Form: Course Syllabus	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	2023/10/15
	Deans Council Approval Decision Number	265/2024/24/3/2
	The Date of the Deans Council Approval Decision	2024/1/23
	Number of Pages	06

1.	**Course Title**	Economic Geology
2.	**Course Number**	0305982
3.	**Credit Hours (Theory, Practical)**	3, theory
	Contact Hours (Theory, Practical)	3, theory
4.	**Prerequisites/Corequisites**	-
5.	**Program Title**	PH.D in Geology
6.	**Program Code**	-
7.	**School/ Center**	School of Science
8.	**Department**	Geology
9.	**Course Level**	PH D program
10.	**Year of Study and Semester (s)**	-
11.	**Other Department(s) Involved in Teaching the Course**	-
12.	**Main Learning Language**	English
13.	**Learning Types**	✔ Face to face learning ☐Blended ☐Fully online
14.	**Online Platforms(s)**	✔ Moodle ✔ Microsoft Teams
15.	**Issuing Date**	2/05/2025
16.	**Revision Date**	

17. Course Coordinator:

Name:Dr . Bety Al-Saqarat

Office number:Geology 204Phone number:

Email: b.saqarat@ju.edu.jo

18. Other Instructors:

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

19. Course Description:

This course offers an advanced examination of the genesis, classification, distribution, and exploration of metallic and non-metallic mineral deposits. Emphasis is placed on the economic value, geological setting, mineralogy, geochemistry, and the genetic models of ore-forming processes. The course also covers resource evaluation, sustainability, and mining impacts, with a focus on Jordanian examples.

20.ProgramStudent Outcomes (SO's):(To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

(SO1)Students will be able to design and execute original research, employing advanced methodologies to generate new knowledge in their specialized area of geology

(SO2)Students will display the potential to seriously evaluate complex geological problems, the usage of analytical and problem-fixing capabilities to develop modern answers and interpretations of their studies.

(SO3)Students will benefit know-how in using cutting-edge gear, techniques, and technology applicable to their geological research, applying these abilities to research and cope with complicated geological phenomena.

(SO4)Students will effectively communicate their studies findings via academic guides, presentations, and conferences, making significant contributions to the scientific network and attractive technical and non-technical audiences.

(SO5)Students will showcase a sturdy dedication to ethical studies practices and apprehend the broader societal and environmental affects of their work, promoting sustainability and integrity within the subject.

(SO6)Students will demonstrate a determination to persistent mastering, actively enticing with rising studies, and professional improvement possibilities to maintain and amplify their know-how throughout their careers.

PILO's	*National Qualifications Framework Descriptors*		
	Competency (C)	Skills (B)	Knowledge (A)
1.	√	√	√
2.	√	√	√
3.	□	√	√
4.	□	√	√
5.	√	□	√
6.	√	□	√

21. Course Intended Learning Outcomes (CLO's): (Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

CLO1**Differentiate** among major magmatic suites based on their tectonic settings and associated petrological characteristics.

CLO2**Employ** phase diagrams and phase equilibria modelling software to reconstruct the thermal history of a magmatic suite.

CLO3**Analyze** the major- and trace-element geochemistry and isotopic systems of igneous rocks and minerals to unravel the petrogenetic evolution of a magmatic association.

CLO4 **Infer** magmatic processes and the thermo-tectonic evolution of a suite by applying mineral thermometry and barometry.

CLO5 **Evaluate** the economic potential of a magmatic suite by examining its petrological characteristics and geochemical signatures.

CLO6 **Construct** a comprehensive petrogenetic model for a given magmatic suite by synthesizing petrological, geochemical, and isotopic data.

Course CLOs	**The learning levels to be achieved**					
	Remembering	**Understanding**	**Applying**	**Analysing**	**evaluating**	**Creating**
CLO (1)	✔	✔		✔		
CLO (2)			✔	✔		
CLO (3)			✔	✔	✔	
CLO (4)			✔	✔		
CLO (5)				✔	✔	
CLO (6)			✔	✔	✔	✔

22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program:

Program SO's / Course CLO's	SO (1)	SO (2)	SO (3)	SO (4)	SO (5)	SO (6)	**Descriptors**		
							A	**B**	**C**
CLO (1)	✔	✔						✔	
CLO (2)	✔		✔				☐	✔	☐

CLO (3)	✔	✔	✔				✔	✔	✔
CLO (4)	✔	✔					☐	✔	✔
CLO (5)		✔			✔		☐	✔	✔
CLO (6)	✔	✔	✔	✔		✔	✔	✔	✔

23. Topic Outline and Schedule:

Week	Lecture	Topic	CLO/sLinked to the Topic	Learning Types (Face to Face/Blended/ Fully Online)	Platform Used	Synchronous / Asynchronous Lecturing	Evaluation Methods	Learning Resources
1		Introduction to Economic Geology	1	Face to Face	MOODLE		Assignments	
2	2	Classification of Ore Deposits	1	Face to Face			Assignments	Suggested readings + papers
3	2	Ore-forming Processes: Magmatic, Hydrothermal	1, 2	Face to Face			Assignments	Suggested readings + papers
4	2	Sedimentary and Metamorphic Ore Deposits	1, 2	Face to Face			Assignments	Suggested readings + papers
5	2	Geochemistry of Ore Deposits	2	Face to Face			Exams + assignments	Suggested readings + papers
6	2	Geophysical Methods in Exploration	2, 3	Face to Face			Assignments	Suggested readings + papers
7	2	Remote Sensing & GIS in Mineral Exploration	3	Face to Face			Assignments	Suggested readings + papers
8	2	Midterm Exam + Case Study (Jordan)	1-3	Face to Face			Midterm Exam	Suggested readings + papers
9	2	Resource Estimation and	4	Face to Face			Assignments	

		Classification (JORC, NI 43-101)						
10	2	Mining Economics and Feasibility Studies	4	Face to Face			Assignments	Suggested readings + papers
11	2	Environmental Impact and Sustainability	5	Face to Face			Presentations	Suggested readings + papers
12	2	Ore Deposits of Jordan (Phosphate, Cu, Mn, Uranium)	5	Face to Face			Assignments	Suggested readings + papers
13	2	Research Trends in Ore Geology	6	Face to Face			Assignments	Suggested readings + papers
14	2	Project Presentations + Final Exam	1-6	Face to Face			Final Exams	Suggested readings + papers

24. Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	CLO/s Linked to the Evaluation activity	Period (Week)	Platform
Midterm Exam	25%	1-7	1-3	8	
Home Assignments	15%	Weekly	1-5	All	
Project and presentation	20%	Term-Long	3-6	14	
Final Exam	40%	8-14	4-6	14	

25. Course Requirements:

students should have a computer, internet connection, account on a specific software/platform…(elearning)

26. Course Policies:

A- Attendance policies: following the school regulations.

B- Absences from exams and submitting assignments on time: following the school regulations.

C- Health and safety procedures: following the school regulations.

D- Honesty policy regarding cheating, plagiarism, misbehavior: following the school regulations.

E- Grading policy: following the school regulations.

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

27. References:

A. Required Textbooks:

- Guilbert, J. M., & Park, C. F. (2007). *The Geology of Ore Deposits*.
- Evans, A. M. (1993). *Ore Geology and Industrial Minerals*.
- Robb, L. (2005). *Introduction to Ore-Forming Processes*.

B. Recommended:

- Moon, C. J., Whateley, M. K., & Evans, A. M. (2006). *Introduction to Mineral Exploration*.
- Jensen, M. L., & Bateman, A. M. (1981). *Economic Mineral Deposits*.
- Jordanian Natural Resources Authority publications.

28. Additional information:

	Signature:	Date:
Name of the Instructor or the Course Coordinator:	……..……	**2/05/2025**……
Dr. Bety Saqarat		
Name of the Head of Quality Assurance Committee/ Department	Signature:	Date:
	……..……	……..……
Name of the Head of Department	Signature:	Date:
Dr Bety Saqarat	……..……	……..……
Name of the Head of Quality Assurance Committee/ School ofScience	Signature:	Date:
Prof. Emad A. Abuosba	……..……	……..……
Name of the Dean or the Director	Signature:	Date:
Prof. Mahmoud I. Jaghoub	……..……	……..……