

Course Syllabus

1	Course title	Structural Geology	
2	Course number	0335372	
3	Credit hours	3 hours weekly	
	Contact hours (theory, practical)	Three times a week.	
4	Prerequisites/corequisites	Petrology	
5	Program title	B.Sc. Program in Environmental and Applied Geology	
6	Program code	0305	
7	Awarding institution	The University of Jordan	
8	School	School of Science	
9	Department	Geology Department	
10	Course level	First-year B.Sc.	
11	Year of study and semester (s)	2023/2024 Second Semester	
12	Other department (s) involved in teaching the course	-----	
13	Main teaching language	English	
14	Delivery method	<input type="checkbox"/> Face to face learning <input checked="" type="checkbox"/> Blended <input type="checkbox"/> Fully online	
15	Online platforms(s)	<input checked="" type="checkbox"/> Moodle <input type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input checked="" type="checkbox"/> Zoom <input type="checkbox"/> Others.....	
16	Issuing/Revision Date	5.2.2024	

17 Course Coordinator:

Dr. Mu'ayyad Al Hseinat, Office No. Geo 211

Phone number: +962-6-5355000, Ext. 22262

Office hours: Mon., Wed., 09:00-11:00, or by appointment.

Email: m.hseinat@ju.edu.jo



18 Other instructors:

Dr. Mu'ayyad Al Hseinat, Office No. Geo 211

Phone number: +962-6-5355000, Ext. 22262

Office hours: Mon., Wed., 09:00-11:00, or by appointment.

Email: m.hseinat@ju.edu.jo

19 Course Description:

As stated in the approved study plan.

This course introduces the basic mechanical principles in structural geology, like stress, strain, and elastic and plastic deformation in materials and rocks. It also enables the student to recognize and describe the different geological structures (joints, faults, folds, foliation...etc.). The students will also study the mechanism of the formation of different structures. This course helps the student to determine time-structural event relationships. In addition, review the skills of using the geological compass and the stereographic methods in structural geology. In the practical course (lab), the student will study different geological structures in the lab and in the field through field trips to the surrounding areas.

Course aims and outcomes: A- Aims:

Acquaint students with a basic understanding of Geophysics, i.e., classifications; development; application: exploration for oil & gas, underground water, ore deposits, and other applications.

- The objectives of this course are to introduce students to the important concepts and topics of different geophysical techniques and their importance, i.e., reflection seismic, refraction seismic, Electrical & Electromagnetic Methods, and Gravity & Magnetic Methods. The following topics will be covered:

Acquaint students with basic information about Geophysical methods which are concerned with the interactions between humans and the geological environment. The objectives of this course are to introduce students to the important concepts and topics of environmental geology. The course will also teach students about the internal and external earth processes, their hazards to life and property, and the most common methods to mitigate them. The following topics will be covered:

- ✓ Introduction to Structural Geology.
- ✓ Rock deformation (elasticity: elastic, brittle, ductile, etc).
- ✓ Faulting and folding
- ✓ Faults (Normal, Reverse, Strike-slip) (tensional, compressional, shearing)
- ✓ Transensional and transpressional deformation.
- ✓ Strike-slip deformational style (horsetail, ..etc).
- ✓ Dead Sea Transform Fault System as an example.
- ✓ Folding (fold geometry)
- ✓ Fault-related-fold
- ✓ International examples.
- ✓ Application of remote sensing and GIS in structural geology.

B- Students Learning Outcomes (SLOs):

Upon successful completion of this course, students will be able to:

SLOs SLOs of the course	SLO (1)	SLO (2)	SLO (3)	SLO (4)	SLO (5)	SLO (6)	SLO (7)	SLO (8)	SLO (9)
1. Identify the term structural geology and understand its classification and development.	X	X							X
2. Describe the scientific method as applied to the structural geology.	X	X			X				

3. Deformation and elasticity.	X		X					X	
4. Understand the term of fault and its classifications.	X	X	X				X		
5. Fault geometry.	X	X							
6. Folding and fold geometry.	X	X					X		
7. Dead Sea Transform Fault System	X	X	X	X	X	X	X	X	X
8. Local articles describe the deformational style of major geologic features in Jordan.	X	X	X	X	X	X	X	X	X
9. Training in Remote-sensing and GIS and how to use there applications in structural geology.	X	X	X	X	X	X	X	X	X

21. Topic Outline and Schedule:

Week	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1 + 2	Introduction to Structural geology	1, 2	Face to Face	E-learning	Synchronous	Quizzes, First Exam, Final Exam	Textbook, Lecture Notes
3	Rock deformation	3	Face to Face	E-learning	Synchronous	Quizzes, First Exam, Final Exam	Textbook, Lecture Notes
4 + 5	Faulting and folding	4,5	Face to Face	E-learning	Synchronous	Quizzes, Second Exam, Final Exam	Textbook, Lecture Notes
6 + 7	Faults (Normal, Reverse, Strike-slip) (tensional, compressional, shearing)	5-7	Face to Face	E-learning	Synchronous	Quizzes, Second Exam, Final Exam	Textbook, Lecture Notes
8 + 9	Transensional and transpressional deformation.	4,5	Face to Face	E-learning	Synchronous	Quizzes, Second Exam, Final Exam	Textbook, Lecture Notes
10-11	Strike-slip deformational Style (horsetail, ..etc).	6	Face to Face	E-learning	Synchronous	Quizzes, Final Exam	Textbook, Lecture Notes
12 + 13	Dead Sea Transform Fault System as an example.	5-7	Face to Face	E-learning	Synchronous	Quizzes, Final Exam	Textbook, Lecture Notes

14	Folding (fold geometry)	1,2,3	Face to Face	E-learning	Synchronous	Quizzes, Final Exam	Textbook, Lecture Notes
15	Fault-related-fold	4,5	Face to Face	E-learning	Synchronous	Quizzes, Final Exam	Textbook, Lecture Notes
16	International examples	1-1	Face to Face	E-learning	Synchronous	Quizzes, Final Exam	Textbook, Lecture Notes

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
First Exam	15	1, 2	1, 2, 3, 4	Week 3	Face to Face
Quizzes and homework	5	1-10	1-8	Each Chapter	Face to Face
Second Exam	20	3, 4, 5	5, 6, 8	Week 9	Face to Face
Final Exam	50	1-10	1-8	Week 15	Face to Face

23 Course Requirements

(e.g: students should have a computer, internet connection, webcam, account on a specific software/platform...etc):

Students need a computer (or smartphone) and internet access to watch important videos.

24 Course Policies:

A- Attendance policies:

Attendance is compulsory and not to exceed (with acceptable excuse only) 15% of the total lectures, the student will automatically deprive if he exceeds this limit. A small fraction of the mark will be allocated to attendance.

B- Absences from exams and submitting assignments on time:

It is not allowed to be absent from the exams, in case of compelling conditions, makeup exam will be held. The assignments should be all delivered on time.

C- Health and safety procedures:

NA



D- Honesty policy regarding cheating, plagiarism, and misbehavior:

There will be no leniency or tolerance with regard to cheating and system bypass issues, necessary actions will be taken by the department committee.

E- Grading policy:

As seen in section 22 above.

F- Available university services that support achievement in the course:

The main library, computer rooms with internet access.

25 References:

A- Required book(s), assigned reading and audio-visuals:

- EARTH STRUCTURE: An Introduction to Structural Geology and Tectonics, 2nd edition. Authors: Ben A. Van der Pluijm & Stephen Marshak, Publisher: Norton, 2004.
- Park, R., (1997): Foundations of Structural Geology. Chapman and Hall, London.
- Hobbs, B., Means, W. and Williams, P., (1989): An outline of structural geology, 3rd ed., John Wiley, New York.
- Ramsay, J. and Huber, M., (1987): The techniques of modern structural geology. Academic Press, London.
- YouTube channel, Internet, Support material (s): presentations, homework and video clips.

26 Additional information:

The thinking skills will be developed by encouraging students to conclude answers to different questions that the instructor intends to use during the presentation of the scientific material. The instructor intends to stimulate the student's analytical thinking side via connections with general aspects in daily life or through questions, net searching, and homework.

Name of Course Coordinator: Mu'ayyad Al Hseinat	Signature: -----	Date: -15/6/2024-----
Head of Curriculum Committee/Department: -----	Signature: -----	---
Head of Department: -----	Signature: -----	-
Head of Curriculum Committee/Faculty: -----	Signature: -----	-
Dean: -----	Signature: -----	