



**NATIONAL UNIVERSITY OF ENGINEERING
COLLEGE OF GEOLOGICAL, MINING AND METALLURGICAL
ENGINEERING**

GEOLOGICAL ENGINEERING PROGRAM

GE801 – MINING GEOLOGY

I. GENERAL INFORMATION

CODE	:	GE-801 Mining Geology
SEMESTER	:	10
CREDITS	:	4
HOURS PER WEEK	:	6 (Theory–Practice–Laboratory)
PREREQUISITES	:	GE732 Metallic Ore Deposits GM711 Geostatistics
CONDITION	:	Compulsory
DEPARTMENT	:	Geological Engineering

II. COURSE DESCRIPTION

Geological maps and interpretations of photographs and satellite images of areas on mining exploration. Exploration methods and their interpretations. Guidelines on mineralization. Sampling in exploration and mining operation. Estimation of mineral resources and ore reserves.

III. COURSE OUTCOMES

1. Organize prior knowledge in various fields to use them profitably while performing classroom work.
2. Explain the Wilson cycle and its relation to the formation of mineral deposits.
3. Understands forming processes of mineral deposits and major metallogenic concepts.
4. Interpret the different data obtained in the various activities of exploration to define the best targets for exploration drilling.
5. Build models of the genesis of mineral deposits.
6. Recognizes the major exploration guides and their use in the exploration of mineral deposits.
7. Analyze the geological context of the mineralized occurrences and mining economic potential to establish whether or not it could become a successful mining project.

IV. LEARNING UNITS

1. PREPARATION OF PLANS IN THE EXPLORATION OF MINERAL DEPOSITS

Interpretation of geological maps / Sampling / Estimates of mineral resources and ore reserves / Exploration of deposits with drilling / Geochemical exploration of deposits.

2. GEOPHYSICAL EXPLORATION OF DEPOSITS

Laboratory work in deposit exploration / Interpretation of different data in exploration / Changes in geological interpretations during the exploration and exploitation of a deposit / Classification of exploration guides / Regional and local guides / Physiographic guides.

3. MINERALOGICAL GUIDES

Lithological guides / Stratigraphic guides / Fractures and faults as guides / Folding and contacts as guides / Faulting solution of mineralized structures / Persistence of the mine in depth.

V. LABORATORY AND PRACTICAL EXPERIENCES

1. Interpretation of geological maps in exploration / Examples of interpretation of aerial photographs in geological exploration / Example of calculation of reserves in veins and mantles / Example of calculation of resources and reserves in ore deposits / Practice of recording in drilling.
2. Interpretation of geochemical planes / Interpretation of geophysical planes / Interpreting microscopic studies in exploration / Examples of regional and local guides.
3. Examples of physiographic guides / Examples of mineralogical guides / Examples of lithological guides.

VI. METHODOLOGY

To achieve the objectives, the course will be developed using active methodology. In this perspective, the student is the main protagonist of the learning process and the instructor is the facilitator.

- Problem-based learning.
- Constant feedback during all activities.

The active participation of the student in individual and group in the problems solution.

VII. EVALUATION FORMULA

The Average Grade PF is calculated as follow:

$$PF = PP$$

PP: The average of practices is calculated after removing the lower grades, up to 25% of the amount of practice or skilled works.

VIII. BIBLIOGRAPHY

1. **MCKINSTRY**
Mining Geology. Omega Edit., Barcelona, 2016.
2. **PETERS, W.C.**
Exploration and Mining Geology. J. Wiley & Sons, 2007.
3. **EVANS, ANTHONY M.**
Introduction to Mineral Exploration. 396 p., Blackwell, 2005.
4. **MOON, CHARLES J.; WHATELEY, M.K.; EVANS, ANTHONY M AND BARRET, WILLIAM L.**
Introduction to Mineral Exploration. 481 p. Blackwell Science Ltd, 2012.