Course Syllabus

1	**Course title**	Optical Mineralogy
2	**Course number**	0335211
3	**Credit hours**	1 practical
	Contact hours (theory, practical)	3 hours
4	**Prerequisites/corequisites**	0345221 (Mineralogy)
5	**Program title**	Environmental and applied Geology
6	**Program code**	
7	**Awarding institution**	The University of Jordan
8	**School**	School of science
9	**Department**	Geology
10	**Course level**	2nd
11	**Year of study and semester (s)**	Spring 2023_2024
12	**Other department (s) involved in teaching the course**	none
13	**Main teaching language**	English/Arabic
14	**Delivery method**	✓ ☐Face to face learning ☐Blended ☐Fully online
15	**Online platforms(s)**	✓ ☐Moodle ☐Microsoft Teams ☐Skype ☐Zoom ☐Others……
16	**Issuing/Revision Date**	Spring_2023/2024 /

17 Course Coordinator:

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18 Other instructors:

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

19 Course Description:

As stated in the approved study plan. This lab introduces the student into the techniques of identifying rock-forming minerals using the polarized microscope. This achieved through the measurement of a set of optical properties of minerals; these include: form, color, pleochroism, interference colors, types of extinction, interference figures: uniaxial and biaxial minerals and the 2V angle. The theoretical basis for these properties will be given as introductions to the labs. The lab will be given for whole semester three hours weekly..

20- Course aims and outcomes: A- Aims:

1- Introducing the concept of polarizing microscope

2- Learn the basics of mineral optics and how to identify basic rock forming minerals in thin section using the polarizing microscope.

3- Identifying and recognizing the optical properties of minerals.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to …

1- use polarizing microscope
2- distinguish between isotropic and anisotropic minerals
3-measure principal optical properties
4- explain the birefringence and interference colors
5- estimate the retardation of the mineral
6- identify the uniaxial interference figures and the determination of the optic sign
7- identify the Biaxial interference figures and the determination of the optic sign
8- identify the optical properties of the minerals: Quartz, Nepheline, calcite and Garnet
9- identify the optical properties of the mineral groups: Olivine, Pyroxenes and Amphiboles
10- identify the optical properties of the mineral groups: Micas and Feldspars

B- Students Learning Outcomes (SLOs):

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

PLOs / SLOs of the course	PLO (1)	PLO (2)	PLO (3)	PLO (4)	PLO (5)	PLO (6)	PLO (7)	PLO (8)	PLO (9)
1- use polarizing microscope			X			X	X		
2- distinguish between isotropic and anisotropic minerals			X			X	X		
3- measure principal optical properties			x			x	x		
4- explain the birefringence and interference colors			X			X	X		
5- estimate the retardation of the mineral			X			X	X		
6- identify the uniaxial interference figures and the determination of the optic sign			X			X	X		
7- - identify the Biaxial interference figures and the determination of the optic sign			X			X	X		
8 identify the optical properties of the minerals: Quartz, Nepheline, calcite and Garnet			X			X	X		
9 identify the optical properties of the mineral groups: Olivine, Pyroxenes and Amphiboles			X			X	X		
10 identify the optical properties of the mineral groups: Micas and Feldspars			X			X	X		

21. Topic Outline and Schedule:

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1		Introduction and using microscope Vibration direction	1 & 2	Face to face			Lab report	Lab Manual
2		Isotropic / anisotropic Color, pleochroism	2	Face to face			Lab report	Lab Manual
3		Relief, refractive index and double refraction	3	Face to face			Lab report	Lab Manual
4		explain the birefringence and interference colors	4	Face to face			Lab report	Lab Manual

5		estimate the retardation of the mineral	5	Face to face			Lab report	Lab Manual
6		Midtermexam						
7		identify the uniaxial interference figures and the determination of the optic sign	6	Face to face			Lab report	Lab Manual
8		- identify the Biaxial interference figures and the determination of the optic sign	7	Face to face			Lab report	Lab Manual
9		identify the optical properties of the	8	Face to face			Lab report	Lab Manual Lab

		minerals: Quartz, Nepheline, calcite and Garnet		Face to face			Lab report	Manual
10		identify the optical properties of the mineral groups: Olivine, Pyroxenes and Amphiboles	9	Face to face			Lab report	Lab Manual
11		identify the optical properties of the mineral groups: Micas and Feldspars	10	Face to face			Lab report	Lab Manual
12		Final exam						

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
Midterm theory	15	1 - 5	1- 5	6	
Midterm lab	15	1 - 5	1- 5	6	
Lab reports	15	1 - 10	1- 10	Every week	
Quiz 1	5	5	5		
Final theory Final lab	25 25	1 – 10 1 - 10	1 – 10 1 - 10		

23 Course Requirements

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

24 Course Policies:

A- Attendance policies:

Following the UJ regulations

B- Absences from exams and submitting assignments on time:

Following the UJ regulations

C- Health and safety procedures:

D- Do not enter the laboratory or use equipment without permission.
E- Do not eat or drink in the laboratory.
F- Be aware of safety signs and adhere to them.
G- Pick up the thin section and bring it back to the pinch by yourself
H- Be aware of the location of fire extinguishers/fire blankets; first aid box and eye wash station.
I- Hands should be washed after laboratory practical work.
J- Your report should be submitted at the end of the Lab.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

Following the UJ regulations

E- Grading policy:

F- Available university services that support achievement in the course: **(changes could applied)**

0 - 39 F

40 - 44 D-

45 – 49 D

50 - 54 D+

55 – 59 C-

60 – 64 C

65 – 69 C+

70 - 74 B-

75 – 79 B

80 - 84 B+

85 - 89 A-

90- 100 A

25 References:

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

Optical Mineralogy Lab Manual

B- Recommended books, materials, and media:

26 Additional information:

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Name of Course Coordinator: ---------Najel Yaseen----------Signature: ---------- Date: ----------
Head of Curriculum Committee/Department: ---------- Signature: ----------
Head of Department: ---------- Signature: ----------
Head of Curriculum Committee/Faculty: ---------- Signature: ---------- ---------- Dean: ---------- Signature: ----------