

Department: Civil & Environmental Engineering
Level and Major: Graduate - Geotechnical Engineering

Division: Civil engineering

Course Title: advanced foundation engineering

Number of Credits: 3

Prerequisite (Corequisite): Structural analysis (I), Concrete Technology **Lecturer:** -

Course Topic

- Surface foundations : calculation and estimation of load carrying capacity and subsidence of surface foundations , by directly using the result of field tests,by reviewing field tests (VST,PLT,DMT,PMT,CPT,SPT),by using analytical methods , introduce analytical methods (limit analysis ,limit equilibrium) , special cases in calculating load carrying capacity of surface foundations (the effect of adjacent foundations , foundation on the slope ,reinforced foundations, ring foundation and etc... calculate the modulus of subgrade reaction ,surface foundation design considerations under the effect of earthquake, geotechnical issues of performing foundations (excavation near neighboring buildings excavation below the water surface and etc...)the design of surface foundations based on LRFP method
- Deep foundations :type of piles and methods of implementation , analysis and design of the pile under axial , pressing and tensional load the phenomenon of negative friction , analysis and design of the pile under lateral load, pile group, pile interaction foundation-pile Raft , static and dynamic tests of the pile, analysis of a submerged pile under the impact of pile driving , the design considerations of deep foundations under the effect of earthquake ,designing pile on LRFD method
- Lateral pressure of soils and design of supporting structure :introducing the methods of analysis of walls , limit analysis and limit equilibrium , types of supporting structure , reminiscent of the principals of designing weight rigid and flexible cantilever walls, methods of designing and performing the processes , analysis and design of braced walls ,deep floor stability ,familiarity with reinforced soil(soil reinforcement mechanism , introducing a variety of reinforced elements, designing walls and slopes of reinforced soil with belt and with Geosynthetics)bridge abutments and other special structures under lateral pressure , the design of retaining walls based on LRFD method
- The design of the foundation on problematic soils and reconditioning soils :introducing the problematic soils ,designing foundation on poor soil with high compression capability ,designing foundation on expansive soil, designing foundation on collapsible soil, familiarity with different methods of reconditioning soil for improving soil load carrying capacity principles and usages of related national regulations (Issues of national building regulations and standard 2800) and international

Course Description:

Reading Sources:

Course Goals and objectives:

Evaluation:

Course topics:

The course aims to: