CE 362
FOUNDATION ENGINEERING I (3+0 Credits)
2024-2025 Spring

Instructor: Assistant Prof. Volkan İşbuğa, Civil Engineering Department, Room no: D-201, volkanisbuga@iyte.edu.tr, Phone: 750-6805

TAs: Mustafa ERGİN and Burak ALBAYRAK
Recitaton Hour: TAs will organize.

Lectures: Wednesday, 9:45 am-12:30pm

Textbook: Principals of Foundation Engineering – Braja M. Das

Course Website: Students are required to register themselves at https://cloud-lms.iyte.edu.tr and enroll to CE 362. All announcements and course materials (lecture notes, homework etc.) will be uploaded on this site.

Aims and objectives of the course:

- To understand site investigation
- To assess the load carrying capacity of the subsoil strata at a given particular site subject to given loading conditions.
- To compute the settlement likely to occur due to construction of the structure.
- To suggest a type of foundation suitable for a given site (shallow or deep) + earthquake (TBDY)
- Retaining walls will also be covered. + earthquake (TBDY)

Lectures and reading assignments: Students MUST read the relevant chapters PRIOR to coming to the class. HMW will be given during lecture hours.

The topics to be covered are listed below:

1. Soil exploration (Ch 2)
   1.1 Methods of soil exploration
   1.2 Boring, sampling
   1.3 Penetration tests
   1.4 Correlation between penetration resistance and strength parameters

2. Analysis and design of shallow foundations
   2.1 Footings on sand (Ch 3)
   2.2 Footings on clay (Ch 3)
   2.3 Settlement calculations (Ch 5)
   2.4 Combined Footing (Ch 6)
   2.5 Design of Mat/Raft Foundations (Ch 6)
   2.6 Earthquake load (TBDY, 2018)

3. Earth pressure problems (Ch 7)
   3.1 Earth pressures at rest
   3.2 Active and passive earth pressure

3.3 Rankine and Coulomb's earth pressure theories
3.4 Concept of bearing capacity

4. Design and analysis of retaining walls (Ch 8)
   4.1 Static load
   4.2 Earthquake load (TBDY, 2018)

5. Pile foundations (Ch 11)
   5.1 Types and methods of construction
   5.2 Estimation of pile capacity
   5.3 Bearing capacity and settlement of group piles

Grading Policy: Assignments and Quizes (10pts), Midterm Exam I (30pts), Final Exam (60pts) – **Total 100 points**

How to pass and do well in the course:

1. Pay attention. Ask questions.
2. Attend recitations.
3. Take good notes and understand what you wrote.
4. Before you attempt to solve your homework problems, read the appropriate chapter from the book as well as the class notes and try to understand (concept) solved problems.
5. Do **all** the homework on time.
6. Get help if you needed.
7. Prepare for each test beginning at least a week before the exam.

Pre-requisite: Soil mechanics I

Attendance: Attendance is mandatory. Students who fail to attend at least 70% of the classes in the semester will receive a grade of "NA"**.**

Cheating or copying:

If a student is found guilty of copying homework or cheating in tests, he/she will receive "FF" grade for the course.