



Department of: Geology

College of: Science

University of: Salahaddin

Subject: Practical Igneous Petrology

Course Book: 3rd year

Lecturer's name: Mohammed Majeed Zrary

Academic Year: 2023/2024

Course Book

1. Course name	Igneous petrology
2. Lecturer in charge	Dr.Mohammed Majeed Zrary
3. Department/ College	Department of Geology/ College of Science
4. Contact	Email: mohammed.sofyissa@su.edu.krd mmzrary@gmail.com Mobile: 0750 453 0 336
5. Time (in hours) per week	Practical: 12
6. Office hours	3-4 hours
7. Course code	
8. Teacher's academic profile	<p>* Graduated at the Department of Geology, Salahaddin University/College of Science (1992-1993).</p> <p>* I was engaged to work as an assistant geology on 1994 at Ministry of industry and energy at Erbil Geological Survey.</p> <p>* At 1998 which I followed the Salahaddin University/ College of Science as assistance researcher to 2000. When I work as assistance researcher, I contributed in teaching several practical geological subjects such as geomorphology, stratigraphy, geophysics, paleontology, mineralogy and general geology at this year I entered master courses and got it at 2003 from that year to now I teach courses in the Department of Geology such as Optical mineralogy, petrology, Geochemistry and igneous and metamorphic petrography.</p> <p>* M.Sc. in Igneous petrology and their minerals, Geology Department, College of Science, Salahaddin University-Erbil, Iraq.</p> <p>* Assistant lecturer in Geology Department, Salahaddin University-Erbil, teaching practical to undergraduate students in the laboratory of subjects: optical mineralogy and Igneous and Metamorphic Petrology.</p> <p>* Ph.D. in Igneous and Mineralogy Geochemistry, at the Department of Geology, College of Science, Mosul University.</p> <p>* Since 2019 I worked as Lecturer in the Geology Department at Salahaddin University-Erbil, teaching theoretical courses to undergraduate students in igneous and metamorphic petrology.</p>
9. Keywords	science, geochemistry, igneous, petrology

10. Courses overview:

This academic focuses on the study of the igneous petrology at first semester igneous and second metamorphic petrology.

11. Course objective:

This academic year is a second year student studies igneous petrology at (2nd level) students studies rocks as a hand specimens but at 3rd stage they study under microscope as thin-sections. Specific goals of the term include familiarizing the students with igneous petrography to identify samples of these rocks, and providing them with an understanding of important relations among of them, for description textures, mineral composition, classification of the rocks and its geological occurrences.

12. Student's obligation

The student's obligation during the course is attendance in the laboratory for (about three hours) for studying the rock thin section part of the course the he applied it in the laboratory.

13. Forms of teaching

Different forms of teaching will be used to reach the objectives of the course: power point presentations for the titles and definitions and summary of conclusions, white board for each laboratory, movies for illustrate texture form, all figures that to determine relation to the lectures.

Furthermore, students will be asked to prepare research papers on texture. There will be classroom discussions at the last first semester.

To get the best of the course, it is suggested that you attend classes as much as possible, read the required lab before the time of lab, teacher's notes regularly as all of them are foundations for the course. Try as much as possible to participate in classroom discussions.

14. Assessment scheme

The students are required to do an exam after more than half labs. The exam has (2*11.5) marks (quizzes 4, activity 4 and report as seminar 4)

Practical exam:	23%
Activity, quizzes, reports	12%

15. Student learning outcome:

In the last years many oil companies come to Kurdistan Region for oil exploration and production, in a wide areas along the region, so several geologist are followed these companies and others are work with the geological survey where the mineral resources are available in the region. Some of the students after graduation they employed in water resources companies in public and private sectors.

16. Course Reading List and References:

Bard J. P. (1986) Microtextures of Igneous and Metamorphic Rocks

*Best, M. G. /2002 IGNEOUS AND METAMORPHIC PETROLOGY, San Francisco, , cl, Blackwell Publishing
730 pages*

Kerr, P. F. (1977) Optical mineralogy, 4th edition, McGraw-Hill, New York. 442

MacKenzie, W. S. and Guilford, C. (1980) Atlas of rock-forming minerals in thin section, Longman, Harlow.

*MacKenzie, W. S., Donaldson, C. H.& Guilford,C. (1982).Atlas of igneous rocks and their textures .
Harlow:Longman .*

<p><i>Nesse1991 Introduction to Optical Mineralogy 335</i></p> <p><i>Philpotts (2003) Petrography of Igneous and Metamorphic Rocks 179p</i></p> <p><i>Pichler, H and C. Schmitt-Riegraf (1997) (auth.)-Rock-forming Minerals in Thin Section-Springer Netherlands 220p</i></p> <p><i>Robin Gill (2010) Igneous Rocks and Processes a Practical Guide, Wiley-Blackwell, 428pages.</i></p> <p><i>Williams H, Turner FJ, Gilbert CM. 1982. Petrography: An introduction to the study of rocks in thin section. New York, W.H. Freeman.</i></p> <p><i>Yardley BWD, Mackenzie WS, Guilford C. 1990. Atlas of metamorphic rocks and their textures. New York, John Wiley and Sons.</i></p> <p>Students are encouraged to search for the Journals and internet that may help them in this course, such as:</p> <p>http://leggeo.unc.edu/Petunia/lgMetAtlas/mainmenu.html</p> <p>http://www.ucl.ac.uk/~ucfbrxs/PLM/PLMhome.html</p>	
17. The Topics:	Lecturer's name
18. Practical Topics	
COURSE PROGRAMME	
<p>Week 1: 2023</p> <p>Steps of slide "igneous petrography" description.</p> <p>Week 2: 2023</p> <p>Texture of igneous rock.</p> <p>Week 3 & 4: 2023</p> <p>Description of ultrabasic igneous rock.</p> <p>Week 5, 6 & 7: 2023</p> <p>Description of basic igneous rock.</p> <p>Week 8: 2023</p> <p>Presentation of Ultrabasic and basic rock on triangle classification. & Plotting of rock composition at classification triangular.</p> <p>Week 9: 2023</p> <p>Monthly exam for (ultrabasic & basic rocks)</p>	<p>Dr. Ahmed Aqrawi</p> <p>Dr. Mohammed Zrary</p>

Week 10, 11 & 12: 2023

Description of intermediate and acidic igneous rock.

Week 13: 2023

Presentation of Intermediate & Acidic rocks rock on triangle classification. & Plotting of rock composition at classification triangular.

Week 14: 2023

Monthly exam for (intermediate & acidic rocks) Presentation of reports

Department of P.E. Science

Monthly practical examination of

3rdYear

igneous rock

.....ناو

30-11-2023

2023-2024

.....گروپ

Q1

- 1- Min. Com.....
- 2- Acidity.....
- 3- Mode of occur
- 4- Rock name.....

Q5

- 1- Min. Com
- 2- Acidity.....
- 3- Mode of occur.....
- 4- Rock name.....

Q2 What is the name of these rocks?

Mineral composition	Texture	Rock name
Olv 54%, Hbl 21% Opx 14%, Cpx 11%	Phaneritic	
Plag 44%, A.F 53% Qtz 3%	Fine grain	
Olv. 13%, Plag 53% Px 23% Leucite 11%	Aphanitic	

Q6

- 1- Min. Com
- 2- Acidity.....
- 3- Crystallinity.....
- 4- Mutual relationship.....

Q3

- 1- Acc. Min
- 2- Mutual relationship.....
- 3- Acidity.....
- 4- Mode of occurrence.....

Q7:

- 1- Granularity
- 2- Intergrowth type.....
- 3- Mode of occurrence.....
- 4- Rock name.....

Q4

- 1- Min. Com.....
- 2- Granularity.....
- 3- Crystallinity.....
- 4- Acidity.....

Q8

- 1- Mutual relationship.....
- 2- Mode of occur.....
- 3- Acidity.....
- 4- Rock name.....

Q9: What is the name of this rock, and how was it formed?