



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية



Module Information				
معلومات المادة الدراسية				
Module Title	General Geology (II)		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	PENG126			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	4	Semester of Delivery		1
Administering Department	PENG	College	ENG	
Module Leader	Dr. Mortada Daghim Abdullah		e-mail	murtadha.Abdullah@alayenedu.iq
Module Leader's Acad. Title			Module Leader's Qualification	
Module Tutor			e-mail	E-mail
Peer Reviewer Name			e-mail	E-mail
Scientific Committee Approval Date			Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	• Understand the formation, properties, and significance of groundwater as a natural resource. • Explain the processes and factors that influence the movement and storage of groundwater in aquifers. • Identify and classify different types of structural features resulting from crustal deformation. • Describe the processes involved in mountain building movements and their impact on the Earth's surface. • Explain the causes and characteristics of earthquakes and their relationship to plate tectonics. • Understand the interior structure of the Earth, including the composition and properties of its different layers. • Describe the principles and methods used in determining geological time and interpreting Earth's history. • Explain the importance of fossils and other key evidence in reconstructing past environments and life forms. • Identify and describe major events in Earth's history, such as mass extinctions and evolutionary milestones. • Understand the theory of plate tectonics and its role in shaping Earth's surface features and geological processes. • Explain the mechanisms of continental drift and the formation of continents, ocean basins, and mountain ranges. • Analyze and interpret geological data and evidence to support various geological concepts and theories.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students will be able to: 1. Understand the fundamental concepts and principles of groundwater, including its occurrence, movement, and management. 2. Identify and analyze different types of structural features resulting from crustal deformation, and explain their geological significance. 3. Describe the processes involved in mountain building movements and their impact on the Earth's surface. 4. Explain the causes and characteristics of earthquakes and their relationship to plate tectonics. 5. Demonstrate knowledge of the Earth's interior structure, including the composition and properties of its different layers. 6. Apply the principles and methods of geological time and dating to interpret Earth's history and reconstruct past environments. 7. Analyze and interpret geological evidence, such as fossils and rock layers, to reconstruct Earth's history and understand evolutionary processes. 8. Understand the theory of plate tectonics and its role in shaping Earth's surface features and geological processes. 9. Explain the mechanisms of continental drift and the formation of continents,

	ocean basins, and mountain ranges. 10. Apply critical thinking and analytical skills to analyze geological data and evidence, and draw informed conclusions. 11. Communicate geological concepts and ideas effectively through oral and written means. 12. Develop an appreciation for the dynamic nature of Earth's geology and its impact on the planet's past and present.
Indicative Contents المحتويات الإرشادية	Introduction to Geology and Earth's Systems (10 hours) • Overview of geology as a science • Earth's systems and their interactions • Introduction to geological time and processes Groundwater (20 hours) • Introduction to groundwater and its importance • Groundwater occurrence and properties • Groundwater exploration and management Crustal Deformation and Structural Features (25 hours) • Types of crustal deformation: folding and faulting • Rock structures and their classification • Geological maps and cross-sections Mountain Building Movements (20 hours) • Tectonic forces and mountain building processes • Types of mountains and their formation • Orogenic belts and their significance Earthquakes and Seismic Activity (25 hours) 1. Causes and characteristics of earthquakes 2. Seismic waves and their behavior 3. Earthquake monitoring and hazard assessment Earth's Interior and Plate Tectonics (30 hours) • Structure and composition of the Earth's interior • Theory of plate tectonics and continental drift • Plate boundaries and associated geological features Geologic Time and Dating Methods (15 hours) • Principles of relative and absolute dating • Geologic time scale and major divisions of Earth's history • Fossils and their use in dating and correlating rocks Historical Geology and Evolution of Life (30 hours) • Evolutionary processes and the fossil record • Major events in Earth's history and their impact • Stratigraphy and geological correlations Plate Tectonics and Global Geology (20 hours) • Plate tectonic boundaries and their effects • Volcanism, earthquakes, and mountain building • Continental drift and paleogeography Applied Geology and Environmental Issues (20 hours)

	• Geology and natural resource exploration • Geologic hazards and their mitigation • Environmental geology and sustainable practices
--	--

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lectures: Conduct interactive lectures to introduce and explain key concepts, theories, and principles related to each topic. Use visual aids, such as slides, diagrams, and videos, to enhance understanding and engagement. Case Studies: Present real-world case studies to demonstrate the practical applications of geological principles and concepts. Discuss geological phenomena and their impacts on human activities, such as groundwater contamination, earthquake hazards, or geological resource exploration. Field Trips: Organize field trips to geological sites of interest, such as rock formations, geological features, or areas affected by natural hazards. Allow students to observe and analyze geological formations firsthand, reinforcing their understanding of concepts discussed in lectures. Hands-on Activities: Engage students in hands-on activities, such as rock identification exercises, geological mapping, or laboratory experiments. This allows them to develop practical skills and reinforce theoretical knowledge. Group Discussions: Encourage students to participate in group discussions and debates on geological topics. Assign group projects or case study analysis, where students can collaborate, share ideas, and learn from each other's perspectives. Visual Demonstrations: Use visual demonstrations, models, and simulations to illustrate geological processes and phenomena that are difficult to observe directly. This can help students visualize complex concepts and enhance their understanding. Assessments: Design varied assessment methods, including quizzes, assignments, laboratory reports, and examinations, to evaluate students' understanding of the topics. Provide timely feedback to help students identify areas for improvement. Technology Integration: Utilize technology tools and resources, such as geology software, online databases, and virtual field trips, to enhance learning experiences. This allows students to explore geologic concepts and phenomena in a more interactive and immersive manner. Continuous Learning Support: Provide additional learning resources, such as textbooks, online articles, and academic journals, to supplement lecture materials.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	- Matter and Minerals - Classification and properties of minerals
Week 2	- Plate Tectonics and Continental Drift - Plate tectonic processes and their effects - Continental drift and paleogeography - Volcanism, earthquakes, and mountain building
Week 3	- Groundwater - Introduction to groundwater
Week 4	- Groundwater occurrence and properties - Groundwater exploration and management

Week 5	• Crustal Deformation and Structural Features
Week 6	• Types of crustal deformation: folding and faulting • Rock structures and their significance
Week 7	• Mountain Building Movements
Week 8	• Tectonic forces and mountain building processes
Week 9	• Orogenic belts and their formation
Week 10	• Earthquakes and Seismic Activity • Causes and characteristics of earthquakes
Week 11	• Seismic waves and their behavior • Earthquake monitoring and hazard assessment
Week 12	• Earth's Interior and Plate Tectonics • Earth's interior structure and composition
Week 13	• Geologic Time and Stratigraphy • Principles of relative and absolute dating • Geologic time scale and major divisions of Earth's history
Week 14	• Historical Geology • Evolution of life on Earth • Fossil record and its significance • Stratigraphy and geological correlations
Week 15	• Final Assessment, including Problem-Solving Questions and Application-Based Scenarios
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Introduction to Laboratory Safety and Procedures
Week 2	Mineral Identification: Physical and Optical Properties
Week 3	Rock Identification: Igneous Rocks
Week 4	Thin Section Analysis: Petrographic Microscopy
Week 5	Rock Identification: Sedimentary Rocks
Week 6	Sediment Analysis: Grain Size Distribution and Sedimentary Structures
Week 7	Rock Identification: Metamorphic Rocks Hand Specimen and Thin Section Analysis

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		No
Recommended Texts		No
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

ALAYEN IRAQI
UNIVERSITY
AUIQ