** principles, about the motion, velocity, newton's laws, statistic inertia, fluid inertia, sliding fraction, rolling fraction and help the student to solve and understand the problems. . (24 hrs) **Part II: Strength of material fundamentals** principles of stress and strain. Develops understanding of force, heat deformation, material properties, allowable strength, young modulus Poisson ratio. It also covers hook laws, shear stress, Moher circles, and the general strain energy equation. (28 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to Encourage students to ask and answer questions, as well as presenting many experimental work labs to increase students' knowledge.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	90	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
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)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week	Newton's laws
Week	Types of the Fractions

Week	Velocity, velocity and accelerations
Week	Plane curvilinear motion (x-y) coordinate
Week	Plane curvilinear motion (n-t) coordinate
Week	Plane curvilinear motion (r-θ) coordinate
Week	Curvilinear motion
Week	stress, strain, Relationship between stress and strain.
Week	Study the concept of Shear Stress, Bearing Stress and Shear Strain.
Week	Allowable working stress factor of safety and the Thermal Stress and Strain.
Week	Elastic Constants (young modulus, Poisson ratio, shear modulus and bulk modulus).
Week	Principle stress (maximum and minimum stress).
Week	Mohr's circle and Principal strain.
Week	Drawing the shear force and bending moment diagrams, Theory of shearing stress in beams.
Week	Study the Beams, types and subject loads, Theory of bending stress in beams with calculations
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Tensile test
Week 2	Hardness test
Week 3	Impact test
Week 4	Particles size analysis
Week 5	Properties of engineering materials with regular shape test
Week 6	Properties of engineering materials with irregular shape test
Week 7	Study the passivity phenomenon test
Week 8	Torsion test
Week 9	Bending test
Week 10	Deflection of beam test
Week 11	Determination of moisture content
Week 12	Calculation of water formation test

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Engineering Mechanics: Statics & Dynamics 14th Edition Engineering Mechanics - Statics and Dynamics Book by A. Bedford and Wallace Fowler	
Recommended Texts	Hibbeler Dynamics Engineering Mechanics: Statics & Dynamics by Russell C. Hibbeler Philpot, Timothy A., and Jeffery S. Thomas. Mechanics of materials: an integrated learning system. John Wiley & Sons, 2020. Timoshenko, Stephen. History of strength of materials: with a brief account of the history of theory of elasticity and theory of structures. Courier Corporation, 1983.	
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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Engineering Practices			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	ENG124				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	OGE		**College**	Engineering	
Module Leader	Ahmed Ihsan		**e-mail**	ahmed.ihsan@uowa.edu.iq	
Module Leader's Acad. Title	Asst.Pro.		**Module Leader's Qualification**	PHD	
Module Tutor	NA		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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 Aims أهداف المادة الدراسية	Semester includes a display problem of representing the needs of the community using the learning method is based on the problem. The problem, which represents the needs of the community scenario includes a description of the problem is similar to the practical realities and limitations of the data that can be obtained by the engineer to reach a solution based on the research and information collection Presented. The other side includes the use of the computer program (AutoCAD soft.) to draw using the computer to build his skills in the field of engineering drawing and design.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The student be able choose the mechanism of data collection to solve the engineering problem. 2. The student be able to determine many of solutions to solve the problem and choose the best. 3. The student be able to search of references using the web to solve the problem in an engineering method depend on mathematic. 4. Students be able to draw by using AutoCAD. 5. Students be able to write the scientific report In an organized and clear manner.
Indicative Contents المحتويات الإرشادية	Indicative Contents will include: Solve problems by using the problems based learning. How to search and reach to the right information. how to take more effective notes. Work as group and how to participate more confidently in group discussion work. Improving accuracy in writing a scientific reports.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Using the problems based learning to give the fallowing Subject-specific skills: 1- Discussion. 2- Brain storming by encouraging students to produce a large number of ideas about some issue or problem raised during the lecture. 3- Self-learning by teaching the student by his own according to his special abilities and mental and cognitive levels responding to his preferences and interests to achieve development and integration of his capabilities. 4- Cooperative learning by team working. 5- Competitive learning by creating a competition among peers.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 16 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
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)	6,12	LO # 1, and 2
	Assignments	2	10% (10)	2,8	LO # 1, and 2
	Projects /	1	10% (10)	Continuous	All
	Report	2	10% (10)	4,10	LO # 2, 4 and 7
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Definition the scenario problem in engineering practice, and definition the process of Problem **B**ased **L**earning Method (**PBL**) in Engineering practice.
Week 2	Describe the drawing and modifying tools bar in AutoCAD.
Week 3	The scenario of problem in (**PBL**). The needs of the society (**The Problem scenario**)
Week 4	Discussion the scenario of problem, and determine the start point to solve the problem and how looking for references in the web.
Week 5	Drawing by using rectangular and polar arrays.

Week 6	Describe how write the items of the report of PBL.
Week 7	Advice on writing as a group.
Week 8	Determine the references required to solve problem determine the standard required.
Week 9	Draw different exercises for the layouts with dimensional mode.
Week 10	The scientific presentation items. Explanation of the interface of the power point software.
Week 11	Initial Report of the problem scenario. Discussions Initial Report of the problem scenario.
Week 12	Drawing with dimensions the shape by AutoCAD of the design of the problem scenario.
Week 13	Discussion the initial report of the groups. The first evaluation of student group reports
Week 14	Discussions and evaluating the Final report of groups of students.
Week 15	Discuss and evaluating the final report of the student groups by presenting to the final report using the PowerPoint software.
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Randy H. Shih , "AutoCAD 2016 Tutorial First Level 2D Fundamentals",	No

	Note: For problem scenario by PBL There is no required text book, however student will have to investigate online and library resources on the design process.	
Recommended Texts	-	
Websites	http://www.sdcpublications.com	

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**English Language I**	**Module Delivery**	
Module Type	**Suplement**	**Theory Lecture**	
Module Code	**UOW111**		
ECTS Credits	**2**		
SWL (hr/sem)	**100**		
Module Level	1	**Semester of Delivery**	1
Administering Department	OGE	**College**	Engineering
Module Leader	Dr.Salam Jabbar	**e-mail**	
Module Leader's Acad. Title	Asst.Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	Name	**e-mail**	
Review Committee Approval	01/06/2023	**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 Aims أهداف المادة الدراسية	In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, this syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students. In English classes, the focus is going to be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, we are going to use the prescribed text for detailed study. The students are encouraged to read the texts leading to reading comprehension and different passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc. The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts and cultures. The course will help to: ➢ Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills. ➢ Equip students to study academic subjects more effectively and critically using the theoretical and practical components of English syllabus. ➢ Develop study skills and communication skills in formal and informal situations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Use English Language effectively in spoken and written forms. 2. Comprehend the given texts and respond appropriately. 3. Communicate confidently in various contexts and different cultures. 4. Acquire basic proficiency in reading and listening, writing and speaking skills.
Indicative Contents المحتويات الإرشادية	Key skills taught will include: The basic structure and style of an academic essay. How to read texts more quickly and more critically, and how to use their ideas in written and oral arguments. What to listen out for in lectures and how to take more effective notes. How to participate more confidently in group discussion work. Improving accuracy in speaking and writing. Using a wider range of vocabulary to express your views more clearly. Giving formal presentations

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Vocabulary building. This is an important component of any English class. This strategy focuses a portion of each classroom session on building a better vocabulary. Writer's workshop. Have students participate in a writer's workshop several times each year. The writing workshop model allows students to learn about and participate in all aspects of the writing process: drafting, revision, editing and publishing. Peer response and editing. This can be a very valuable teaching strategy for both the teacher and the student, and there are many peer response strategies to try in class. Students get a chance to think critically about others' writing and see the results their classmates got from a writing assignment.

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	4.5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	10	10% (10)	1- 10	LO # 1-4
	Assignments	5	10% (10)	11-14	LO # 1-4
	Projects	1	10% (10)	Continuous	LO # 1, 2
	Report	1	10% (10)	15	LO # 3

Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO # 1-4
	Final Exam	2hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	An international industry
Week 2	Oil & Gas –Upstream
Week 3	Oil and Gas –Downstream
Week 4	Oil and Gas: Safety First
Week 5	Finding Oil and Gas
Week 6	Drilling
Week 7	Pipes and Pipelines
Week 8	Working Offshore
Week 9	Natural Gas
Week 10	Oil and the Environment
Week 11	Workshop operations
Week 12	Repairs and maintenance
Week 13	The refinery
Week 14	Emergencies
Week 15	Petrochemicals
Week 16	**Final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	English for Oil and Gas #1 (Oxford English for Careers: Oil and Gas, Lewis Lansford, D'Arcy Vallance, Jon Naunton, and Alison Pohl. Oxford University Press.).	Yes
Recommended Texts	English for Oil and Gas #2 (Oxford English for Careers: Oil and Gas, Lewis Lansford, D'Arcy Vallance, Jon Naunton, and Alison Pohl. Oxford University Press.).	No
Websites	https://t.me/+qmKQz0lBjq8zYWQy	

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

Note:

NB 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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	General Geology I			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	OGE117				
ECTS Credits	**4**				
SWL (hr/sem)	**150**				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	OGE		**College**	Engieering	
Module Leader	Hawraa Majeed		**e-mail**	hawraa.majeed@uowa.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	PHD	
Module Tutor	NA		**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	01/06/2023		**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 Aims أهداف المادة الدراسية	**1-Facilitate a better understanding of Earth rock formation, rocks types, process and factors affect on Earth crust.** **2-Provide students with the tools to interpret the minerals and rock types and fossil record.** **3-Laboratory exercises and field trips will highlight and enhance the concepts learned in the classroom.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1-Identify various types of minerals and rocks and understand the geologic processes of their formation, structural deformation and the process of weathering and erosion.** **2-Describe the mechanisms that produced the earth's major continents, mountain ranges, ocean basins, plate tectonics and deformation of earth crust.** **3-Discuss geologic history in the context of understanding Earth systems and how they may change in the future.**
Indicative Contents المحتويات الإرشادية	**The most important skills required by the student are:** **1- Understanding the geological processes that formed the Earth and its layers and minerals.** **2 - The effects leading to the change of rock types as a result of the effects of all types of erosion and weathering.** **3- The basic structural influences that changed the shape of the earth's crust and their results in generating various types of folds and faults.** **4- Studying the basic factors of deposition situation of sedimentary rocks and knowing their geological ages.**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**The possibility of identifying the various types of minerals and rocks through which the student can evaluate the contents of the earth's crust and how oil accumilations are formed inside the earth and the mechanisms of their extraction through knowledge of the hardness and strength of these rocks, their depth and sedimentary age, geological structures sub-surface and the quality of oil reservoirs.**

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	90	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	50	**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	1	10% (10)	1-3	LO #1-3
	Assignments	1	10% (10)	4-6	LO # 1-3
	Projects /	1	10% (10)	7-9	LO # 1-3
	Report	1	10% (10)	10-12	LO # 1-3
Summative assessment	Midterm Exam	1 hr	10% (10)	1-7	LO # 1-3
	Final Exam	2hr	50% (50)	16	LO # 1-3
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Geology , types of geological sciences, Why Study Geology? Rocks and Fossils are important tools for geologists that tell a story of what Earth like in the past.
Week 2	Earth generation and Earth's Internal Structure , Crust, Mantel and Core. Define their physical and chemical properties , Why Does Oceanic Crust Form Ocean Basins and Continental Crust Form the Continents?
Week 3	Matter and Minerals, what are the minerals and how can they be formed? Minerals are the building blocks of rocks Earth's crust is made of rocks. Mineral Composition. Chemical bonding forming a compound as mineral. Rock-Forming Minerals the Silicates and non-Silicates.
Week 4	Silicate Mineral Structures, Environment of Formation, Bowen's Reaction Series, Physical Properties of Minerals.
Week 5	Types of Rocks . What Can Igneous Minerals/Rocks Tell Us? Origin of Igneous Rocks. How Do Igneous Rocks Form? How Does Magma Originate? Generating Magma from Solid Rock. Components of Magma.
Week 6	Origin of Magma Compositions, Origin of Andesitic Magmas Origin of Granitic Magmas, Classification of Igneous Rocks, Igneous Textures, Rate of Cooling, Mineral Compositions of Igneous Rocks
Week 7	Volcanoes and Other Igneous Activity, Not all Volcanic Eruptions are the Same, Factors Affecting Viscosity, Materials Extruded from Volcanoes, Anatomy of Volcanoes, Types of Volcanoes , Plutonic Igneous Activity, Classification of Plutons.
Week 8	Metamorphic Rocks, What Can Metamorphic Minerals and Rocks Tell Us? Metamorphism, Agents of Metamorphism, Classification of Metamorphic Rocks, How Metamorphism Alters Rocks, Types of Foliation and Foliated Metamorphic Rocks, Metamorphic Environments
Week 9	Sedimentary Rocks, Turning Sediment into Rock, Diagenesis, Types of Sedimentary Rocks, Classification of Sedimentary Rocks, Characteristics of Detrital Sedimentary Rocks,

Week 10	Grain Size , What Does Grain Size Tell Us? Sorting, What Does the Degree of Sorting Tell Us? Chemical and Biochemical Sedimentary Rocks, Inorganic Processes including Evaporation, Hydrothermal, Chemical Activity and Organic Processes of Biochemical Origin.
Week 11	Types of Chemical and Biochemical Sedimentary Rocks. Carbonate Rocks, Characteristics of the Environment of Marine Carbonate Formation. Sedimentary Environments of Deposition, Depositional Environments.
Week 12	Weathering and Erosion, Mechanical & Chemical Weathering, Products of Weathering, Erosion, types of Mechanical Weathering, types of Chemical Weathering, Factors Influencing Rates of Weathering
Week 13	Crustal deformation and Geologic Structures, Deformation, Deformational Stress, How Do Rocks Deform? Crustal Structures, Anatomy of a Fold, Common Types of Folds,
Week 14	Types of Faults, Summary of Fault Types, Dip-Slip Faults and Strike-Slip Faults, Types of Strike-Slip Faults , Fault-Associated Folding
Week 15	Geological time , The Geologic Time Scale, Methods of Dating Rocks, Relative Dating: Principles of Geology, Law of Original Horizontality, Principle of Superposition, Principle of Lateral Continuity and Principles of Unconformities.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	**Introduction and Crystallography.**
Week 2	**Types of crystal system and their properties.**
Week 3	**Types of minerals , silicates and non silicate and study their physical properties.**
Week 4	**Igneous rocks , their types and composition and textures.**
Week 5	**Metamorphic rocks , their types, textures, and types of metamorphism.**
Week 6	**Sedimentary rocks , their types and classification, detrital sedimentary rocks.**
Week 7	**Chemical sedimentary rocks and their types.**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	**1- Essentials of Geology (Lutgens and Tarbuck, 10th Edition).**	Not sure

	2- Sedimentary Basins Evolution, Facies, and Sediment Budget , By Gerhard Einsele , Springer Science & Business Media, Jul 27, 2000 - Science - 792 pages. **3- 5- Zumberge's Laboratory Manual for Physical Geology (Robert Rutford and James Carter, 14th Edition.)**	
Recommended Texts	**The Concise Geologic Time Scale , By james G. Ogg, Gabi Ogg , Felix M. Gradstein , Cambridge University Press, Sep 4, 2008 - Science - 177 pages.**	Not sure
Websites	**The Encyclopedia of Field and General Geology , Charles W. Finkl , Springer Science & Business Media, Apr 30, 1988 - Science 1912 pages.**	

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	General Geology II			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	OGE122				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	OGE		**College**	Engineering	
Module Leader	Salam Khalid		**e-mail**	salam.khalid@uowa.edu.iq	
Module Leader's Acad. Title	Asst.Lecturer		**Module Leader's Qualification**	M.SC	
Module Tutor	NA		**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	OGE117	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	**1-Facilitate a better understanding of Earth rock formation, rocks types, process and factors affect on Earth crust.** **2-Provide students with the tools to interpret the minerals and rock types and fossil record.** **3-Laboratory exercises and field trips will highlight and enhance the concepts learned in the classroom.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1-Identify various types of minerals and rocks and understand the geologic processes of their formation, structural deformation and the process of weathering and erosion.** **2-Describe the mechanisms that produced the earth's major continents, mountain ranges, ocean basins, plate tectonics and deformation of earth crust.** **3-Discuss geologic history in the context of understanding Earth systems and how they may change in the future.**
Indicative Contents المحتويات الإرشادية	**The most important skills required by the student are:** **1- Understanding the geological processes that formed the Earth and its layers and minerals.** **2 - The effects leading to the change of rock types as a result of the effects of all types of erosion and weathering.** **3- The basic structural influences that changed the shape of the earth's crust and their results in generating various types of folds and faults.** **4- Studying the basic factors of deposition situation of sedimentary rocks and knowing their geological ages.**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**The possibility of identifying the various types of minerals and rocks through which the student can evaluate the contents of the earth's crust and how oil accumilations are formed inside the earth and the mechanisms of their extraction through knowledge of the hardness and strength of these rocks, their depth and sedimentary age, geological structures sub-surface and the quality of oil reservoirs.**

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
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	1	10% (10)	1-3	LO #1-3
	Assignments	1	10% (10)	4-6	LO # 1-3
	Projects /	1	10% (10)	7-9	LO # 1-3
	Report	1	10% (10)	10-12	LO # 1-3
Summative assessment	Midterm Exam	1 hr	10% (10)	1-7	LO # 1-3
	Final Exam	2hr	50% (50)	16	LO # 1-3
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Geology , types of geological sciences, Why Study Geology? Rocks and Fossils are important tools for geologists that tell a story of what Earth like in the past.
Week 2	Earth generation and Earth's Internal Structure , Crust, Mantel and Core. Define their physical and chemical properties , Why Does Oceanic Crust Form Ocean Basins and Continental Crust Form the Continents?
Week 3	Matter and Minerals, what are the minerals and how can they be formed? Minerals are the building blocks of rocks Earth's crust is made of rocks. Mineral Composition. Chemical bonding forming a compound as mineral. Rock-Forming Minerals the Silicates and non-Silicates.
Week 4	Silicate Mineral Structures, Environment of Formation, Bowen's Reaction Series, Physical Properties of Minerals.
Week 5	Types of Rocks . What Can Igneous Minerals/Rocks Tell Us? Origin of Igneous Rocks. How Do Igneous Rocks Form? How Does Magma Originate? Generating Magma from Solid Rock. Components of Magma.
Week 6	Origin of Magma Compositions, Origin of Andesitic Magmas Origin of Granitic Magmas, Classification of Igneous Rocks, Igneous Textures, Rate of Cooling, Mineral Compositions of Igneous Rocks
Week 7	Volcanoes and Other Igneous Activity, Not all Volcanic Eruptions are the Same, Factors Affecting Viscosity, Materials Extruded from Volcanoes, Anatomy of Volcanoes, Types of Volcanoes , Plutonic Igneous Activity, Classification of Plutons.
Week 8	Metamorphic Rocks, What Can Metamorphic Minerals and Rocks Tell Us? Metamorphism, Agents of Metamorphism, Classification of Metamorphic Rocks, How Metamorphism Alters Rocks, Types of Foliation and Foliated Metamorphic Rocks, Metamorphic Environments
Week 9	Sedimentary Rocks, Turning Sediment into Rock, Diagenesis, Types of Sedimentary Rocks, Classification of Sedimentary Rocks, Characteristics of Detrital Sedimentary Rocks,

Week 10	Grain Size , What Does Grain Size Tell Us? Sorting, What Does the Degree of Sorting Tell Us? Chemical and Biochemical Sedimentary Rocks, Inorganic Processes including Evaporation, Hydrothermal, Chemical Activity and Organic Processes of Biochemical Origin.
Week 11	Types of Chemical and Biochemical Sedimentary Rocks. Carbonate Rocks, Characteristics of the Environment of Marine Carbonate Formation. Sedimentary Environments of Deposition, Depositional Environments.
Week 12	Weathering and Erosion, Mechanical & Chemical Weathering, Products of Weathering, Erosion, types of Mechanical Weathering, types of Chemical Weathering, Factors Influencing Rates of Weathering
Week 13	Crustal deformation and Geologic Structures, Deformation, Deformational Stress, How Do Rocks Deform? Crustal Structures, Anatomy of a Fold, Common Types of Folds,
Week 14	Types of Faults, Summary of Fault Types, Dip-Slip Faults and Strike-Slip Faults, Types of Strike-Slip Faults , Fault-Associated Folding
Week 15	Geological time , The Geologic Time Scale, Methods of Dating Rocks, Relative Dating: Principles of Geology, Law of Original Horizontality, Principle of Superposition, Principle of Lateral Continuity and Principles of Unconformities.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	**Introduction and Crystallography.**
Week 2	**Types of crystal system and their properties.**
Week 3	**Types of minerals , silicates and non silicate and study their physical properties.**
Week 4	**Igneous rocks , their types and composition and textures.**
Week 5	**Metamorphic rocks , their types, textures, and types of metamorphism.**
Week 6	**Sedimentary rocks , their types and classification, detrital sedimentary rocks.**
Week 7	**Chemical sedimentary rocks and their types.**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**1- Essentials of Geology (Lutgens and Tarbuck, 10th Edition).** **2- Sedimentary Basins Evolution, Facies, and Sediment Budget , By Gerhard Einsele , Springer Science & Business Media, Jul 27, 2000 - Science - 792 pages.** **3- 5- Zumberge's Laboratory Manual for Physical Geology (Robert Rutford and James Carter, 14th Edition.)**	Not sure
Recommended Texts	**The Concise Geologic Time Scale , By james G. Ogg, Gabi Ogg , Felix M. Gradstein , Cambridge University Press, Sep 4, 2008 - Science - 177 pages.**	Not sure
Websites	**The Encyclopedia of Field and General Geology , Charles W. Finkl , Springer Science & Business Media, Apr 30, 1988 - Science 1912 pages.**	

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Human Rights and Democracy			**Module Delivery**	
Module Type	**Support**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOWA102				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level		UGI	**Semester of Delivery**		2
Administering Department		OGE	**College**	Engineering	
Module Leader	Mousa Ali		**e-mail**	mousa.ali@uowa.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		
Module Tutor	NA		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**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 Aims أهداف المادة الدراسية	Human rights are the social standards and moral principles that must be available to all human beings. These rights cannot be violated. They are due and inherent to every person simply because they are human. They give all human beings value and dignity, and their basis is justice, freedom and peace. Full knowledge of their contents, borders and ways of guaranteeing them, as the provision for the inclusion of rights in the core of international and national constitutions and covenants does not achieve practical benefit unless effective guarantees are available against the violations they are exposed to over time As for Democracy is the rule of the people by the people and for the people without prejudice to the rights of states, nations and peoples by choosing the mechanisms and forms that suit them. As for its forms and expressions, they are subject to the specificities of nations and peoples and the special circumstances of societies. The essence of democracy is the rule of the people by the people for the benefit of the people, which includes fixed features and elements, the most important of which are: respect for man as an end, not a means, participation in governance by the people, and achieving the satisfaction of the governed.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	An ability to skillfully communicate orally with gathering of people and in writing with various managerial leavels An ability to work adequately on teams and to set up objectives , plan activities ,meet due dates and manage risk and uncertainty
Indicative Contents المحتويات الإرشادية	Developing the student's analytical and critical skills regarding the reality and future of human rights and democracy Enabling students to understand the importance of education and its role in spreading the culture of human rights and democracy in building a civilized society based on good governance, the most important of which is belief in human rights and education on them and active participation in governance through free and fair elections.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	A- Spreading the culture of human rights and informing university students about it. B - The student's awareness of his civil, political, economic, social, cultural and environmental rights and the importance of preserving them and not waiving them. c- Raising awareness and educating university students about the importance of democracy, its methods and how to practice it, and thus contribute to establishing the rule of law, which adopts democracy as a basis for building it. d- The need for the student to realize that the real bet on achieving the democratic system in the country is how to root the concept of democracy and its principles and apply them effectively and successfully away from copying and quoting from others.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 16 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	2	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	0.13
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	2	10% (10)	5, 10	LO #4 and 7
	Assignments	2	10% (10)	2, 12	LO # 4 and 7
	Recording the student's attendance		10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 4 and 7
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 4-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	The human rights means and its properties and sections and The human rights in the old nations
Week 2	Human rights in the monotheistic religions / Islamic, Jewish and Christian religions
Week 3	Sources of human rights at the international and national levels
Week 4	Human rights guarantees at the internal and external levels
Week 5	Guarantees of human rights at the Islamic level
Week 6	The human rights future/The technology developmation and its effect on the rights and the freedoms/ The role of regional human rights organizations in protecting rights
Week 7	The child rights in Islam/The woman rights in Islam /Non-overnmental organizations and their role in the defense of human rights/Intellectual human rights/Fight Human Trafficking

Week 8	The concept of democracy and its roots / Definition of democracy
Week 9	The democracy between global and the privat
Week 10	forms of democracy/The direct democracy/The semi-direct democracy/The Parliamentary democracy
Week 11	The Parliamentary democracy The Parliamentary democracybasics and its faces
Week 12	Parliament and its internal organization
Week 13	The election Concept/constituency/Electoral lists/Election campaign vote
Week 14	election system Direct and indirect selection/ Individual selection and list/Majority system and proportional representation/interests representation system/Optional voting system and secret and compulsory voting
Week 15	**Preparatory week before the final Exam**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	The human and the child rights and the democracy ((DR . Maher saleeh alaawi)) Iraq republic , minstery of the higher education and the scientific research 2009 -Also same references from the internet	
Recommended Texts		
Websites		

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

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

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Principle to Petroleum Engineering			**Module Delivery**	
Module Type	Core			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	OGE112				
ECTS Credits	4				
SWL (hr/sem)	125				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	OGE		**College**	Engineering	
Module Leader	DR. dheiaa Al farage		**e-mail**	ali.kh@uowa.edu.iq	
Module Leader's Acad. Title	Asst.Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	NA		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	English Language I	**Semester**	1

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1- Identify the basics of oil and gas industry 2- This course aims to get familiar with the abbreviations and terminology used in the oil industry 3- Explain all operations that related to explore, drill, completion and produce oil wells as well as post-production procedures like well stimulation and production enhancement.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	To Understand the fundamentals of the petroleum industry, which including: 1- Petroleum & Crude Oil Definition 2- Petroleum Formation Theories 3- Petroleum exploration methods 4- Oil and gas drilling operation and drilling fluid types 5- Identify oil and gas reservoirs, types of oil and the nature of oil formations 6- Well completion and Production operations 7- post-production operations like well stimulation and artificial lift 8- Drive Mechanisms, secondary recovery and enhance oil recovery 9- Get familiar with the key abbreviations and terminology used in the oil industry.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: **Part I: fundamentals of petroleum engineering** Petroleum & crude oil definition, API (American Petroleum Institute), associated gas and non-associated gas, The reservoir classification, biogenic and the abiotic theories for petroleum formation, rock types and petroleum history. (24 hrs) **Part II: Oil and gas well operations** Drilling operation, drilling fluid types and benefits, well logging and formation evaluation, well cementing and casing, perforation techniques and production operation. (28 hrs) **Part III: post-production operation** Enhance oil recovery by using artificial lift techniques, secondary and tertiary recovery techniques. (8 hrs)
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to Encourage students to ask and answer questions, as well as presenting many explanatory videos to increase students' knowledge, since most of the equipment and facilities for the oil industry are not available in daily life and it is difficult to see them, and also to introduce the student to the most important petroleum terms, abbreviations and symbols that he will need to complete the rest of the academic stages Or to work in the future as an oil engineer.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
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	125		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Petroleum & Crude Oil Definition
Week 2	Petroleum Formation Theories
Week 3	Petroleum exploration methods
Week 4	Drilling Engineering
Week 5	Drilling Fluids
Week 6	Cable-tool drilling & Rotary Drilling
Week 7	Reservoir Engineering
Week 8	Reservoir fluids properties
Week 9	Petrophysical rock properties
Week 10	Formation evaluation & well logging

Week 11	Well Completion
Week 12	Production Engineering
Week 13	Oil and gas separators
Week 14	Artificial lift
Week 15	Drive Mechanisms, secondary recovery and enhance oil recovery
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	- Dalvi, Samir (2015). Fundamentals of Oil & Gas Industry for Beginners. - John R. Fanchi (2017). Introduction to Petroleum Engineering. - Moshood Sanni (2018). Petroleum Engineering: Principles, Calculations, and Workflows	No
Recommended Texts	- Ahmed, Tarek (2010). Reservoir Engineering Handbook.	yes
Websites	https://guides.loc.gov/oil-and-gas-industry https://www.drillingformulas.com/ https://glossary.slb.com/en/search#sort=relevancy	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
Module Title	**Workshops**		Module Delivery
Module Type	Support		☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**
Module Code	ENG126		
ECTS Credit/year	4		
SWL/year	100		
Module level	1	Semester of Delivery	1, 2
Module Leader	Ahmed Saddy	College	Engineering
Module Leader Academic Title	Asst.Prof.	e-mail	ahmed.saddy@uowa.edu.iq
Module Tutor		Module Leader's Qualification	Ph.D.
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	1/6/2023	e-mail	
		Version Number	1

Relation with other Modules			
Prerequisite Module	-	Semester	-
Co-requisite Module	-	Semester	-

Module Aims, Learning Outcomes and Inductive Contents	
Module Aims	1-Preparing applied engineers in the field of engineering sciences who are distinguished by a high level of knowledge and technological creativity, in line with the strict standards adopted globally in quality assurance and academic accreditation of the corresponding engineering programs, while adhering to the ethics of the engineering profession. 2. Enable the student to know and understand work systems, risks, and the factors surrounding them. 3. Enable the student to know and understand theoretical principles in handicrafts and measurements.
Module Learning Outcomes	1- To familiarize the student with the vocabulary of occupational safety and its importance in the field of work. 2- Acquisition of the student's manual operation skills, for example (Filings and Tinsmith workshops), and mechanical operation skills, for example (Turning). 3- Acquisition of the student's mechanical forming skills, for example (Casting and Blacksmithing). 4- The student acquires basic engineering skills such as Welding, Carpentry, and Electrical installations that serve him in the professional field. 5- Enabling the student to operate the various machines and devices in mechanical operations and formation. 6- Cooperative learning by working collectively.
Inductive Contents	1. Introducing the student to the basics of the art of turning and milling, types of cold working machines, the skill of dealing with them, choosing metals, operational tools, and methods of measurement and standardization 2. Introducing the student to the basics of the art of casting, hot forming, metal selection, method of working on casting furnaces and tools, and manufacturing casting molds 3. Familiarize students with the basics of cars and the systems they use, as well as maintenance, disassembly, and assembly processes. 4. Introducing students to the basics of household and industrial electrical appliances, the skill of using tools, and designing electrical circuits and control panels

	5. Introducing the student to the basics of the art of plumbing, leveling surfaces, the skill of using tools, manufacturing and installing geometric shapes, and methods of measurement and standardization 6. Introducing the student to the basics of the art of blacksmithing, cold and hot forming of metals, the method of hardening them, and the skills of dealing with hand tools, forming machines, and heating furnaces 7. Introducing the student to the basics of the art of filing and manual operation of metals with the help of manual, electrical, and mechanical tools, the skills of dealing with them, and the methods of measurement and standardization 8. Introducing the student to the basics of the art of welding, the installation and assembly of metals, the types of welding machines, the skills of dealing with them, the types of welding, and the methods of measurement and standardization 9. Introducing the student to the basics of the art of carpentry and woodworking with the help of manual, electrical, and mechanical tools, the skills of dealing with them, and methods of measurement and standardization

Student Workload (SWL)			
Structured SWL (h/sem)	90	Structured SWL (h/w)	6.00
Unstructured SWL (h/sem)	10	Unstructured SWL (h/w)	0.46
Total SWL (h/sem)	100		
Structured SWL (h/year)	180	Structured SWL (h/w)	6.00
Unstructured SWL (h/year)	20	Unstructured SWL (h/w)	0.46
Total SWL (h/year)	200		

Module Evaluation					
		Time/No.	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative Assessment	Quizzes				
	Assignments				All
	Projects / Practice	Every 3 weeks	60%	Continuous	
	Report				
Summative Assessment	Midterm Exam				
	Exam	Every 3 weeks	40%	Continuous	All
Total assessment			100%		

Delivery Plan (Weekly Syllabus)	
	Materials Covered
Week 1	Welding workshop. -Occupational safety and its importance in welding workshops. -Introduction to the basics of welding. -Electric arc exercise. -An exercise for welding straight lines in a circular motion (helical).
Week 2	Welding workshop - An exercise for welding straight lines with a crescent movement and other welding methods -Construction welding exercise.
Week 3	Welding workshop. -Welding two pieces together. -Written exam in practical exercises. -
Week 4	Casting workshop -Occupational safety and its importance in plumbing workshops. -Introduction to the basics of metal casting. -Simple wooden disc exercise. Half workout.
Week 5	Casting workshop Wheel exercise.

	Pushing arm exercise.
Week 6	Casting workshop. -Complete pulley exercise. -Circular pole exercise. -Written exam in practical exercises.
Week 7	Blacksmith Workshop -Occupational safety and its importance in blacksmithing workshops. -Introduction to the Basics of Blacksmithing. - Barbell adjustment exercise. -Eight-star exercise. - Exercise forming the number eight in English. -Six formation exercises in English.
Week 8	Blacksmith Workshop -An exercise forming the number five in English. - Exercise forming the number nine in English. . -An exercise in forming an iron model in the form of a circle
Week 9	Blacksmith Workshop - S-shape exercise. - Air hammer hot barbell exercise. - Exercise to form a circle on an electric bending machine. - Exercising cold and hot ornament formation. . - A written exam in practical exercises
Week 10	Automotive Workshop -Occupational safety and its importance in car maintenance workshops. -An introduction to cars and their basic parts. -Parts of the engine, how it works, types of engines, and methods of classification.
Week 11	Automotive Workshop - Open the engine and identify the parts -Lubrication system -Cooling system.
Week 12	Automotive Workshop -The fuel system. -The old and new ignition circuits. -Written exam in practical exercises.
Week 13	Turning Workshop -Introduction to lathe machines and identifying their parts -Measuring tools and the use of an oven measuring instrument -Circular column lathing exercise on different diameters.
Week 14	Turning Workshop -Exercise using the pen (semicircular R) brackets. An exercise in making different angles using a pen (square + angle pen 55).

Week 15	Turning Workshop - Making shaft with different diameter exercises using (left and right pen) - Workout (Tube Connection). -Written exam in practical exercises.
Week 16	Fitting workshop Occupational safety and its importance in filing workshops -An introduction to the basics of filing -Pen holder exercise “preparation and preparation”
Week 17	Fitting workshop Pencil holder exercises finishing and assembling.
Week 18	Fitting workshop -The catcher exercise. - Clamping exercise. Written exam in practical exercises.
Week 19	Carpentry workshop -Occupational safety and its importance in carpentry workshops. - An introduction to carpentry, its types, types of wood, tools used, and preparation Preparing the tools used Face modification exercise using the reindeer
Week 20	Carpentry workshop Garden fence work and how to connect its parts, the eight-star exercise
Week 21	Carpentry workshop - Wood smoothing exercise using smoothing paper - Wood dyeing exercise in three stages Final smoothing and varnishing exercise Written exam in practical exercises
Week 22	The tinsmith workshop Occupational safety and its importance in plumbing workshops An introduction to plumbing, its tools, and plumbing stages Planning and marking exercise on metal plates
Week 23	The tinsmith workshop Geometric shapes Types of individuals and methods of individuals Geometric shape individuals exercise on a metal board
Week 24	The tinsmith workshop Cone members exercise - Exercise of cylinders with an oblique cut Roll forming operations Connection without the use of an intermediary Written exam in practical exercises
Week 25	Electric Workshop

	Occupational Safety and its importance in electrical workshops An introduction to the basics of electrical installations - Linking a simple circuit consisting of a lamp to the control of a single-way switch. Connect two lamps in series with one-way switch control. Connecting two lamps in parallel with the control of a single road switch. Connect two lights with one-way dual switch control.
Week 26	electric Workshop Connect a fluorescent lamp circuit to a one-way switch control Connecting an electric supply socket circuit to the control of a separate or combined one-way switch Written exam in practical exercises
Week 27	electric Workshop Occupational Safety and its importance in blacksmithing workshops Introduction to the basics of Blacksmithing - Barbell adjustment exercise Eight-star exercise - Exercise forming the number eight in English Exercise forming the number six in English
Week 28	supplementary training curriculum Welding workshop Plumbing workshop Blacksmith's workshop
Week 29	supplementary training curriculum - Automotive workshop - Turning workshop Fitting workshop
Week 30	supplementary training curriculum Carpentry workshop The plumbing workshop electric Workshop

Learning and Teaching Resources		
	Text	Available in the library
Required Texts	Workshop technology and measurements, Ahmed Salem Al-Sabbagh,	yes
Recommended Texts		
Websites		

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
Module Title	Workshops		Module Delivery
Module Type	Support		☐ Theory ☐ Lecture ☐ Lab ☐ Tutorial ■ Practical ☐ Seminar
Module Code	ENG116		
ECTS Credit/year	4		
SWL/year	200		
Module level	1	Semester of Delivery	1, 2
Module Leader		College	
Module Leader Academic Title	Ali Basem	e-mail	Ali.basem@uowa.edu.iq
Module Tutor		Module Leader's Qualification	Ph.D.
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	1/6/2023	e-mail	
		Version Number	1

Relation with other Modules			
Prerequisite Module	-	Semester	-
Co-requisite Module	-	Semester	-

Module Aims, Learning Outcomes and Inductive Contents	
Module Aims	1-Preparing applied engineers in the field of engineering sciences who are distinguished by a high level of knowledge and technological creativity, in line with the strict standards adopted globally in quality assurance and academic accreditation of the corresponding engineering programs, while adhering to the ethics of the engineering profession.

	2. Enable the student to know and understand work systems, risks, and the factors surrounding them. 3. Enable the student to know and understand theoretical principles in handicrafts and measurements.
Module Learning Outcomes	1- To familiarize the student with the vocabulary of occupational safety and its importance in the field of work. 2- Acquisition of the student's manual operation skills, for example (Filings and Tinsmith workshops), and mechanical operation skills, for example (Turning). 3- Acquisition of the student's mechanical forming skills, for example (Casting and Blacksmithing). 4- The student acquires basic engineering skills such as Welding, Carpentry, and Electrical installations that serve him in the professional field. 5- Enabling the student to operate the various machines and devices in mechanical operations and formation. 6- Cooperative learning by working collectively.
Inductive Contents	1. Introducing the student to the basics of the art of turning and milling, types of cold working machines, the skill of dealing with them, choosing metals, operational tools, and methods of measurement and standardization 2. Introducing the student to the basics of the art of casting, hot forming, metal selection, method of working on casting furnaces and tools, and manufacturing casting molds 3. Familiarize students with the basics of cars and the systems they use, as well as maintenance, disassembly, and assembly processes. 4. Introducing students to the basics of household and industrial electrical appliances, the skill of using tools, and designing electrical circuits and control panels 5. Introducing the student to the basics of the art of plumbing, leveling surfaces, the skill of using tools, manufacturing and installing geometric shapes, and methods of measurement and standardization 6. Introducing the student to the basics of the art of blacksmithing, cold and hot forming of metals, the method of hardening them, and the skills of dealing with hand tools, forming machines, and heating furnaces 7. Introducing the student to the basics of the art of filing and manual operation of metals with the help of manual, electrical, and mechanical

	tools, the skills of dealing with them, and the methods of measurement and standardization 8. Introducing the student to the basics of the art of welding, the installation and assembly of metals, the types of welding machines, the skills of dealing with them, the types of welding, and the methods of measurement and standardization 9. Introducing the student to the basics of the art of carpentry and woodworking with the help of manual, electrical, and mechanical tools, the skills of dealing with them, and methods of measurement and standardization

Student Workload (SWL)			
Structured SWL (h/sem)	93	Structured SWL (h/w)	6.00
Unstructured SWL (h/sem)	7	Unstructured SWL (h/w)	0.46
Total SWL (h/sem)	100		
Structured SWL (h/year)	186	Structured SWL (h/w)	6.00
Unstructured SWL (h/year)	14	Unstructured SWL (h/w)	0.46
Total SWL (h/year)	200		

Module Evaluation					
		Time/No.	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative Assessment	Quizzes				
	Assignments				All
	Projects / Practice	Every 3 weeks	60%	Continuous	
	Report				
Summative Assessment	Midterm Exam				
	Exam	Every 3 weeks	40%	Continuous	All
Total assessment			100%		

Delivery Plan (Weekly Syllabus)	
	Materials Covered
Week 1	Welding workshop. -Occupational safety and its importance in welding workshops. -Introduction to the basics of welding. -Electric arc exercise. -An exercise for welding straight lines in a circular motion (helical).
Week 2	Welding workshop - An exercise for welding straight lines with a crescent movement and other welding methods -Construction welding exercise.
Week 3	Welding workshop. -Welding two pieces together. -Written exam in practical exercises. -
Week 4	Casting workshop -Occupational safety and its importance in plumbing workshops. -Introduction to the basics of metal casting. -Simple wooden disc exercise. Half workout.
Week 5	Casting workshop Wheel exercise. Pushing arm exercise.
Week 6	Casting workshop. -Complete pulley exercise. -Circular pole exercise. -Written exam in practical exercises.
Week 7	Blacksmith Workshop -Occupational safety and its importance in blacksmithing workshops. -Introduction to the Basics of Blacksmithing.

	- Barbell adjustment exercise. -Eight-star exercise. - Exercise forming the number eight in English. -Six formation exercises in English.
Week 8	Blacksmith Workshop -An exercise forming the number five in English. - Exercise forming the number nine in English. . -An exercise in forming an iron model in the form of a circle
Week 9	Blacksmith Workshop - S-shape exercise. - Air hammer hot barbell exercise. - Exercise to form a circle on an electric bending machine. - Exercising cold and hot ornament formation. . - A written exam in practical exercises
Week 10	Automotive Workshop -Occupational safety and its importance in car maintenance workshops. -An introduction to cars and their basic parts. -Parts of the engine, how it works, types of engines, and methods of classification.
Week 11	Automotive Workshop - Open the engine and identify the parts -Lubrication system -Cooling system.
Week 12	Automotive Workshop -The fuel system. -The old and new ignition circuits. -Written exam in practical exercises.
Week 13	Turning Workshop -Introduction to lathe machines and identifying their parts

	-Measuring tools and the use of an oven measuring instrument -Circular column lathing exercise on different diameters.
Week 14	Turning Workshop -Exercise using the pen (semicircular R) brackets. An exercise in making different angles using a pen (square + angle pen 55).
Week 15	Turning Workshop - Making shaft with different diameter exercises using (left and right pen) - Workout (Tube Connection). -Written exam in practical exercises.
Week 16	Fitting workshop Occupational safety and its importance in filing workshops -An introduction to the basics of filing -Pen holder exercise “preparation and preparation”
Week 17	Fitting workshop Pencil holder exercises finishing and assembling.
Week 18	Fitting workshop -The catcher exercise. - Clamping exercise. Written exam in practical exercises.
Week 19	Carpentry workshop -Occupational safety and its importance in carpentry workshops. - An introduction to carpentry, its types, types of wood, tools used, and preparation Preparing the tools used Face modification exercise using the reindeer
Week 20	Carpentry workshop Garden fence work and how to connect its parts, the eight-star exercise
Week 21	Carpentry workshop - Wood smoothing exercise using smoothing paper

	- Wood dyeing exercise in three stages Final smoothing and varnishing exercise Written exam in practical exercises
Week 22	The tinsmith workshop Occupational safety and its importance in plumbing workshops An introduction to plumbing, its tools, and plumbing stages Planning and marking exercise on metal plates
Week 23	The tinsmith workshop Geometric shapes Types of individuals and methods of individuals Geometric shape individuals exercise on a metal board
Week 24	The tinsmith workshop Cone members exercise - Exercise of cylinders with an oblique cut Roll forming operations Connection without the use of an intermediary Written exam in practical exercises
Week 25	Electric Workshop Occupational Safety and its importance in electrical workshops An introduction to the basics of electrical installations - Linking a simple circuit consisting of a lamp to the control of a single-way switch. Connect two lamps in series with one-way switch control. Connecting two lamps in parallel with the control of a single road switch. Connect two lights with one-way dual switch control.
Week 26	electric Workshop Connect a fluorescent lamp circuit to a one-way switch control

	Connecting an electric supply socket circuit to the control of a separate or combined one-way switch Written exam in practical exercises
Week 27	electric Workshop Occupational Safety and its importance in blacksmithing workshops Introduction to the basics of Blacksmithing - Barbell adjustment exercise Eight-star exercise - Exercise forming the number eight in English Exercise forming the number six in English
Week 28	supplementary training curriculum Welding workshop Plumbing workshop Blacksmith's workshop
Week 29	supplementary training curriculum - Automotive workshop - Turning workshop Fitting workshop
Week 30	supplementary training curriculum Carpentry workshop The plumbing workshop electric Workshop

Learning and Teaching Resources		
	Text	Available in the library
Required Texts	Workshop technology and measurements, Ahmed Salem Al-Sabbagh,	yes
Recommended Texts		
Websites		

UNIVERSITY OF WARITH AL-ANBIYAA
COLLEGE OF ENGINEERING
2017
كلية الهندسة

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Academic English Writing	**Module Delivery**	
Module Type	**Support or related learning activity**		☒ **Theory**
Module Code	UOW211		☒ **Lecture**
ECTS Credits	**4**		☐ **Lab**
SWL (hr/sem)	**100**		☐ **Tutorial** ☐ **Practical** ☐ **Seminar**

Module Level	UGII	**Semester of Delivery**	1
Administering Department	OGE	**College**	Engineering
Module Leader	Dr. Dheiaa Alfarge	**e-mail**	dheiaa.al@uowa.edu.iq
Module Leader's Acad. Title	lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor	NA	**e-mail**	dheiaa.al@uowa.edu.iq
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	ENLA111	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	Aims and objectives are: 1. to offer a structure approach to writing 2. to acquaint the students with the process of writing 3. to provide practice in basic sentence structure 4. to develop Grammar and Mechanics skills
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Be able to express themselves in correct English with correct grammar usage 2. Be able to construct coherent and logically constructed paragraphs 3. Write a sentence that expresses an idea in short (topic sentence) 4. Recognize the various types of supporting evidence to support their topic sentence 5. Limit ideas according to the context
Indicative Contents المحتويات الإرشادية	This course concentrates on the paragraph as the basic unit in extended writing. It begins with a review of sentence types, then it takes the students through the way of paragraph development including a topic sentence, supporting evidence and a concluding sentence. This course aims at developing students' writing and guiding students through the logical steps necessary for creating a paragraph.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The methods of instruction may include, but are not limited to: 1. Lectures 2. Individual assignments 3. Listening 4. Any active learning method such as: small group, presentations

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	**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	2.4
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, 10	LO #1, 2
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 5
	Projects	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction
Week 2	Paragraph Structure

Week 3	Parts of a paragraph
Week 4	Topic Sentence
Week 5	Exercises on topic sentences
Week 6	Supporting sentences
Week 7	Concluding Sentence
Week 8	Midterm exam
Week 9	Achieving coherence by repetition of key nouns
Week 10	Achieving coherence by Using consistent Pronouns
Week 11	Achieving coherence by using Transition words
Week 12	Achieving coherence by arranging ideas in logical order
Week 13	Supporting Details
Week 14	Facts vs. Opinions
Week 15	Plagiarism
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	English for Oil and Gas #2 (Oxford English for Careers: Oil and Gas, Lewis Lansford, D'Arcy Vallance, Jon Naunton, and Alison Pohl. Oxford University Press.).	Yes
Recommended Texts	Academic Writing from paragraph to essay, Lisa A. Rumisek, Dorothy Zemach. Macmillan, Oxford, 2005	No
Websites	A Practical Guide to Academic Writing for International Students:	

	https://www.routledge.com/rsc/downloads/A_Practical_Guide_to_Academic_Writing_for_International_Students-A_Routledge_FreeBook-_FINAL_VERSION_.pdf

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 Information

معلومات المادة الدراسية

Module Title	**اللغة العربية**	**Module Delivery**	
Module Type	**Basic**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐**Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOW204**		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level	UGII	**Semester of Delivery**	1
Administering Department	OGE	**College**	Engineering
Module Leader	Natik aziz	**e-mail**	Natik.a@uowa.edu.iq
Module Leader's Acad. Title		**Module Leader's Qualification**	MS.c.
Module Tutor	1	**e-mail**	Natik.a@uowa.edu.iq
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date		**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	**1- تمكين الطالب من الوقوف على حقيقة أحكام اللغة.** **2- صون اللسان عن الخطأ والنطق الصحيح بالحرف العربي** **3- أن يطبق القواعد النحوية والإملائية التي يدرها الطالب تطبيقا سليما.** **4- أن تتعزز فيه الميول الأدبية والمواهب .** **5- التذوق الجمالي والقدرات اللغوية المتميزة.**

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1- المعرفة والفهم** **2-الوقوف على قواعد اللغة** **3- اعتزاز الطالب بالأمة العربية والإسلامية** **4-الحفاظ على الهوية الإسلامية** **5- الوقوف على حقيقة الإعجاز القرآني.** **6 – تمكين الطالب من معرفة قواعد اللغة** **7– ان يكتسب ثروة لغوية تمكنه من التعبير السليم في المواقف التي يمر بها في حياته**
Indicative Contents المحتويات الإرشادية	**1- أن يكتسب الطالب مهارة في إتقان قواعد اللغة.** **2- قادرا أن يعطي مثالا لكل باب من أبواب اللغة** **3-أن يتدرب على إخراج موضوعات اللغة من النصوص** **4- اعتزاز الطالب بهويته الوطنية والإسلامية ولغته .**

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	**1- الشرح والتوضيح واستخدام السبورة** **2- طريقة عرض المادة والمحاضرة** **3- الطريقة التقليدية ، الكتاب المنهجي إضافة إلى مصادر خارجية**

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	2	10% (10)	5, 12	LO #1 and 4
	Seminar	2	10% (10)	2, 10	LO # 1, 3 and 4
	Online assignments	2	10% (10)	3, 7	LO # 2, 4 and 7
	Report	1	10% (10)	13	LO # 1 and 3
Summative assessment	Midterm Exam	2 hr	20% (20)	7	LO # 1,3 and 4
	Final Exam	3 hr	50% (50)	16	LO # 1,3 and 4
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	مهارات اللغة العربية ومميزاتها
Week 2	الادب والشعر في العصر الجاهلي (قصيدة للحفظ من العصر الجاهلي)
Week 3	اللغة العربية لغة القرآن الكريم (نص قرآني كريم للحفظ وقصيدة للحفظ من العصر الاسلامي)
Week 4	اللغة العربية لغة الضاد – الفروقات في اللغة العربية
Week 5	اسماء الاشارة وحروف الجر والعطف ومعانيها
Week 6	المبتدأ والخبر
Week 7	كان واخواتها
Week 8	ان واخواتها

Week 9	العدد والمعدود
Week 10	الاخطاء الشائعة باللغة العربية
Week 11	امتحان منتصف الفصل
Week 12	الاملاء في اللغة العربية
Week 13	علامات التنقيط في اللغة العربية
Week 14	كيفية كتابة الانشاء بلغة صحيحة
Week 15	**قصيدة من الشعر العربي الحديث**
Week 16	الامتحان النهائي

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	•	
Recommended Texts		
Websites		

Grading Scheme

مخطط الدرجات

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

(0 – 49)	**F –** Fail	راسب	(0-44)	Considerable amount of work required

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

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Computer Programming II	**Module Delivery**	
Module Type	**Support or related learning activity**		☒ **Theory**
Module Code	ENG214		☐ **Lecture**
ECTS Credits	**5**		☒ **Lab**
SWL (hr/sem)	**125**		☐ **Tutorial** ☐ **Practical** ☐ **Seminar**

Module Level	UGII	**Semester of Delivery**	1
Administering Department	OGE	**College**	Engineering
Module Leader	Dr.Salam Jabar Hussain	**e-mail**	
Module Leader's Acad. Title	Asst. Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	NA	**e-mail**	
Peer Reviewer Name	Asst.Lect.Salam Khalid	**e-mail**	Salam.khalid@uowa.edu.iq
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	COPR115	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The main objective of this course is to provide a foundation in programming for engineering problem solving using the MATLAB software package. Students will develop the skills analyze and break down an engineering program and solve it algorithmically using MATLAB. After this course, students will have an understanding of various programming constructs and how they can be used to solve a computational problem.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics. • An ability to develop the confidence necessary to successfully solve Mathematical problems with a computer. • An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
Indicative Contents المحتويات الإرشادية	we will provide students with the skills to create & develop applications using MATLAB , where that allow Engineers to develop engineering applications that run in the Windows environment. MATLAB provides the engineer a programming tool to write simple programs quickly that meet their needs. Example programs written using MATLAB include gas and oil fluid correlations, interpolation software, gas well bottom hole pressure from surface conditions, volumetric reserve calculations, simple log analysis, water pattern analysis and bottom hole pressure analysis, also MATLAB can help you develop predictive maintenance algorithms customized to the specific operational and architectural profile of your equipment. Use Predictive Maintenance Toolbox to design condition indicators and estimate the remaining useful life of your critical equipment like pumps and compressors

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to Encourage students to ask and answer questions, as well as training students to implement many practical exercises in the laboratory (which covers most of what is studied in theoretical lectures), which in turn gives students the ability to carry out the work required of them in the future in their practical life.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Starting With Matlab: MATLAB windows , Menus and the toolbar , Working in the command window , Arithmetic operations with scalars , Display formats , Elementary math built-in functions, Useful commands for managing variables, Script files and the Editor Debugger, Matlab Help System
Week 2	Vector :Row Vectors, Extracting Bits of a vector, Column Vectors, Transposing, Matrices.vector addressing , Using a colon:in addressing vector , Adding elements to existing variables, Deleting elements, Built-in functions for handling vector , Mathematics With vector: Addition and subtraction , vector multiplication, vector division ,
Week 3	Creating Arrays: Creating a two-dimensional array (matrix) , The transpose operator , Array addressing , Using a colon: in addressing arrays, Adding elements to existing variables, Deleting elements, Built-in functions for handling arrays
Week 4	Mathematics With Array:Addition and subtraction , Array multiplication, Array division , Elementby-element operations , Using arrays in MATLAB built-in math functions,Built-in functions for analyzing arrays, Generation of random numbers
Week 5	Functions:Elementary Functions(log10, log, exp, sqrt), Max, min, mean, all, sort, unique, length, size, sum, abs functions, Polyarea, std (Standard Deviation), roots (Polynomial Roots), polyval, diff functions, Build functions
Week 6	Programming In Matlab: Relational and logical operators, Conditional statements, if constructs(if ... end, if ... else ... end, if ... elseif ... else ... end), Switch statements. The switch case statement,
Week 7	Loops:For Loops, while loop, Break & continue statement.

Week 8	Symbolic toolbox Factor, simplify and Expand the terms, Solving Equations, User-definedfunction (Inline, vectorize), Differentiation(The first derivative, The nth derivative), Integration (Definitive and in-definitive integrals, Multiple integral), Solutions of Differential Equations (First Order Differential Equations, Higher Order Differential Equations), Limits
Week 9	Graphic Plotting functions, Plotting a given data set, Adding (titles, axis labels, and annotations), Multiple data sets in one plot, Multiple Plots in One Figure, Three Dimensional Plot-Surface Generation
Week 10	Polynomials, Curve Fitting, And Interpolation : Polynomials, Curve fitting , Interpolation , Extrapolation
Week 11	Applications and Engineering Problems:Numerical analysis,The Root of The Equation Iteration method, Linear interpolation method, Bisection method, Tangent method (Newton-Raphson method).
Week 12	Solution of System of Equations: The Elimination method, Gauss-Jordan method, Gauss- Seidel Method, Newton-Raphson method.
Week 13	The solution of Ordinary Differential Equations: The Taylor Series method, The Euler method, The Runge-Kutta method, Method of Solving Higher Order Equations
Week 14	Petroleum Data Science and Machine Learning
Week 15	Apply the fundamental knowledge of mathematics, science & engineering, to solve the real engineering problems
Week 16	**Preparatory week before the final Exam**
Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered

Week 1	Starting With MATLAB: MATLAB windows , Menus and the toolbar , Working in the command window , Arithmetic operations (exercises using MATLAB as calculator).
Week 2	Vectors (practical exercises + homework): Row Vectors, Column Vectors, Transposing, Vector addressing , Adding elements to existing variables, Deleting elements, Built-in functions for handling vector , Mathematics With vector: Addition and subtraction , vector multiplication, vector division .
Week 3	Matrices (practical exercises + homework): Creating a two-dimensional array (matrix) , The transpose operator , addressing , Using a colon: in addressing arrays, Adding elements to existing variables, Deleting elements.
Week 4	Mathematics with Matrix (practical exercises + homework): Addition and subtraction, Array multiplication, Array division, element by-element operations.
Week 5	Built in functions (practical exercises + homework): log10, log, exp, sqrt, max, min, mean, all, sort, length, size, sum, abs, polyarea, std (Standard Deviation).
Week 6	Test.
Week 7	Programming In Matlab (practical exercises + homework): Relational and logical operators. Solving simple exercises using script files (Editor).
Week8	Conditional statements (practical exercises + homework): if constructs (if ... end, if ... else ... end, if ... elseif ... else ... end), Switch statement (The switch case statement).
Week9	Loop statements (practical exercises + homework): For Loops, while loop, Break & continue statement.
Week10	User defined functions (practical exercises + homework): Creating a function file, structure of a function file, saving a function file , and using a user-defined function
Week11	Graphic (practical exercises + homework): Plotting functions, Plotting a given data set, Adding (titles, axis labels, and annotations), and multiple data sets in one plot, Multiple Plots in One Figure, Three Dimensional Plot-Surface Generation
Week12	Symbolic toolbox (practical exercises + homework):

	Factor, simplify and Expand the terms, Solving Equations, User-defined function (Inline, vectorize), Differentiation, Integration, Solutions of Differential Equations (First Order Differential Equations, Higher Order Differential Equations), and Limits.
Week13	Solution of System of Equations (practical exercises + homework): The Elimination method, and Newton-Raphson method.
Week14	Solve some engineering problems using MATLAB
Week15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. RudraPratap: Getting started with MATLAB 7, Oxford Press (Indian edition),2006. 2. Desmond J. Higham and Nicolas J. Higham: Matlab Guide, SIAM, 2000.	yes
Recommended Texts	Introduction to MATLAB for Chemical & Petroleum Engineering 2nd Edition by Sam Toan , Hertanto Adidharma , Bahareh Nojabaei	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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Crimes of the Baath regime in Iraq	**Module Delivery**	
Module Type	Suport	☒ **Theory**	
Module Code	UOWA226	☒ **Lecture**	
ECTS Credits	2	☐ **Lab**	
SWL (hr/sem)	50	☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	

Module Level	UGII	**Semester of Delivery**	1
Administering Department	OGE	**College**	Engineering
Module Leader	Asst. Lect. Mosa Ali	**e-mail**	mousa.ali@uowa.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	
Module Tutor		**e-mail**	mousa.ali@uowa.edu.iq
Peer Reviewer Name	Asst. Lect. Mosa Ali	**e-mail**	mousa.ali@uowa.edu.iq
Scientific Committee Approval Date	01/09/2024	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The curriculum aims to document the crimes of the Ba'athist regime to provide a clear and truthful account for current university students. It allows them to understand the reality of decades of Iraqi rule under a tyrant disguised as a human being. By studying its sections and contents, students will be guided to counteract any media distortion that attempts to mislead them, thus preventing any form of deception.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After completing the academic semester, the student will learn: 1. The concept of crimes and their categories. 2. Types of international crimes. 3. Psychological crimes and their effects. 4. The Ba'athist regime's stance on religion. 5. Forms of human rights violations and abuses of power. 6. Environmental crimes committed by the Ba'ath regime in Iraq.

	7. The effects of war and radioactive pollution, and the dangers of landmines. 8. The destruction of cities and villages. 9. The draining of marshlands and the devastation of palm groves, trees, and crops. 10. Crimes related to mass graves. 11. Locations of prisons and detention centers under the Ba'ath regime. 12. Social crimes. 13. Violations of Iraqi laws. 14. The militarization of society. 15. The events of mass extermination graves perpetrated by the Ba'athist regime in Iraq.
Indicative Contents المحتويات الإرشادية	The indicative contents cover various aspects of the Ba'ath regime's crimes in Iraq, including categories of crimes, international and psychological offenses, religious stances, human rights abuses, environmental destruction, war pollution, and mass graves, alongside violations of laws and societal impacts.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Learning and teaching strategies involve a mix of interactive lectures, detailed case studies, multimedia presentations, and survivor testimonies to explore the Ba'ath regime's crimes. Students critically analyze historical documents, engage in group discussions, and conduct research projects, enabling a comprehensive understanding of the regime's impact on Iraqi society.

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	- The concept of crimes and their categories.
Week 2	- Types of international crimes.
Week 3	- Psychological crimes and their effects.
Week 4	- The Ba'athist regime's stance on religion.

Week 5	- Forms of human rights violations and abuses of power.
Week 6	- Environmental crimes committed by the Ba'ath regime in Iraq.
Week 7	- The effects of war and radioactive pollution, and the dangers of landmines.
Week 8	- The destruction of cities and villages.
Week 9	- The draining of marshlands and the devastation of palm groves, trees, and crops.
Week 10	- Crimes related to mass graves.
Week 11	- Locations of prisons and detention centers under the Ba'ath regime.
Week 12	- Social crimes.
Week 13	- Violations of Iraqi laws.
Week 14	- The militarization of society.
Week 15	- The events of mass extermination graves perpetrated by the Ba'athist regime in Iraq
Week 16	- **The preparatory week before the Final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Crimes of the Baath regime in Iraq book	
Recommended Texts	Crimes of the Baath regime in Iraq book	
Websites	https://euaa.europa.eu/country-guidance-iraq-2021/crimes-committed-during-regime-saddam-hussein#:~:text=Saddam%20Hussein%20and%20the%20Baath,Kurdish%20people%20were%20systematically%20persecuted.	

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Fluid Mechanic I	**Module Delivery**	
Module Type	**Basic**		☒ **Theory**
Module Code	**ENG213**		☐ **Lecture**
ECTS Credits	**5**		☐ **Lab**
SWL (hr/sem)	**125**		☒ **Tutorial** ☐ **Practical** ☐ **Seminar**

Module Level	UGII	**Semester of Delivery**	1
Administering Department	OGE	**College**	Engineering
Module Leader	Dr.Salam Jabar	**e-mail**	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor		**e-mail**	
Peer Reviewer Name	Asst.Lect.Mujtaba Mahdi	**e-mail**	Mujtaba.mahdi@uowa.edu.iq
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CALC123	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	This course provides students an information on the principal concepts and methods of fluid mechanics. Topics covered in the course include pressure, hydrostatics, control volume analysis; mass conservation, momentum conservation and energy conservation for moving fluids; viscous fluid flows, flow through pipes; dimensional analysis; boundary layers. Students will work to formulate the models necessary to study, analyze, and design fluid systems through the application of these concepts, and to develop the problem-solving skills essential to good engineering practice of fluid mechanics in practical applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- To give the student the knowledge in fluid types, physical properties and the consequence of such properties on fluid flow, and types of units and their conversion. 2- To make the students release the forces acting on static fluid. 3- To give knowledge on types of flow and the basic forces acting on simple profiles and shapes in an steady fluid flow. 4- To give knowledge on viscous flow ,friction factor and losses in pipes.
Indicative Contents المحتويات الإرشادية	Students will work to formulate the models necessary to study, analyze, and design fluid systems through the application of these concepts, and to develop the problem-solving skills essential to good engineering practice of fluid mechanics in practical applications.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Using the following: 1- Discussion.

	2- Brain storming by encouraging students to produce a large number of ideas about some issue or problem raised during the lecture. 3- Self-learning by teaching the student by his own according to his special abilities and mental and cognitive levels responding to his preferences and interests to achieve development and integration of his capabilities. 4- Cooperative learning by team working.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	**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	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 12	LO #1 and 4
	Assignments	2	10% (10)	2, 10	LO # 1, 3 and 4
	Projects /	-	-	-	-
	Report	1	10% (10)	13	LO # 1 and 3
Summative assessment	**Midterm Exam**	2 hr	20% (20)	7	LO # 1,3 and 4
	Final Exam	2hr	50% (50)	16	LO # 1,3 and 4

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Introduction** Syllabus and References Definition, types of fluids, units and dimensions
Week 2	**Physical Properties** dynamic and kinematic viscosity, surface tension, vapor pressure and cavitation.
Week 3	**Static Fluid** static fluid and gage measurement.
Week 4	**Static Fluid** Application on pressure gage measurement.
Week 5	**Hydrostatic Forces on Submerged Surfaces** Hydrostatic Forces on Plane Surfaces, and curved Surfaces .
Week 6	**Hydrostatic Forces on Submerged Surfaces** Buoyancy
Week 7	**Dynamic Fluid** Definition, Reynolds no. ,types of flow and flow pattern . flow in noncircular duct, and the derivation.
Week 8	**Governing Equations** Continuity equation, momentum equation, and energy equation.
Week 9	**Governing Equations**

	Euler equation, Bernoulli equation and its modification
Week 10	EGL and HGL.
Week 11	**Velocity Distribution** Derivation of velocity distribution, maximum, average and mean velocity for laminar flow
Week 12	**Velocity Distribution** Velocity distribution, maximum, average and mean velocity for turbulent flow. Correction factor
Week 13	**Friction in Pipes** Types of friction, skin friction and derivation of Darcy equation, form friction and its application.
Week 14	**Losses in Pipes** Major and minor losses.
Week 15	**Preparatory week before the final Exam**
Week 16	**Final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Streeter, V. "Fluid Mechanic", 6th edition, Mc-Graw Hill, 1975 . • Frank M. White "Fluid Mechanics", 5th edition, McGraw Hill. 1997. • Coulson & Richardson's Chemical Engineering - Vol. 1, Fluid Flow, Heat Transfer and Mass Transfer - 6th edition, Butterworth-Heinemann, 1999. • R. C. Hibbeler "FLUID MECHANICS", 2nd edition in SI units, Pearson Education, 2021.	

Recommended Texts	Frank M. White "Fluid Mechanics", 5th edition, McGraw Hill. 1997.	
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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Fluid Mechanic II			**Module Delivery**	
Module Type	**Basic**			☒ **Theory**	
Module Code	ENG223			☐ **Lecture**	
ECTS Credits	**6**			☒ **Lab**	
SWL (hr/sem)	**150**			☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Level	UGII		**Semester of Delivery**	4	
Administering Department	OGE		**College**	ENG	
Module Leader	Dr.Salam Jabar		**e-mail**	salam.jabar@uowa.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	PH.D.	
Module Tutor	Asst.Lect Mujtaba Mahdi		**e-mail**	Mujtaba.mahdi@uowa.edu.iq	
Peer Reviewer Name			**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	ENG213	**Semester**	3
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	This course provides students an information on the principal concepts and methods of fluid mechanics. Topics covered in the course include pipe systems and pipes network, fluid measurements(types and their importance), Non Newtonian liquids, dimensional analysis, pumps, flow of compressible fluid, and flow in porous media. Students will work to formulate the models necessary to study, analyze, and design fluid systems through the application of these concepts, and to develop the problem-solving skills essential to good engineering practice of fluid mechanics in practical applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- To give the student the knowledge in types of fluid measurements; their importance, principles and applications. 2- To give the students an idea on Non-Newtonian fluids; their types and models, their physical principles of flow, and friction. 3- To give the students an idea on dimensional analysis grouping. 4- To give knowledge on types of pumps and their principles. 5- To make the students release the compressible fluid; their difference from incompressible fluid and how to write their basic equations
Indicative Contents المحتويات الإرشادية	Students will work to formulate the models necessary to study, analyze, and design fluid systems through the application of these concepts, and to develop the problem-solving skills essential to good engineering practice of fluid mechanics in practical applications.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Using the following: 1- Discussion. 2- Brain storming by encouraging students to produce a large number of ideas about some issue or problem raised during the lecture. 3- Self-learning by teaching the student by his own according to his special abilities and mental and cognitive levels responding to his preferences and interests to achieve development and integration of his capabilities. 4- Cooperative learning by team working.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	90	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
	Quizzes	2	10% (10)	5, 13	LO #1

Formative assessment	**Assignments**	2	10% (10)	3, 11	LO # 1 and 4
	Projects / lab	1	10% (10)	15	LO # 1 and 3
	Report	7	10% (10)	2,4,6,8,10,12,14	LO # 1,3 and 4
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1 and 3
	Final Exam	2hr	50% (50)	16	LO # 1 and 3
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Multiple-pipe system** Parallel connection, series connection.
Week 2	**Multiple-pipe system** Reservoir pipe junction, and piping network.
Week 3	**Flow measurement** Why it is important? Custody Transfer Measuring System Obstructive devices, and Non-obstructive devices. Pitot tube
Week 4	**Flow measurement of close channel** Venture meter, Orifice meter.
Week 5	**Flow measurement of close channel** Nozzle meter, Rotameter.

Week 6	**Flow measurement of open channel** Weir and Notch.
Week 7	**Mid Exam**
Week 8	**Non- Newtonian liquids** Introduction, types of Non-Newtonian liquids, apparent viscosity.
Week 9	**Non- Newtonian liquids** Velocity distribution.
Week 10	**Non- Newtonian liquids** friction factor, and the pressure losses.
Week 11	**Dimensional Analysis** The Principle of Dimensional Homogeneity, Why do we need to do dimensional analysis? Dimensionless group using Rayleigh Method.
Week 12	**Dimensional Analysis** Dimensionless group using Buckingham Pi Theorem.
Week 13	**Pumps** Types, application, similarity rules, starting point for one and two pumps connected in parallel or sequence.
Week 14	**Compressible fluid** Introduction, applications, energy losses of its flow, derivation of sonic equation, supersonic and subsonic flow and the types of measurement.
Week 15	**Preparatory week before the final Exam**

Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Hydraulic bench, Volumetric flow rate measurement.**
Week 2	**Osborne-Reynolds and laminar flow Demonstration.**
Week 3	**flow through a Venture meter.**
Week 4	**Head losses in bends.**
Week 5	**Energy losses in piping system.**
Week 6	**Fluid friction in a smooth & roughened pipe/flow measuring and valves.**
Week 7	**Bourdon manometer calibration (dead weight).**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Streeter, V. "Fluid Mechanic", 6th edition, Mc-Graw Hill, 1975 . • Frank M. White "Fluid Mechanics", 5th edition, McGraw Hill. 1997.	

	• Coulson & Richardson's Chemical Engineering - Vol. 1, Fluid Flow, Heat Transfer and Mass Transfer - 6th edition, Butterworth-Heinemann, 1999. • R. C. Hibbeler "FLUID MECHANICS", 2nd edition in SI units, Pearson Education, 2021.	
Recommended Texts	Frank M. White "Fluid Mechanics", 5th edition, McGraw Hill. 1997.	
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
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	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
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	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Ordinary and partial differential equations		**Module Delivery**
Module Type	**Basic**		☒ **Theory**
Module Code	ENG212		☐ **Lecture**
ECTS Credits	**5**		☐ **Lab**
SWL (hr/sem)	**125**		☒ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Level	UGII	**Semester of Delivery**	1
Administering Department	OGE	**College**	Engineering
Module Leader	Dr.dheiaa hamadi	**e-mail**	Dheiaa.ha@uowa.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor	2	**e-mail**	E-mail
Peer Reviewer Name	Asst.Lect.Hawraa Majed	**e-mail**	hawraa.majeed@uowa.edu.iq
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CALC123	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	Important objectives of the calculus sequence are to develop and strengthen students' problem-solving skills and to teach them to read, write, speak, and think in the language of mathematics. In particular, students learn how to apply calculus tools to a variety of problem situations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Find limits of functions (graphically, numerically, and algebraically) 2. Analyze and apply the notions of continuity and differentiability to algebraic and transcendental functions. 3. Determine derivatives by a variety of techniques including explicit differentiation, implicit differentiation, and logarithmic differentiation. Use these derivatives to study the characteristics of curves. Determine derivatives using implicit differentiation and use them to study the characteristics of a curve. 4. Students will use a variety of methods to solve the Laplace and Poisson equations.

	5. Harmonic function characteristics will be examined by the students. 6. The heat and wave equations will be solved, and students will examine their characteristics. 7. The characteristic approach will be used by students to resolve first order partial differential equations. 8. Students will evaluate conservation laws' characteristics. 9. Students will examine some other nonlinear PDEs' properties if time allows.
Indicative Contents المحتويات الإرشادية	1. To model and comprehend scenarios involving exponential growth or decay and second order physical systems, use established DE types. 2. Use a variety of input functions, such as zero, constants, exponentials, sinusoids, step functions, impulses, and superpositions of these functions, to solve the major equations. 3. Use the characteristic equation, exponential response formula, Laplace transform, convolution integrals, Fourier series, complex arithmetic, parameter variation, elimination, and anti-elimination methods to solve the differential equations mentioned above. 4. Be able to solve linear DEs using the fundamental ideas of linearity, superposition, and the existence and uniqueness of DE solutions.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Highlight conceptual comprehension. • Assign homework that is difficult and builds on the lessons you gained in class. • Cooperative learning strategies ought to be applied.

	• Submit intelligent queries. • Put your focus on logical reasoning and practical problem-solving. • Use a range of assessment techniques.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	- Exponential and logarithm functions, Application of Exponential and logarithm functions
Week 2	- The relationship between the Exponential function and the logarithm function, Trigonometric functions
Week 3	- The inverse of Trigonometric functions, Hyperbolic functions
Week 4	- The inverse of Hyperbolic functions, Limits
Week 5	- Derivative, Implicit differentiation, Exponential functions derivative
Week 6	- The logarithm functions derivative, Derivative of hyperbolic functions
Week 7	- Mid-Term Exam
Week 8	- Applications of differentiation, Increasing and decreasing functions, Maximum and Minimum using Derivatives
Week 9	- Introduction to PDE and classification, Special functions: (Gamma function, Bessel function, Exponential integral function, Error function)
Week 10	- Fourier series and analysis (Definition, General Formula, Euler-Fourier Coefficient, Periodic Functions, Odd and Even Functions).
Week 11	- Fourier Transform (General Formula, Fourier Transform Theorems, Fourier Transform Pairs, Inverse of Fourier Transform, Inverse of Fourier Transform Theorems)
Week 12	- Methods of Solving PDE: (Direct integration method, Variables separable, Fourier Transform, Laplace Transform, ODE methods)
Week 13	- One Dimension Heat Equation, Two Dimension Heat Equation (Laplace equation)
Week 14	- One Dimension Wave Equation, Wave Equation: D. Alembert's formula
Week 15	- Single Phase Fluid Flow Equation Solution
Week 16	- **The preparatory week before the Final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- George B. Thomas, "THOMAS' CALCULUS ", Eleventh Edition 2011, Dorling Kindersley (India). 2- Spiegel, M. R. Schaums outline series, theory and problems of Lablace transform, copy write 1965 by Mc Graw-Hill Inc. 3- Spiegel, M. R. Schaums outline series, theory and problems of Fourier analysis with application to boundary value problem, copy write 1974 by Mc Graw-Hill Inc.	
Recommended Texts	1- Ford , S.R. and Ford , J.R. " Calculus " , (1963) McGraw-Hill. 2- K.Back house and S.P.T. Houldsworth " Pure Mathematics a First Course " (1979) , S1 Edition , Longman Group . 3- Erwin Kreyszig, "Advanced Engineering Mathematics", John Wiley & Sons. Inc., 9th ed., 2006.	
Websites	1- https://en.wikipedia.org/wiki/Differential_equation 2- https://byjus.com/maths/differential-equation/	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings

	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	**F –** Fail	راسب	(0-44)	Considerable amount of work required

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

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Partial Differential Equations	**Module Delivery**	
Module Type	**Basic**		☒ **Theory**
Module Code	ENG226		☐ **Lecture**
ECTS Credits	**5**		☐ **Lab**
SWL (hr/sem)	**125**		☒ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Level	UGII	**Semester of Delivery**	4
Administering Department	OGE	**College**	ENG
Module Leader	Dr.dheiaa hamadi	**e-mail**	E-mail: Dheiaa.ha@uowa.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	ENG212	**Semester**	3
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	Important objectives of the calculus sequence are to develop and strengthen students' problem-solving skills and to teach them to read, write, speak, and think in the language of mathematics. In particular, students learn how to apply calculus tools to a variety of problem situations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Find limits of functions (graphically, numerically, and algebraically) 2. Analyze and apply the notions of continuity and differentiability to algebraic and transcendental functions. 3. Determine derivatives by a variety of techniques including explicit differentiation, implicit differentiation, and logarithmic differentiation. Use these derivatives to study the characteristics of curves. Determine derivatives using implicit differentiation and use them to study the characteristics of a curve. 4. Students will use a variety of methods to solve the Laplace and Poisson equations.

	5. Harmonic function characteristics will be examined by the students. 6. The heat and wave equations will be solved, and students will examine their characteristics. 7. The characteristic approach will be used by students to resolve first order partial differential equations. 8. Students will evaluate conservation laws' characteristics. 9. Students will examine some other nonlinear PDEs' properties if time allows.
Indicative Contents المحتويات الإرشادية	1. To model and comprehend scenarios involving exponential growth or decay and second order physical systems, use established DE types. 2. Use a variety of input functions, such as zero, constants, exponentials, sinusoids, step functions, impulses, and superpositions of these functions, to solve the major equations. 3. Use the characteristic equation, exponential response formula, Laplace transform, convolution integrals, Fourier series, complex arithmetic, parameter variation, elimination, and anti-elimination methods to solve the differential equations mentioned above. 4. Be able to solve linear DEs using the fundamental ideas of linearity, superposition, and the existence and uniqueness of DE solutions.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Highlight conceptual comprehension. • Assign homework that is difficult and builds on the lessons you gained in class. • Cooperative learning strategies ought to be applied.

	• Submit intelligent queries. • Put your focus on logical reasoning and practical problem-solving. • Use a range of assessment techniques.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**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, 10	LO #3 and 10
	Assignments in collage	10	10% (10)	Continuous	All
	Assignments in home	10	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	- General Review
Week 2	- Special Functions I
Week 3	- Special Functions I
Week 4	- Fourier Analysis and Series
Week 5	- Fourier Transform I
Week 6	- Inverse of Fourier Transform
Week 7	- Laplace Transform
Week 8	- Inverse of Laplace Transform
Week 9	- Methods of Solving PDE: (Direct integration method, Variables separable, Fourier Transform, Laplace Transform, ODE methods)
Week 10	- One Dimension Heat Equation, Two Dimension Heat Equation (Laplace equation) by Variable separable
Week 11	- One Dimension Heat Equation, Two Dimension Heat Equation (Laplace equation) by Transforms
Week 12	- One Dimension Wave Equation by Variable separable, Wave Equation: D. Alembert's formula
Week 13	- One Dimension Wave Equation by transforms
Week 14	- Single Phase Fluid Flow Equation Solution
Week 15	- Final Exam
Week 16	- **The preparatory week before the Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1- George B. Thomas, "THOMAS' CALCULUS ", Eleventh Edition 2011, Dorling Kindersley (India). 2- Spiegel, M. R. Schaums outline series, theory and problems of Lablace transform, copy write 1965 by Mc Graw-Hill Inc. 3- Spiegel, M. R. Schaums outline series, theory and problems of Fourier analysis with application to boundary value problem, copy write 1974 by Mc Graw-Hill Inc.	
Recommended Texts	1- Ford , S.R. and Ford , J.R. " Calculus " , (1963) McGraw-Hill. 2- K.Back house and S.P.T. Houldsworth " Pure Mathematics a First Course " (1979) , S1 Edition , Longman Group . 3- Erwin Kreyszig, "Advanced Engineering Mathematics", John Wiley & Sons. Inc., 9th ed., 2006.	
Websites	1- https://en.wikipedia.org/wiki/Differential_equation 2- https://byjus.com/maths/differential-equation/	

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Petroleum Geology			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	OGE221				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	UGII		**Semester of Delivery**	4	
Administering Department	OGE		**College**	ENG	
Module Leader	Hawraa Majeed Obaid		**e-mail**	Hawraa.majeed@uowa.edu.iq	
Module Leader's Acad. Title	Assist. Lect.		**Module Leader's Qualification**	MSc	
Module Tutor	NA		**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	OGE215	**Semester**	3
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	Understanding the nature of the organic-rich source rock, the paleoaquifers in which the petroleum flowed, and the trapping mechanism are important parts of Petroleum Geology. A petroleum engineers needs to have a broad knowledge of sedimentary geology (sedimentology and petrography), stratigraphy, structural geology, and hydrogeology.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	* An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics. * An ability to develop the confidence necessary to successfully solve Mathematical problems with a computer. * An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
Indicative Contents المحتويات الإرشادية	The outcomes of this course are used to construct the evolutionary histories of sedimentary basins. Thus, a successful petroleum engineers needs a broad background, and a willingness to learn and apply a wide range of information and techniques to the problems of finding, developing, and exploiting a petroleum reservoir.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Have a basic understanding of the petroleum system, petroleum as a resource, and the value chain. 2. Have a basic understanding of petroleum formation and origin. 3. Understand how geologists conduct the search for petroleum resources through the value chain or the life cycle of a petroleum resource. This will include the processes involved and actual examples. 4. Learn details on how to begin evaluating a hydrocarbon play and developing a prospect. 5. Learn the concepts of migration and accumulation of hydrocarbon 6. Learn the principles of mapping a subsurface reservoir.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	**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	2.5
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects /	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	INTRODUCTION What is petroleum geology?, Principal of petroleum geology, Why is Carbon so Important in the Life Cycle, Oil and Gas.
Week 2	ORIGIN OF PETROLEUM FORMS Characteristics of petroleum reservoirs, Exploration activities in a sedimentary basin.
Week 3	PETROLEUM TRAP 1 General Considerations, Structural Traps, Types of Structural traps, Stratigraphic Traps,
Week 4	PETROLEUM TRAP 2 Types of stratigraphic traps, Combination Traps, Hydrodynamic Traps
Week 5	ORIGIN, MIGRATION, AND ACCUMULATION 1 Origin of petroleum, Total Organic Carbon (TOC), Source Rocks, TOC Types,

Week 6	ORIGIN, MIGRATION, AND ACCUMULATION 2 Conversion of OM to HC, Dehydrogenization and Carbonization, Deoxygenization and Carbonization.
Week 7	SOURCE ROCK QUALITY Maturation, Purposes of maturation indicators, Lopatin's TTI Index, Other Maturation Indicators, Oil Source Rock Criteria.
Week 8	MIGRATION OF HYDROCARBON 1 General considerations, Formation water, Formation water composition, Pressure and temperature during burial,
Week 9	MIGRATION OF HYDROCARBON 2 Evidence for Migration, Primary Migration, Primary Migration Controversy, Primary Migration Mechanisms ,Secondary Migration, Migration Pathways
Week 10	PETROLEUM RESERVOIR CHARACTERISTIC
Week 11	EXPLORATION TECHNIQUES FOR HYDROCARBON Surface geology, Subsurface geology, Drilling operations
Week 12	MAPS AND CROSS SECTIONS Contour maps, Geologic maps, Cross sections
Week 13	PETROLEUM GEOLOGY OF IRAQ AND SURROUNDING REGIONS 1
Week 14	PETROLEUM GEOLOGY OF IRAQ AND SURROUNDING REGIONS 2
Week 15	**Preparatory week before the final Exam**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Basic Petroleum Geology, Peter K. Link	Yes
Recommended Texts	Elements of Petroleum Geology (2nd edition): Academic Press, Toronto,	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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Physics and Thermodynamics	**Module Delivery**	
Module Type	**Basic**		☒ **Theory**
Module Code	ENG225		☐ **Lecture**
ECTS Credits	**5**		☐ **Lab**
SWL (hr/sem)	**125**		☒ **Tutorial** ☐ **Practical** ☐ **Seminar**

Module Level	UGII	**Semester of Delivery**	4
Administering Department	OGE	**College**	
Module Leader	Asst.lect Yahya hadi	**e-mail**	Yahya.hadi@uowa.edu.iq
Module Leader's Acad. Title	Prof.	**Module Leader's Qualification**	PhD
Module Tutor	2	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	ENG212	**Semester**	3
Co-requisites module	1- It provides abroad foundation in the basic of science and engineering.	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. The program has a strong emphasis on modern physics and its application to 21st century technology. 2. Our program builds on the existing research and teaching strengths of the Physics and Materials Science Division in cross-cutting areas such as novel 21st century materials, materials for energy, macromolecules, quantum mechanics to devices, surfaces, interfaces, and nanostructures, and computation, and is flexible enough to grow together with the research base of our division.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Graduates will have substantial experience with laboratory methods, data analysis, and computation.
Indicative Contents المحتويات الإرشادية	Engineering physics students will be well equipped to pursue research and development careers in new and emerging technologies such as properties of new materials, quantum electronics, nanofabrication and devices, quantum signal processing and quantum computing, related to emerging advances in electrical, mechanical and petroleum engineering.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Active learning techniques methods

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	90	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	130		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	History of nature science, electrical, charge, current.
Week 2	Resistance, resistivity, galvanometer, ammeter, voltmeter.
Week 3	Simple harmonic motion.
Week 4	Kinetic and potential energy
Week 5	Electric and magnetic properties of matter
Week 6	Insulators, semiconductor, conductor, superconductor.
Week 7	Diamagnetic, paramagnetic, ferromagnetic
Week 8	Nanotechnology
Week 9	Introduction: Zeroth law of thermodynamics: Definition of temperature, Zeroth law concept, Type of thermometers, Type of temperature scales, Kelvin experiment: gas thermometer
Week 10	Ideal gas Equation: Properties of matter, Temperature effect on matter, Thermal expansion laws Macroscopic description of ideal gas, Derivation of Ideal gas equation
Week 11	Heat: Heat and internal energy, Units of heat, Mechanical equivalent of heat, Specific heat capacity, Calorimetry, Latent heat Work: State variables, Transfer variables, Work in thermodynamics, PV diagrams, Energy transfer .
Week 12	The 1st law of thermodynamics: Isolated and open systems, Adiabatic processes, Adiabatic free expansion process Isobaric processes, Isochoric processes, Isothermal processes, Thermal expansion
Week 13	Engines and refrigerators: Work to heat, Heat engine, Thermal efficiency of heat engine, Heat pump (refrigerators), Refrigerator cycle (Sterling), Coefficient of performance
Week 14	2nd law of thermodynamics: Entropy Kelvin-Planck & Clausius forms, Reversible and irreversible processes Carnot engine and theorem, Carnot efficiency
Week 15	**Preparatory week before the final Exam**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Electric Charge and Field, Guide to Semiconductor Engineering, Magnetic and Electric book. Publish Papers	Yes
Recommended Texts	Physics text book, Series of nanotechnology	
Websites	Elsevier, Springer, Physics library online, https://openlibrary.org/subjects/physics ,	

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Properties and transportation of crude oil and gas	**Module Delivery**	
Module Type	**Core**		☒ **Theory**
Module Code	OGE222		☐ **Lecture**
ECTS Credits	**5**		☒ **Lab**
SWL (hr/sem)	**125**		☐ **Tutorial** ☐ **Practical** ☐ **Seminar**

Module Level	UGII	**Semester of Delivery**	4
Administering Department	OGE	**College**	ENG
Module Leader	Dr.Salam Jabar	**e-mail**	salam.jabar@uowa.edu.iq
Module Leader's Acad. Title	Ass. Prof. Dr	**Module Leader's Qualification**	PhD
Module Tutor	Asst.lect yahya hadi	**e-mail**	E-mail:Yahya.hadi@uowa.edu.iq
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	ENG213	**Semester**	3
Prerequisite module	UOW121	**Semester**	2
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	**Providing students with science and knowledge in oil and gas different types of transportation as single-phase flow and two-phase flow, Stresses types, study the types of pumps, compressors, legislation and laws relating to the transfer and storage of oil and gas, methods of storage and calculations of economic diameter. Also study the characteristics of crude oil and its products in terms of classification and use Products and methods of obtaining them as well as disposal methods of unwanted compounds in crude oil or its various products (light, medium and heavy).**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1- To give the student the knowledge in pipeline, horizontal and non-horizontal flow calculation as single and two-phase flow.** **2- To give student the knowledge of sizing and specifying pipe, selection of route, protection against corrosion pipe lying. Types of oil and gas transportations.** **3- To give student the idea about tanks, pressure vessels, design and selection of storage tanks.** **4- To give the student the knowledge and experiments of Petroleum assay (carbon residue, asphaltene content) Density, distillation, Light hydrocarbon, salt content, Sulfur content, Viscosity and pour point.** **5- To give student the knowledge of Crude oil properties, Industrial process of distillation towers and fraction processes.** **6- To give student the idea liquid petroleum gases (LPG), gasoline blending components, and naphtha, jet fuel, kerosene, and distillates, and Lubricated oil, Residue Fuel Oil, Wax, Asphlitane.**

Indicative Contents المحتويات الإرشادية	**This course focus to crude oil and gas properties first part then in the second part study oil and gas transportation which make the students through the application of module learning outcomes concepts to develop the problem-solving skills essential to good engineering practice of practical applications of Properties and transportation of crude oil and gas.**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**1. Lectures.** **2- Discussion.** **3- Presentations and Listening.** **4- Encourage students to team working.** **5- Encouraging students to submit reports on problem and solutions related to the curriculum.**

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects /	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Source of Oil and classifications, Petroleum assay (carbon residue , asphaltene content) Density, Viscosity, Distillation process, Light hydrocarbon, salt content.**
Week 2	**Sulfur content, pour point, Properties of Oil Stock, fractional Industries, Industrial process of distillation towers and fraction processes, Basic operation in petroleum processing.**
Week 3	**Light products and Their properties (Gasoline blending components, and naphtha, Liquid petroleum gases (LPG))**
Week 4	**Mid-range Oil Products (Jet fuel, kerosene)**
Week 5	**Heavy Oil products and Their Properties (Residue Fuel Oil, Wax (classification, types) , Lubricants)**

Week 6	Methods of Oil and Gas Transportation (single flow calculations) and Pipeline Transportation of single and Multi-phase Flow
Week 7	Efficiency of Pipeline Transportation with other types
Week 8	Multi-phase Flow
Week 9	Horizontal and Non-Horizontal Flow Calculation multi-phase flow
Week 10	Gas Flow in Series, Parallel and Network Pipelines, Gathering pipelines. The SCADA System for pipelines.
Week 11	Pipelines Economics, Pipelines Design, Pipeline networks, Sampling and Testing of Oil and Gas.
Week 12	Pumps and Compressors, Instrumentation and Control, Safety and Supervision.
Week 13	Rules and Regulation in Transportation and Storage of Oil and Gas, Economic pipe diameter.
Week 14	Types of Storage, Underground Storage of Natural Gas
Week 15	Preparatory week before the final Exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**density and specific gravity**
Week 2	**Astm distillation**
Week 3	**flash and fire point**
Week 4	**carbon residue and Ash content**
Week 5	**sulfur content**
Week 6	**smoke point**
Week 7	**octane and cetane number**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**1- Emir Ceriþc, "Crude Oil , Processes and Products", ISBN (9958917343, 9789958917349). 2012.** **2- Vasily .S and Raphael. I, Marcel Dekker, "Crude Oil Chemistry", Inc, New York Basel 2005.** **3- James. G. Speight "Petroleum Chemistry and Refining", Applied Energy Technology Series, Taylor and Francis USA, 1998.** **4- "Oil and Gas Production Handbook", Havard Devold., Wikipedia (The Free Encyclopedia), 2013.** **5- "Gas Conditioning and Processing: The Basic Principles", John. M. C., Robert. A. H., Robert. N. M., Copyright Campbell Petroleum Series USA. 1992.**	

	6- "Production and Transportation of Oil and Gas B: Gathering and Transportation (Development in Petroleum Science)", A. P. Szilas, Elsevier Science Publishing Company 1986.	
Recommended Texts	1- Emir Ceriþc, "Crude Oil , Processes and Products", ISBN (9958917343, 9789958917349). 2012. 2- "Oil and Gas Production Handbook", Havard Devold., Wikipedia (The Free Encyclopedia), 2013.	
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

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	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Statistical and Optimization	**Module Delivery**	
Module Type	**Basic**	☒ **Theory**	
Module Code	ENG216	☐ **Lecture**	
ECTS Credits	**5**	☐ **Lab**	
SWL (hr/sem)	**125**	☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	

Module Level	UGII	**Semester of Delivery**	1
Administering Department	OGE	**College**	Engineering
Module Leader	Dr.ali khayoon	**e-mail**	ali.kh@uowa.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor	1	**e-mail**	ali.kh@uowa.edu.iq
Peer Reviewer Name	Asst. Lect..Yahya hadi	**e-mail**	yahya.hadi@uowa.edu.iq
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CALC123	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	Foundation material in probability and statistical inference. Topics include sample spaces, conditional probability, random variables, discrete and continuous probability distributions, expectation, estimation, and hypothesis testing as well as Simple linear regression, model and equation.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Learn the language and core concepts of probability theory. 2- Use software and simulation to do statistics. 3- Become an informed consumer of statistical information.
Indicative Contents المحتويات الإرشادية	1- Dealing with numbers and variables and identifying the methods of dealing with them. Studying Central tendency measures as important tools in dealing with many variables Define the Probability theories and determine how to deal with all variables according to the correct method of probability, and using suitable methods to deal with methods of continuous and discrete variables. 2- Using suitable software to deal with the large number of variables of all kinds. Recognition through exercise to determine the quality of variables and calculate central tendency measures and measures of variation. 3- Finding the relationship between dependent and independent variables and construct the correlation coefficient and degree of correlation as well as the studying the regression models and determining the equation. learning how to draw the relationship of the different variables.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	As a basic strategy .. students try through this course to identify the correct statistical methods in dealing with the numbers and the multi variables that they might deal with regarding of oil and gas engineering applications, in addition to studying the systems, concepts and theories of probability through which it can infer accurate facts and information which will be highly beneficial in their field and its practical applications through the use of a set of specialized software.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**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**	1	10% (10)	1-4	1
	Assignments	1	10% (10)	5-8	1,2
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	1,2,3
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	1,2,3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction and Fundamental elements of statistics.
Week 2	Types of data, Methods of describing data.
Week 3	Measures of central tendency.
Week 4	Measures of variation.
Week 5	Probability and Discreet of random variable.
Week 6	Probability and Continuous random distribution.
Week 7	Normal Distribution.
Week 8	Applications .
Week 9	Testing of Hypothesis.
Week 10	Traditional Methods.
Week 11	z Test for a Mean and Chi-square
Week 12	Simple linear regression.
Week 13	The coefficient of correlation.
Week 14	Regression model.
Week 15	Regression equation.
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Allan G. Bluman, 2007. Elementary Statistics: step by step approaches , Mc. Graw Hill, 7th edition.	Not sure
Recommended Texts	-	
Websites	-	

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

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	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Structure geology			**Module Delivery**	
Module Type	**Basic**			☒ **Theory**	
Module Code	OGE215			☐ **Lecture**	
ECTS Credits	**4**			☒ **Lab**	
SWL (hr/sem)	**100**			☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Level	UGII		**Semester of Delivery**	1	
Administering Department	OGE		**College**	Engineering	
Module Leader	Farah Taha Abdallah Hawraa Majeed Obaid		**e-mail**	Farrah.ta@uowa.edu.iq Hawraa.majeed@uowa.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	M.SC	
Module Tutor	NA		**e-mail**	Farrah.ta@uowa.edu.iq Hawraa.majeed@uowa.edu.iq	
Peer Reviewer Name			**e-mail**		

Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	GEGE122	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	Explain basic concepts related to structural geology Study the relationship between structure geology and petroleum engineering
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	* An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics. * An ability to develop the confidence necessary to successfully solve Mathematical problems. * An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
Indicative Contents المحتويات الإرشادية	The outcomes of this course are used to study the stress and ductile deformation, thus understand rock mechanic and relation with petroleum engineering. Also, study the concepts of folds and fractures, thus understand hydrocarbon migration and traps. A successful petroleum engineers needs a broad background, and a willingness to learn and apply a wide range of information and techniques to the problems of finding, developing, and exploiting a petroleum reservoir.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	

	1- Explain fundamental concepts relevant to structure geology 2- Explain the concepts of stress and brittle deformation 3- Explain the concepts of stress and ductile deformation 4- Explain the fault connectivity during hydrocarbon migration 5- Explain naturally fractured Reservoirs 6- Explain the concepts of folds and hydrocarbon traps

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Stress in rocks: Introduction, Traction, Stress components.
Week 2	Stress in two dimensions, Biaxial stress, Uniaxial stress, Pure shear stress, Stress in three dimensions
Week 3	Deformation and strain, homogeneous strain and the strain ellipsoid, strain path, Coaxial and non-coaxial strain accumulation, superimposed strain,
Week 4	Strain quantities: Longitudinal Strain, Volumetric Strain, Angular Strain, Other Strain Quantities
Week 5	Faults: introduction, Fault components/Terminologies, the attitude of fault, classification of fault, Dip Slip Faults, Listric Normal Fault, Strike slip fault, Transfer fault, Tear Fault, Transform fault, Scissors fault
Week 6	Principal stress orientation for three main fault types: Normal Fault systems (Horst and graben and Half-Graben Blocks), Geometric classification of fault, Classification based on rake of net slip, Classification Based on attitude of fault relative to altitude of adjacent beds, Classification Based on fault pattern, Classification Based on angle at which fault dips, Fault activity
Week 7	Geological factors in characterizing fault connectivity during hydrocarbon migration, Parameters characterizing fault connectivity, Parameterization of geological factors controlling fault connectivity, case study (Effectiveness of selected parameters in assessing fault connectivity), Fault traps
Week 8	Joints: introduction, Joint patterns, Master joints, Plumose Structure, Twist hackle, Systematic and Non-systematic Joints, Joint Sets and Joint Systems, Cross-Cutting Relations between Joints, Joint Spacing in Sedimentary Rocks,
Week 9	Origin and interpretation of joints (Joints Related to Uplift and Unroofing, Formation of Sheeting Joints, Natural Hydraulic Fracturing, Stylolite joints), Mechanics of jointing
Week 10	The Nature of Naturally Fractured Reservoirs, Open and healed fractures, naturally fractured reservoirs classification, Fractured Rocks Properties (porosity, permeability, Compressibility)
Week 11	Fold: introduction, Folding processes, Mechanical role of layers: Active / passive folding, Folding mechanisms (Bending, Lithospheric-scale flexures, Buckling (Single layer buckling, Multilayer

	buckling, Influence of spacing) Flexural Folding. Flowage Folding, Shear Folding, Folding Due to intrusions, Folding Due to Differential Compression,
Week 12	Fold types, Geometric of folded surface, classification of fold based on Shape and orientation, Classification of folds relative to hinge curvature is referred to as bluntness, Classification based on the orientation of the hinge line and the axial plane, Fold axis orientation, Classification based on Interlimb angles, Fold Symmetry
Week 13	Fold dimensions (draw and calculations), Orientation of a plane (dip and strike), Draw and calculations thickness and depth of beds
Week 14	Dom, hydrocarbon traps
Week 15	Structural basin geology
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Structural maps
Week 2	Calculation the thickness of layers from maps
Week 3	Calculation the thickness of layers (case one)
Week 4	Calculation the thickness of layers (case two)
Week 5	Calculation the thickness of layers (case three)
Week 6	Calculation the depth of layers (case one , two)
Week 7	Calculation the depth of layers (case three)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Natural Fractured Reservoir Engineering The Nature of Naturally Fractured Reservoirs	No
Recommended Texts	Structure geology	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
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