

### **COURSE NOTES**

**Instructor in Charge:** Ronnie I. Borja  
Terman 244; Tel. 723-3664; E-Mail: borja@stanford  
Office Hours: M & W 1:30 – 2:30 pm  
(or by appointment)

**Course Assistant:** Amado Lizarraga  
E-mail: amado@stanford  
Office Hours: TBA

#### **References:**

B. M. Das, Principles of Foundation Engineering, Fifth Edition, Brooks/Cole, 2004.

S.L. Kramer, Geotechnical Earthquake Engineering, Prentice-Hall, 1996.

#### **Books On Reserve:**

Bowles, J. E., *Foundation Analysis and Design*, McGraw-Hill Book Company, Fifth Edition, 1995.

Das, B.M., Principles of Geotechnical Engineering, Fifth Edition, Brooks/Cole, 2002.

Peck, R.B., Hanson, W.E. and Thornburn, T.H., *Foundation Engineering*, Second Edition, John Wiley and Sons, 1974.

#### **Notes:**

1. The course outline is found on page 2. The intent of the lectures is to provide you with background material and theory which supplement those given in the references and handouts.
2. Homework problem sets will be assigned on a regular basis and will typically be due one week later. Solutions to homework problems will be handed out as soon as the graded homeworks are returned.
3. There will be a 1-1/2 hour midterm examination (Friday, February 16) and a 1-1/2 hour final examination (Wednesday, March 21). Weighting for the final grade is: Final Examination: 35%, Mid-Term Examination: 35%, Homework: 30%.

## COURSE OUTLINE

---

**1. Rigid Retaining Structures (1.5 weeks)**

Coulomb and Rankine methods; earthquake loads (Das: Chapters 7 & 8; Kramer: Chapter 11).

**2. Flexible Retaining Structures (1.5 weeks)**

Sheetpile walls; braced excavations (Das: Chapters 9 & 10).

**3. Slope Stability Methods (1.5 weeks)**

Ordinary method of slices and modified Bishop methods; comparison of methods; consideration of water forces and earthquake loads; stability curves; chart solutions (Class Handouts; SLOPE/W Manual; Kramer: Chapter 10)

**4. Foundation Bearing Capacity (1.5 weeks)**

Stress distribution in soils; bearing capacity theory and solutions; effect of layering; eccentric load (Das: Chapters 3, 4, 5 & 6).

**Midterm Exam**

(Scope: Items 1–3)

Friday, February 16, 11:00 am–12:30 pm

**5. Continuation of Bearing Capacity; Settlement Calculation (1 week)**

**6. Pile Foundations (2 weeks)**

Individual piles; group piles; lateral loads (Das: Chapters 11 & 12).

**Final Examination**

(Scope: Items 4–6)

Wednesday, March 21, 9:30 a.m.–11:00 a.m.

---