

Ge Eng 477, Discontinuous Rock

This will be a multi-disciplinary course that will be offered to graduate students in Geological Engineering and Mining Engineering. It addresses the issues of discontinuities (joints) in rock masses:

1. **Relevance of Rock Discontinuities:** Relevance to the strength, deformability, and hydraulic conductivity of rock masses. Importance in site investigation, analysis, and project design.
2. **Nature and Genesis of Discontinuities:** How discontinuities typically occur in rock masses, how discontinuities and cracks are generated in the lab and how they might have been generated in nature.
3. **Characterization of Discontinuities:** Evaluation of method of identifying, measuring, and characterizing rock discontinuities. Data collection and evaluation for input into design models.
4. **Rock Mechanics of Discontinuities:** Shear behavior of discontinuities. Models of shear behavior. Interactions between discontinuities, intact rock, fluid flow and pressure, stress, and the effect of construction on discontinuities and the effect of discontinuities on construction.
5. **Fracture Detection:** How to find, identify and characterize fractures, using remote sensing, field mapping, and geophysics.
6. **Scale Effects and Block Size:** The influence of scale on the mechanical and hydrogeological aspects rock mass behavior. The relationship between block size and rock mass stability.
7. **Rock Mass Classification.** Rock mass classification of discontinuous rock masses.
8. **Flow Through Fractured Rock Masses.** Hydrogeology of discontinuous rock masses.
9. **Slope Stability.** Slope stability of fractured rock slopes.
10. **Modeling of Discontinuous Rock.** Numerical modeling of discontinuous rock masses, using FLAC and UDEC.

Prerequisites: A course in Rock Mechanics, or Rock Engineering (can be taken concurrently) or consent of Instructor (Dr. Norbert H. Maerz).

PLEASE CONTACT Dr. Norbert H. Maerz, 341-6714 or norbert@mst.edu if you are interested.