GeoE. 517 - *Tunnel Design and Construction*  (3 cr)

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**Course description:**

Principles of underground tunneling techniques. Emphasis on evaluation of ground conditions, estimation of support requirements, methods of tunnel driving and boring, auxiliary systems & equipment and safety.

**Reference book**


*Rock Mechanics Design in Mining and Tunneling* by Z.T. Bieniawski

**Topics covered**

1. Site investigations  
2. Geotechnical consideration  
3. Design of tunnels  
4. Construction and excavation methods  
5. Soft ground tunnels  
6. Rock tunnels  
7. Micro tunneling techniques  
8. Tunnel support design  
9. Ventilation  
10. Tunnel utilities  
11. Safety

**Evaluation:**  
Assignment  15 %,  
Midterm  20 %  
Final  30 %  
Final project  30 %,