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

Level and Major: Ph.D., Rock Mechanics

Course Title: Ground Subsidence Engineering

Number of Credits: 2   **Lecturer:** Dr. Kourosh Shahriar

Course Goals and Objectives

Mastering in teaching and research and planning, conducting guidance and supervision and evaluation, analyzing and solving scientific problems, and solving problems related to subsidence problems in mining and tunneling.

Course Topics

- Course introduction, references introduction, acquaintance and history
- Natural subsidence
- Developing engineering subsidence concepts
- Mining and land movement
- Movements caused by underground mining
- The final subsidence pit
- Dynamic subsidence pit
- Subsidence prediction using the NCB empirical model
- Different subsidence prediction methods
- Impact function
- Profile function
- Numerical methods
- Empirical methods
- Physical Models
- Subsidence caused by room and pillar mining
- Subsidence caused by the extraction of sloping layers
- Subsidence caused by drilling shallow tunnels
- Subsidence caused by water, petroleum and gas extraction
- Subsidence control

Reading Resources

- Surface Subsidence Engineering, Syd .s. Peng, SME, 1992
- Subsidence, Prediction and Control, Whitaker, Reddis, 1989
- Subsidence Engineering Handbook, NCB,1966
- Longwall Mining, SYD S. Peng, H. Schiang, John Wiley, USA, 1984
- Michael Karmis, 2009, Enhancing Mine Subsidence Prediction and Control Methodologies for Long-term Landscape Stability, Blacksburg, Virginia