

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: MINERALOGY & PETROLOGY II

Code No.: GEO 123-4

Program: GEOLOGY

Semester: II

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New: _____ Revision: X

APPROVED:

J. Giguere
Chairperson

Feb 4/87
Date

CALENDAR DESCRIPTION

MINERALOGY AND PETROLOGY I

GEO 123-4

COURSE NAME

COURSE NUMBER

PHILOSOPHY/GOALS:

This is the second course in mineral and rock identification. This course outlines the systematic approach through the practical application of mineral identification. Also introduced are Igneous, Metamorphic and Sedimentary rocks with emphasis on Metamorphic and Sedimentary rocks.

METHOD OF ASSESSMENT (GRADING METHOD):

Theory Test	50%
Laboratory Tests	30%
Laboratory Assignments	20%

Late assignments will be considered only for valid reasons, (medical etc.).

Supplemental exam will be available at the end of the semester to students who have an average grade between 50% and 60%.

Pass grade is 60%.

Below 60% is a failure.

TEXTBOOK(S):

Manual of Mineralogy; 20th edition after J.D. Dana by Klein & Hurlbut.

TOPIC	PERIODS	TOPIC OF INFORMATION
1	2	Chemical Composition of Minerals Calculation of percent of elements from atomic weight (review)
2	4 10	Igneous Petrology (review) Igneous rock classification, origin Plutonic rocks, volcanic rocks, mineral composition, texture Practice at igneous rock identification in hand specimens
3	3 6	Sedimentary Petrology Sedimentary rock classification origin of sediments, clastics, chemical sediments, mineral composition Practice at sedimentary rock identification in hand specimens
4	3 6	Metamorphic Petrology Classification of metamorphic rocks Origin of metamorphic rocks, metamorphic zoning Practice in hand specimen identi- fication of metamorphic rocks

TOPIC	PERIODS	TOPIC OF INFORMATION
5		Thin Section Making
	1	Use of thin sections selection of rock specimens, basic steps in thin section making
	4	Practice in cutting rock slices and surfacegrinding of same
6	12	Systematic Mineral (Identification)

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AIM

This is a second semester course. The main purpose of this course is to continue the systematic identification of minerals and rocks in the laboratory, complimented by class theory on the origin of rocks and minerals.

OBJECTIVES

1. The student, by the end of the semester will be able to identify a total of 70 minerals in a test situation, where 3 minutes per specimen is allowed.
2. The student will identify the main categories of igneous, metamorphic, and sedimentary rocks by texture and main mineral composition in a test situation of 10 minutes per specimen.
3. The student will recite in a written test the origin of clastic and chemical sedimentary rocks.
4. In a written test, the students will draw diagrams of the various textures and fabrics of sedimentary rocks.
5. The student will recite on a test the chemical composition of specified minerals.
6. The students will calculate in an exercise the weight percent of an element in a rock based on the mineralogical composition of the rock.
7. The classification of metamorphic rocks will be diagrammed in a written test.
8. The classification by metamorphic facies and subfacies will be applied in hand specimens identification of metamorphic rocks in Laboratory exercises.
9. One thin section will be made in the laboratory by students.
10. A simple screen analysis of a crushed rock will be made using Tyler methods.
11. A simple assembly and adjustment of a petrographic microscope will be made.
12. The optical properties of minerals covering polarization, interference, refractive index, optic axes and birefringence will be tested in writing and by microscope tests.

MINERAL LIST - GEO 123-4

Calcite	A.3.1	Week 1	
Hematite	A.8.2		Specular
Magnetite	A.13.1		
Gypsum	A.7.5		Selenite
Phlogopite	A.16.9		
Talc	A.19.1	Week 2	
Chalcopyrite	A.3.3		
Molybdenite	A.13.3		
Siderite	A.18.2		
Chlorite	A.3.4		
Quartz	A.17.1	Week 3	Almandine
Garnet	A.7.2		
Sulphur	A.18.12		
Graphite	A.7.4		
Muscovite	A.13.5		
Hornblende	A.1.12 <u>c</u>	Week 4	
Dolomite	MC.2		
Sillimanite	-----		
Actinolite	A.1.12 b		
Azurite	A.1.13		
Microcline		Week 5	
Malachite	A.1.13		
Olivine	A.15.1		
Pentlandite	A.16.1		
Pyrrhotite	A.16.1		
Goethite	A.7.3	Week 6	
Cinnabar	A.3.10		
Diopside	A.16.7		
Bauxite	A.2.2		
Lepidolite	A.12.4		
Flourite	A.6.2	Week 7	
Epidote	A.5.1		
Chromite	A.3.5		
Galena	A.7.1		
Manganite	A.13.2		
Copper (native)	A.3.14	Week 8	
Asbestos	A.1.7		Tremolite
Zincite	A.18.6		
Nepheline	A.14.1		Plagioclase
Bytownite	A.2.24		An ₇₀ An ₉₀

MINERAL LIST Cont'd

*Prehnite	A.14.2	Week 9 & 10
*Apatite	A.1.6	
Albite	A.1.2	
Bornite	A.2.5	
*Chalcocite	A.3.2	
*Autunite	A.1.8	
*Celestite	A.3.9	
Anorthite	A.1.5	
Biotite	A.2.3	
Chrysocolla	A.3.6	
Enstatite	A.5.2	
Oligoclase	A.16.4a	
Labradorite	A.16.4b	
Staurolite	A.18.3	
Tourmaline	A.19.2	
Kyanite	A.11.1	
*Halite	A.8.1	
Spodumene	A.18.7a	