

North Central Michigan College

NCMC MASTER COURSE SYLLABUS

Last Date Revised __ 12.05.09 _____

DIVISION/AREA: Liberal Arts **DEPARTMENT:** Earth Sciences (ESC)
ASSOCIATE DEAN: Sam McLin **ORIGINATOR:** Kurt Yuengling
DEAN OF INSTRUCTION: Dr. Timothy Dykstra

HOURS OF INSTRUCTION:

Credit hours: 5
Lecture: 3
Lab: 4
Contact hours: 88.0

COURSE TITLE: Mineralogy and Petrology

COURSE ALPHA: ESC **COURSE NUMBER:** 230

CATALOG DESCRIPTION:

Study of Earth materials. Students will learn to identify, interpret, and classify rocks and minerals. Special attention will be given to hand specimens and techniques used to identify them in laboratory and field settings. Students will also be exposed to optical (microscopic) and modern analytical techniques used to identify the chemistry and internal structure of minerals and rocks. The class is laboratory intensive. A knowledge of chemistry similar to those topics covered in CEM 101 is recommended.

PREREQUISITE(S): ESC 101, or ESC 110, or ESC 121, or ESC 122

COREQUISITE(S): None

GENERAL EDUCATION DISTRIBUTION AREA: None
(example: Social Science Group B)

GENERAL EDUCATION/PROGRAM OUTCOMES: None

COURSE OBJECTIVES AND OUTCOMES:

1. Identify minerals and rocks in hand specimen and microscopic samples.
2. Organize minerals and rocks into groups based on similar chemistries and internal structures.
3. Interpret the environment of formation of various types of minerals and rocks.
4. Demonstrate understanding of modern analytical techniques used in these disciplines.
5. Use acquired skills to participate in an ongoing research project in the region.

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COURSE TITLE AND NUMBER: ESC 230 Mineralogy and Petrology

METHODS OF INSTRUCTION: Lectures, discussions, lab exercises.

METHODS OF EVALUATION: Class Participation, Lab Exercises, Exams/Quizzes, Project(s)

REQUIRED TEXT AT TIME OF COURSE ADOPTION/REVISION:

TEXTS: Title: *Earth Materials*
Author: *Kevin Hefferan and John O'Brien*
Publisher: *Wiley-Blackwell*
ISBN: *978-1-4051-4433-9*

OPTIONAL SUPPLEMENTARY MATERIALS:

Reasonable accommodations can be provided for students with documented disabilities. Please contact Learning Support Services for assistance: 231/348-6817.

SUGGESTED TIME ALLOWANCE AND SEQUENCE OF INSTRUCTION:

(List general content description of what is being covered each week)

WEEK 1	Crystal forms and Mineral Lattices
WEEK 2	Review of Chemical Equations and Mineral Groups
WEEK 3	Non-silicate Minerals
WEEK 4	Silicate Minerals
WEEK 5	Basics of Optical Mineralogy
WEEK 6	Rock Classification and Environments of Formation
WEEK 7	Igneous Rocks – Intrusive
WEEK 8	Igneous Rocks – Extrusive
WEEK 9	Igneous Rocks and Ore Deposits
WEEK 10	Sedimentary Rocks – Depositional Environments
WEEK 11	Sedimentary Rocks – Lithification
WEEK 12	Sedimentary Rocks – Clays
WEEK 13	Metamorphic Rocks – Regional Metamorphism
WEEK 14	Metamorphic Rocks – Contact Metamorphism
WEEK 15	Modern Analytical Techniques
WEEK 16	Rocks and Minerals of Michigan

APPROVED FOR ADOPTION/REVISION BY THE CRD/AP COMMITTEE ON 1/29/10