SAULT COLLEGE

of APPLIED ARTS and TECHNOLOGY

Sault Ste. Marie

COURSE OUTLINE

# MINERALOGY & PETROLOGY

GEO 123-4

revised January 83 by J. Giguere

GEOLOGY TECHNICIAN

MINERALOGY & PETROLOGY

GEO 123-3

Text:

Dana's Manual of Mineralogy..19th ed... Cornelius S. Hurlbut

REFERENCES:

System of Mineralogy, 3 Volumes -- Dana et al

Glossary of Geology and related Sciences -- American Geological Institute

Rocks and Minerals of Ontario -- Ontario Department of Mines

Principles of Physical Geology -- Gilluly, Waters & Woodford

Prospecting in Canada -- Geological Survey of Canada

GEOLOGY TECHNICIAN

GEO 123-3

| TOPIC NO. | PERIODS | TOPIC INFORMATION |
|---|---|---|
| 1 | 2 | Chemical Comp.of Minerals<br>Calculation of percent of elements from atomic weight (review) |
| 2 | | Igneous Petrology (review) |
| | 4 | - Igneous rock classification, origin Plutonic rocks, volcanic rocks, mineral composition, texture |
| | 10 | - Practice at igneous rock identification in hand specimens |
| 3 | | Sedimentary Petrology |
| | 3 | - Sedimentary rock classification origin of sediments, clastics, chemical sediments, mineral composition |
| | 6 | - Practice at sedimentary rock identification in hand specimens |
| 4 | | Metamorphic Petrology |
| | 3 | - Classification of metamorphic rocks<br>- Origin of metamorphic rocks, metamorphic zoning |
| | 6 | - Practice in hand specimen identification of metamorphic rocks. |
| 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. |

# MINERALOGY AND PETROLOGY

## GEO 123-3

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 complsition of the rock.

7. The classification of metamorphic rocks will be diagramed 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.

11. A simple screen analyses of a crushed rock will be made using Tyler methods.

12. A simple assembly and adjustment of a petrographic microscope will be made.

13. The optical properties of minerals covering polarization, interference, refractice index, optic axes and birefringence will be tested in writing and by microscope tests.

MINERALS TO BE STUDIED BY STUDENTS:

Actinolite
Agate
Albite
Almandite
Amethyst
Andesine
Anhydrite
Anorthite
Apatite
Aragonite
Arsenopyrite
Asbestos
Augite
Azurite
Barite
Biotite
Black jack
Bornite
Bytownite
Calcite
Cassiterite
Chalcosite
Chalcopyrite
Chalk
Chert
Chlorite
Chromite
Chrysocolla
Cinnabar
Copper
Corundum
Cuprite
Diopside
Dolomite
Epidote
Fluorite
Galena
Garnet
Goethite
Gold
Graphite
Gypsum
Halite
Hematite
Hornblende
Hypersthene
Illmenite
Kaolin
Kyanite
Labradorite
Magnetite
Malachite
Marcasite
Microcline
Molybdenite
Muscovite
Nepheline
Niccolite
Oligoclase
Olivine
Pentlandite
Phlogopite
Plagioclase
Prehnite
Pyrite
Pyrrhotite
Quartz
Rutile
Serpentine
Siderite
Sillimanite
Silver
Sodalite
Sphalerite
Spodumene
Staurolite
Sulfur
Talc
Tourmaline
Tremolite

MINEROLOGY & PETROLOGY

GEO 123

## Grading

Theory test will make up 50 percent of the grade.

Laboratory tests will constitute 30 percent of the grade.

Laboratory assignments will constitute 20 percent of the grade.

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

Supplemental exam will be available to students with less than 60 percent but over 50 percent average.

Pass grade is 60 percent

Below 50 percent is a failure.