

Department: Mining Engineering

Division: Tunneling and Underground Spaces

Level and Major: MSc, Tunneling and Underground Spaces

Course Title: Advanced Engineering Mathematics

Number of Credits: 3

Lecturer: Dr. Hamed Molladavoodi

Course Goals and Objectives

Introduction to advanced engineering mathematics and its use in rock mechanics.

Course Topics

- Fourier series, even, and odd Fourier series
- Even and odd Fourier series
- Derivation from Fourier series
- Derivation from Fourier series
- Fourier integral and convention
- Partial differential equations
- Wave equation
- Thermal equation
- Laplacian equations
- Complex variables
- Analytical functions
- Continuity of a complex function
- Complex integrals
- Engineering applications
- Tensor and Vector Calculus
- Index Notation
- Tensors algebra operation
- Vector Calculus
- Vector Calculus.

Reading Resources

- Engineering mathematics for rock engineering