

NVCC COLLEGE-WIDE COURSE CONTENT SUMMARY

GOL 207 - MINERALOGY (4 CR.)

COURSE DESCRIPTION

Provides details for study of minerals. Focuses on the structure and properties of mineral, their occurrence, and uses. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GENERAL COURSE PURPOSE

The purpose of the minerals course is to provide the student in the physical or earth sciences with a course in mineral genesis, practical identification, and mineral chemistry. This course is designed for a student interested in the geologic implications of natural mineral deposits and the physical laws that govern the growth and form. This course is intended to be a "second year" geology course comparable to an introductory mineralogy course in other schools. The student should have a basic knowledge of physical geology or background in college chemistry to fully grasp the course material. The nature of the course is descriptive and focuses on rock-forming minerals. The course relies heavily on laboratory preparation of minerals and the identification by simple qualitative, chemical, and prognostic methods. Field trips are integrated into the course for the purpose of examining natural representative specimens for laboratory study. The course will be aimed to meet the composite educational needs of prospective geology majors, mineral collectors, or any science the student with natural curiosity and interest in the mineral kingdom.

ENTRY LEVEL COMPETENCIES

Prerequisite for this course is GOL 105 - "Physical Geology".

COURSE OBJECTIVES

Upon completion of the course, the student will be able to:

- A. understand the internal structure of crystalline materials
- B. relate basic chemical formulas to specific crystal groups
- C. describe the chemistry and structure of the commonly occurring minerals
- D. identify the common minerals of the earth's crust by their diagnostic, physical, and chemical features
- E. discuss the formation of minerals of various geologic environments
- F. understand how determinative mineralogy is used to interpret earth history and processes

MAJOR TOPICS TO BE INCLUDED

- A. Internal structure of crystals
 - 1. crystal symmetry
 - 2. crystal notation
 - 3. the thirty two crystal classes
- B. Physical mineralogy
 - 1. crystal lattice

2. plane groups

- C. Chemical mineralogy
 - 1. stoichiometry in crystals
 - 2. solid solution
- D. Descriptive mineralogy
 - 1. crystal lattice
 - 2. plane groups
 - 3. sulfosalts
 - 4. oxides
 - 5. halides
 - 6. nitrates
 - 7. borates
 - 8. sulfates and chromates
 - 9. phosphates, arsenates, vanadates
 - 10. silicates
- E. Occurrence and association of minerals
 - 1. common economically important of minerals
 - 2. common associations
 - 3. geologic implications of occurrence and associations