CEE 450-3 Soil Mechanics III

**Spring 2018** **M W 8:00-10:00**

**Course Outline Course Grading**

I. Review of Earth Pressure Theory Class participation 10%

A. Active pressures Homework 20%

B. Passive pressures Project 30%

C. Movements to mobilize pressures Final Exam 40%

II. Overview of Retaining Structures

III. Retaining Structures (Fill walls)

A. Concrete walls

B. Mechanically stabilized earth walls

IV. Supported Excavations (Excavated walls)

A. Sheet pile walls

1. Cantilevered

2. Anchored

B. Internally braced excavations

1. Effects of wall type

2. Stability of cut

a. earth pressures

b. embedded wall response

c. water loads

C. Tieback excavations

1. Differences between braced and tieback excavations behaviors

2. Ground anchor capacity

3. Pressures to design walls

4. Anchor testing

D. Movements

1. Observations

2. Semi-empirical methods to estimate ground movements

3. Designing support system for movements

V. Slope Stability

A. Historical background

B. Method of analysis

1. Overall equilibrium

2. Method of slices

a. Ordinary method of slices

b. Modified Bishop method

c. Effect of water forces

3. Sliding wedge and block approaches

C. Shear strength selection

1. Types of shear strength

2. Types of analyses

3. Conditions for analyses

4. Comments on Effective Stress Analyses

5. Comments on Total Stress Analyses

D. Minimum factor of safety

E. Slopes in soils representing special problems

F. Basic design requirements for earth fills retaining water