Faculty of Earth Sciences

Department of Mineral Resources & Rocks
3rd & 4th Years Program

The Geological Society
Accredited degree courses

ORE MICROSCOPY

Course Name	Course ID	Prerequisite
ORE MICROSCOPY	*EMR 334*	*EMR 331*

Course Description

Fields of mineralogical study using reflected light optics. Basis of optical reflected light. Ore microscope and its components. Preparation of slabs and polished sections. Optical properties of ore minerals. Hardness and reflectivity. Etching with acids, micro chemical methods and contact print. Ore mineral textures, their interpretation and importance in determining mineral genesis. Detailed ore microscopy study of common ore minerals, their properties and identifications.

Course Objectives

The main objective of the course is supplying students with the different aspects of the light behavior on polished surfaces. The students are supposed to be informed with a collective idea about the intimate relationship between ore microscopy and the branch of ore dressing since the interlocking index of ore and gangue minerals strongly determines the proper method of ore beneficiation. The course also demonstrates the main groups of ore minerals under the ore microscope. As an output, the course is intended to give students expertise in handling the problems connected to ore genesis and beneficiation. Accordingly, the students would be able to use the materials of the course in their future career, especially for those who will work in the mining companies and authorities, as well as the concentration plants.

General References for the Course: (Books/Journals…*etc*.)

Students in this course can read from:

1. *Atlas of Ore Minerals*, by Picot, P. and Johan, Z., 1982. Orleans: BRGM;

Amsterdam: Elsevier.
2. *Determination Tables for Ore Microscopy,* by Schouten, C., 1962. Published, Amsterdam: Elsevier.
3. *Introduction to Practical Ore Microscopy,* by Ineson, P.R., 1989. Longman Publ., London, U.K.
4. *Ore Microscopy and Ore Petrography, 2nd Edition,* by Craig, J.R., and Vaughan, D.J., 1994. John Wiley & Sons, Inc., New York.
5. *Ore Microscopy and Photometry. In: Cabri,* by Criddle, A.J., and Vaughan, D.J., 1998, Modern Approaches to Ore and Environmental Mineralogy. MAC Short Course 27, 428p (1-74).
6. *Ore Microscopy, 1st Edition,* by Cameroon, E.N., 1961. John Wiley & Sons, Inc., New York.

List of URLs for this Course

- http://web.umr.edu/~rhagni/
- http://www.aboutmicroscopes.com/ore-microscopy/html
- http://www.unige.ch/sciences/terre/mineral/fontbote/opaques/opaques_menu.html
- http://www.smenet.org/opaque%2Dore/

Course Outcome

By the end of this course:

1. Student can know the optical characters and identification of ore mineral groups, ore textures, and their role in ore genesis
2. Student can know the optical characters of ore minerals under reflected L.M., the identification of different ore mineral groups
3. Student can know the descriptive and genetic classification of ore textures
4. 4. Student can be able to do the description of the mineralogical and textural evolution of the different ore types (mineral assemblages).