MNGN 528: MINING GEOLOGY

Credit: 3.00
Instructor: Dr. Elizabeth Holley
Pre-requisite Knowledge: A course in mineral deposits and its prerequisites (or professor’s consent).

MNGN 528 is taught as a field-based course in odd years and a modeling-based course in even years. The field-based course teaches geologists and engineers how to investigate geological factors that affect the mining life cycle. The project-based modelling course enhances student understanding of geological uncertainty in mining, using state-of-the-art software. Each version of this course is designed to help students leverage geoscience skills to create successful industry products and bridge the gap between geological science and mining business operations.

The field-based course is taught in a seminar-style setting, wherein teams of students lead discussions on a reading list topical to the field trip. Class lessons guide a student to think about how geological factors influence activities at all stages of the mining life cycle. These concepts are then explored further during field trips to active mines where a student will gain firsthand experience through interactions with scientists and professionals that have direct knowledge of the subject matter. Additionally, there is a 10-day field trip to northern Nevada to observe world-class Carlin-type, epithermal, and porphyry-style mineralization. Students conduct open pit and underground mapping exercises, log core, and attend operations and processing tours. After completing this course, a student will be able to recognize the important field characteristics of each deposit style and translate that knowledge to decision-making in mining operations.

The modelling-focused version of this course gives students hands-on exposure to the ways in which geological uncertainty affects mining activities. Datasets donated by industry entities are used as teaching tools to demonstrate real world situations that are commonly encountered at a mine. Class projects are driven by students and are customized to ensure that information applicable to specific student interests is covered. Top tier modelling software packages are available for class use to assist students in assessing geological uncertainties associated with their project and investigating how those uncertainties might propagate to affect the block model. After completing this course, a student will have experienced a practical decision-making process to assess project feasibility and logistics. Moreover, the multi-disciplinary approach allows for geologists, mining engineers, metallurgists and economists to effectively work together in a collaborative environment and critically evaluate the impact of geological variables on the many aspects of mining.