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
Tunnel Engineering Handbook, by J.O. Bickel and T.R. Kuesel
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 20 %
Midterm 20 %
Final 30 %
Final project 30 %