

**Department:** Mining Engineering

**Division:** Mining Exploitation and Rock Mechanics

**Level and Major:** BSc, Mining Exploitation and Rock Mechanics

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**Course Title:** Economic Geology

**Number of Credits:** 2

**Corequisite:** Petrology

**Lecturer:** Dr. Abbas Maghsoudi

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### **Course Description**

Economic geology is the study of Earth materials that can be profitably extracted. It provides information on the various types of mineral deposits, as to the major ore and gangue minerals, the current models and the mode of formation or when and in which geodynamic setting these deposits mainly formed.

### **Course Goals and Objectives**

The purpose of the study of economic geology is to gain understanding of the ore genesis and the processes within the Earth's crust that form and concentrate ore minerals into economically viable quantities. Practical work involves study of hand samples from various type of mineralization.

### **Course Topics**

- Some useful and applied Definitions
- Classification of economic minerals and a classification scheme of ore deposits
- Hydrothermal fluids and isotope
- Chromite deposits, pegmatites
- Models for the formation of porphyry type cu, Mo, Sn and, w deposits
- Epithermal deposits
- shear zone and IOCG deposits
- Skarn ore deposits
- VMS deposits
- Sedimentary ore deposits
- Nonmetal ore bodies
- Metallogeny through time

### **Reading Resources**

- Edwards, R., and Atkinson, K., 1986, Ore Deposit Geology: Chapman and Hall, 466 p

- Evans, A. M., 1993, Ore Geology and Industrial Minerals: An Introduction (3rd edn): Blackwell, 390 p
- Franco Pirajno, 2009, hydrothermal processes and mineral systems, Springer, 1250 P
- Guilbert, J. M., and Park, C. F., Jr., 1986, Ore Deposits, 4th edn: Freeman, 985 p.
- Kkrimpour. M.H and Saadat saeid, 1382, Applied economic geology, Firdausi University Press (in Persian).
- Kesler, S. E., 1994, Mineral Resources, Economics, and the Environment: Macmillan, 391 p
- Shahabpour, J., 1386, Economic geology, publication of Shahid Bahonar University Press (in Persian).
- Walter L. P., 2011. Economic Geology Principles and Practice: Metals, Minerals, Coal and Hydrocarbons - Introduction to Formation and Sustainable Exploitation of Mineral Deposits

### **Evaluation**

- Quiz: 10%
- Midterm Exam: 30%
- Final Exam: 60%