



## Faculty of Earth Sciences



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



The Geological Society  
*Accredited degree courses*

## INDUSTRIAL MINERALS AND ROCKS

Course Name	Course ID	Prerequisite
Industrial Minerals and Rocks	EMR 432	<i>EMR 231</i>

### Course Description

The course concerns with the main properties of gemstones, industrial minerals and rocks, their classification according to genesis and their overall economic aspects. Occurrence of industrial minerals and rocks in different geologic environment and mineralogical composition will be also handled.

Preparation of industrial mineral and rocks and their suitability for the different uses in addition to the economic consideration of working of such materials.

Examples and sties of common industrial minerals and rocks and regions of occurrence in the Kingdom and the World. A one-day field trip around Jeddah during official working hours is also scheduled.

### Course Objectives

1. The principal objective of this course is the creation of an integrated configuration for the great importance of minerals (including gemstones) and rocks that are involved in industrial activities. In order to achieve the proposed goals, the students from the very early beginning will be guided to differentiate between industrial minerals and rocks on scientific basis.
2. Concerning the part on industrial minerals, it is intended that the students will learn the diversity of mineral occurrences and their classifications. Such classifications include the convenient classification that distinguishes between metallic and non-metallic minerals. In this respect, the minerals contained in the Precambrian shield rocks and those hosted by the Phanerozoic cover in Saudi Arabia will be studied in terms of their locations, grade, ore specification and the industrial application.

3. As to the objectives of teaching the industrial rocks, the students will learn the main differences between the use of such rocks for ornamentation as dimensional stones, and their use for the production of chemicals (e.g. acids and salts), extractions of elements and diverse products (e.g. ceramics, cement, glass, electronics, ..... etc.).

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

- 1-Bates, R. L. (1969): Geology of the industrial Rocks and Minerals, Harper & Bros, New York; Dover Publ. Inc., New York.
- 2- Lefond, S. J. (1983): Industrial Minerals and Rocks. Society of Mining Engineers of the AIMMPE, New York.
- 3-Yamani, M. A. (1986): Economic Geology and Mineral Resources in the Kingdom of Saudi Arabia (In Arabic).
- 4- Manning, D. A. C. (1995): Introduction to Industrial Minerals. Chapman & Hall, Cambridge.
- 5- Al-Shanti, A. M. S. (1995): mineral deposits in the Kingdom of Saudi Arabia. Sci. Publ. Centre, King Abdulaziz University, Jeddah (In Arabic).

**List of URLs for this Course**

1. <http://www.mineralnet.co.uk>
2. [http://www.ex.ac.uk/CSM/courses/pg\\_geology.htm](http://www.ex.ac.uk/CSM/courses/pg_geology.htm)
3. <http://www.ees.nmt.edu/Geol/oregenesis.htm>
4. <http://www.pgis.lj/programmes/msc/Gemmin.htm>
5. <http://www.uky.edu/KGS/coal/webindmn/combo.htm>
6. <http://www.bgs.ac.uk/mineralsuk/minequar/industrial/home.html>

**Course Outcome**

By the end of this course, the students should :

- 1- Student can Realize the great importance of minerals and rocks that are involved in industrial activities.
- 2 Student can understand the differences between industrial minerals and rocks on scientific basis.
- 3- Student can be familiar with the diversity of mineral occurrences and their classifications.
- 4- Student can be acquainted with the minerals contained in the Precambrian shield rocks and those hosted by the Phanerozoic cover in Saudi Arabia in terms of their locations, grade, ore specification and the industrial application.
- 5- Student can familiarize with the uses of such rocks for ornamentation as dimensional stones, and their use for the production of chemicals, extractions of elements and diverse products