

## **CE 413 FIRST EXAM STUDY GUIDE**

Format will be **Closed Book/Closed Note** Followed by **Open Book/Open Note**

You should reread all material assigned in the class syllabus

You should review the board notes presented in class.

### **Closed Book/Closed Note Portion (30%)**

You should be able to describe in your own words and apply the following terms and concepts

1. The importance and origin of preventing contact between collected human waste streams and drinking water sources
2. Sanitary, storm, and combined sewers
3. Infiltration/Inflow, lift station, and surcharged flow
4. Choice basis of pipe cross-section, maximum & minimum velocities, or minimum slope
5. Sanitary sewer gas generation and importance
6. Sanitary sewer appurtenances and their purposes

### **Open Book/Open Note Portion (70%)**

You should be able to demonstrate by computation that you can

1. Calculate normal depth using Manning's Equation for open channel flow
2. Calculate critical depth for open channel flow
3. Relate by calculations head loss and flow for open channel and enclosed pipe flow
4. Calculate partially filled pipe depth and velocity using Manning's Equation
5. Determine estimates of sanitary sewer collected flow
6. Develop peaking flow estimates or minimum flow estimates