مركز الاعتماد وضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER

# Course Syllabus

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| **1** | **Course title** | Plate Tectonics |
| **2** | **Course number** | 0305403 |
| **3** | **Credit hours** | 3 hours weekly |
| | **Contact hours (theory, practical)** | Three times a week |
| **4** | **Prerequisites/corequisites** | Structural geology |
| **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** | Fourth-year B.Sc. |
| **11** | **Year of study and semester (s)** | 2022/2023 2nd semester |
| **12** | **Other department (s) involved in teaching the course** | --------- |
| **13** | **Main teaching language** | English |
| **14** | **Delivery method** | ☐Face to face learning ☐Blended ■Fully online |
| **15** | **Online platforms(s)** | ■Moodle ■Microsoft Teams ☐Skype ■Zoom ☐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

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**18 Other instructors:**

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| Name:--------- |
| Office number: --------- |
| Phone number: --------- |
| Email: --------- |
| Contact hours: --------- |
| Name: --------- |
| Office number: --------- |
| Phone number: --------- |
| Email: --------- |
| Contact hours: --------- |

**19 Course Description:**

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| As stated in the approved study plan. |
| As stated in the approved study plan. Welcome to Introduction to Plate Tectonics Theory!<br>This course will provide the students with an advanced understanding of Plate Tectonics, i.e., Investigating Earth's structures, Continental drift theory, Seafloor spreading, Magnetic stripes and polar wandering, Mantel convection models, Plate boundaries, Rates and motion of the plates, Hot Spots, History of the continents. The topics covered in this course will allow the students to better understand the physical processes that caused Plate Tectonics. |

**Course aims and outcomes:** A- Aims:

Provide an advanced understanding of Plate Tectonics, i.e., Investigating Earth's structures, Continental drift theory, Seafloor spreading, Magnetic stripes and polar wandering, Mantel convection models, Plate boundaries, Rates and motion of the plates, Hot Spots, History of the continents. The topics covered in this course will allow the students to better understand the physical processes that caused plate tectonics.

- ✓ Introduction to plate tectonics.
- ✓ Continental rift.
- ✓ Spreading center and mid-ocean ridge.
- ✓ Plate Tectonics Theory.
- ✓ Plate boundaries (convergent, divergante, and transform).
- ✓ Magnetic stripes and polar wandering.
- ✓ Convention flows and mantle plume.
- ✓ Mantel convection models.
- ✓ Hot spots.
- ✓ Forces caused plate motions.
- ✓ Continental margins (active and passive).
- ✓ Sea level fluctuations.
- ✓ Glacial isostatic adjustment (ice-load-induced tectonics).

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. Understand the origin and development of the universe (earth and planets). | **X** | **X** | | | | | | | |
| 2. Provide an advanced understanding of Plate Tectonics | **X** | **X** | | | **X** | | | | |
| 3. Investigating Earth's structures | **X** | | **X** | **X** | | | | **X** | |
| 4. The evolution of the Continental drift theory | **X** | **X** | **X** | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 5. The evolution of the Seafloor spreading | X | X | | X | | | | | | |
| 6. Explain how internal earth processes (plate tectonics theory) | X | X | | | | | | | | |
| 7. Explain how the Mantel convection models | X | X | | | | | | | | |
| 8. Understand the Historical evolution of the continents | 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 | Plate tectonic theory and its revolution | 1, 2, 3 | Fully Online | Zoom+ E-learning | Synchronous | Quizzes, First Exam, Final Exam | Textbook, Lecture Notes |
| 3 | Investigating Earth's structures | 4 | Fully Online | Zoom+ E-learning | Synchronous | Quizzes, First Exam, Final Exam | Textbook, Lecture Notes |
| 4 + 5 | Continental drift theory | 5, 6 | Fully Online | Zoom+ E-learning | Synchronous | Quizzes, Second Exam, Final Exam | Textbook, Lecture Notes |
| 6 + 7 | Spreading center theory | 6, 8 | Fully Online | Zoom+ E-learning | Synchronous | Quizzes, Second Exam, Final Exam | Textbook, Lecture Notes |
| 8 + 9 | Magnetic stripes and polar wandering | 6, 8 | Fully Online | Zoom+ E-learning | Synchronous | Quizzes, Second Exam, Final Exam | Textbook, Lecture Notes |
| 10-11 | Mantel convection models | 7, 8 | Fully Online | Zoom+ E-learning | Synchronous | Quizzes, Final Exam | Textbook, Lecture Notes |
| 12 + 13 | Plate boundaries | 7, 8 | Fully Online | Zoom+ E-learning | Synchronous | Quizzes, Final Exam | Textbook, Lecture Notes |
| 14 | Sea level fluctuations | 7, 8 | Fully Online | Zoom+ E-learning | Synchronous | Quizzes, Final Exam | Textbook, Lecture Notes |
| 15 | Glacial isostatic adjetment | 7, 8 | Fully Online | Zoom+ E-learning | Synchronous | Quizzes, Final Exam | Textbook, Lecture Notes |
| 16 | Ice-load-induced tectonics | 7, 8 | Fully Online | Zoom+ 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 | 25 | 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 | 15 | 3, 4, 5 | 5, 6, 8 | Week 9 | Face to Face |
| Students Presentation | 5 | 1-10 | 1-8 | Week 14 | 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 and access to the internet to watch some 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, make up exam will be held. The assignments should be all delivered on time.

C- Health and safety procedures:

NA

D- Honesty policy regarding cheating, plagiarism, andmisbehavior:

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 has computer rooms with internet access.

**25 References:**

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

-Plate Tectonics and Crustal Evolution, 4th Edition Author(s): Kent C. Condie, 1997

B- Recommended books, materials, and media:

-Internet, YouTube Channel, Support material (s): presentations, homework, and video clips

**26 Additional information:**

***Thinking and analysis***

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 of daily life or through questions, net searching, and homework.

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| Name of Course Coordinator: Mu’ayyad Al Hseinat Signature: ---------- Date: --7/2/2024-------- |
| Head of Curriculum Committee/Department: ---------- Signature: ---------- |
| Head of Department: ---------- Signature: ---------- |
| Head of Curriculum Committee/Faculty: ---------- Signature: ---------- |
| Dean: ---------- Signature: ---------- |