

**Department:** Mining Engineering

**Division:** Mineral Processing

**Level and Major:** MSc, Mineral Processing

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**Course Title:** Modeling, Simulation, and Principles of Control of Mineral Processing Systems

**Number of Credits:** 3

**Lecturer:** Dr. Ali Akbar Abdollahzadeh

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### **Course Goals and Objectives**

Become familiar with mathematical models of important mineral processing units.

### **Course Topics**

- Basic concepts: Plug flow and perfect mixing definition, perfect mixer, reaction kinetics
- Residence time function in mineral processing units
- Grinding: Introduction, breakage and selective function, the effect of grain size and ball on selective function, mill matrix determination and solution methods
- Hydrocyclone: mathematical model, parameter determination, using the grinding model in closed circuit
- Flotation model: Introduction to flotation kinetics, modeling algorithms, theoretical principal of model
- Review of control processes

### **Reading Resources**

- Up-to-date articles