

**Department:** Mining Engineering

**Division:** Mining Exploration

**Level and Major:** Ph.D., Mining Exploration

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**Course Title:** Planning of Exploration Projects

**Number of Credits:** 3

**Lecturer:** Dr. Ardeshir Hezarkhani & Dr. Hamidreza Ramazi

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### **Course Goals and Objectives**

- The application of geochemical methods to exploration time tables based on expend and risk.
- Designing exploration projects in different deposits, oil, water, and site investigations.

### **Course Topics**

- Deposit Modeling Programs
- Problems and Opportunities for Mineral Deposit Models
- The Development and Use of Mineral Deposit Models
- Application in Resource Assessment and Exploration
- Spatial and Temporal Analysis of Precious-metal Deposits for mineral Resource Assessments
- What is an Exploration Model? An Analysis of the Cognitive Development and Use of Models in Mineral Explorations.
- Application of Deposit Models and Risks to Exploration.
- A Rapid Comparison Technique - Economic Application of Deposit Models to Mineral Exploration.
- Application of Conceptual Models for Sediment-hosted Ore Deposits in the Discovery of Nifty Copper and Adjacent Zinc-Lead Deposits.
- Models for Sedimentary-hosted and Volcanic-related Deposits
- Models for Magmatic and Hydrothermal Deposits.
- Quantitative Approaches to Deposit Models and Computer-processing of Large Data Sets.
- Fundamentals of exploration projects planning
- Planning of regional exploration projects
- Modeling in mineral exploration projects
- Planning of Exploration projects for coal deposits
- Planning of Exploration projects for Iron deposits
- Planning of Exploration projects for metal deposits
- Planning of Exploration projects for Aquifers
- Planning of site investigation projects

- Presentation of some case studies

### **Reading Resources**

- Mineral Deposit Modeling. W.D. Sinclair - R.I. Thorpe and J.M. Duke
- Introduction to Geochemical Modeling, Francis Albarede, USA
- Geochemical Thermodynamics Nordstrum, D.K.