Department: Mining Engineering **Division:** Mining Exploitation and Rock Mechanics

Level and Major: BSc, Mining Exploitation and Rock Mechanics

Course Title: Principles Of Mineral Processing **Number of Credits:** 2

Prerequisite: Petrology **Lecturer:** Dr. Mehdi Irannajad

Course Goals and Objectives

The instructional goals of this course include the ability of the students to learn various methods of evaluating classification and separation processes.

Course Topics

- Generalities, definitions and introduction
- Ore dressing definition, various steps in ore dressing studies, the parameters affecting separation methods
- Operation evaluation, recovery, grade, separation efficiency, pulp characterization
- Particle size analyzing, screening, classification
- Fragmentation, mechanism,
- Crushing, operation, various modes
- Grinding, mechanism and various mode
- Principles of classification, classifiers, hydrocyclone
- Gravity separation, principles, modes
- Heavy liquids and heavy media separation
- Magnetic and electrical separations, principles and mechanism
- Flotation, principles, physicochemical aspects, flotation cells
- Solid-liquid separation, thickening, filtration
- Sorting
- Auxiliary operations

Reading Resources

- E.G. Kelly, D.J. Spottiswood, “Introduction to Mineral Processing”, Mineral Engineering Services, Australia, 1989.
- B. A. WILLS, 1997, Mineral Processing Technology, Sixth Edition, Pergamon Press, England.

- A .Gupta and D.S. Yan, 2006, Introduction to Mineral Processing design and Operation, Perth, Australia.
- N L Weiss, 1985, SM Mineral Processing Handbook, SME-AIME,
- T. J. Napier-Munn, S. Morrell, R.D. Morrison and T. Kojovic, 1999, Mineral Comminution Circuits; Their Operation and Optimization, JKMRC Monograph series in Mining and mineral processing, Queensland, Australia
- Ore dressing, H, Nematollahi, Tehran University publisher.
- S. Banisi, applied problems in mineral processing