**Form No:ÜY-FR-0323**

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|  | **ECTS Course Description Form** |
| **PART I ( Senate Approval)** |
| **Offering School**  | College of Engineering |
| **Offering Department** | Civil Engineering |
| **Program(s) Offered to** | *Civil Engineering* | *Must* |
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|  |  |
| **Course Code**  | *CE 433* |
| **Course Name** | *Foundation Engineering* |
| **Language of Instruction** | English |
| **Type of Course** | Lecture, Problem Solving |
| **Level of Course** | Undergraduate |
| **Hours per Week** | **Lecture:** 2 | **Laboratory:** | **Recitation:** | **Practical:1**  | **Studio:** | **Other:** |
| **ECTS Credit** | 4 |
| **Grading Mode** | Letter Grade |
| **Pre-requisites** | CE 332 |
| **Co-requisites** | - |
| **Registration Restriction** | - |
| **Educational Objective** | This course is designed to teach the design of bases together with the application of soil mechanics and other related techniques. |
| **Course Description** | This course covers basic analysis and the main principles of construction. The course covers the basics of ground survey planning, basic excavations, selection of foundation system, bearing coefficient and earthquake loads. Special emphasis is given to the field experiments and the basic analysis of these experimental data. |
| **Learning Outcomes** | **LO1** | 1. To be able to know basic types and soil investigation techniques,2. To plan soil investigations,3. To be able to choose the most appropriate basic course for the engineering problem being studied,4. Calculate the loads on the bases for static vertical load and dynamic-equivalent static horizontal load combinations to the carrying capacity and seating and simple bolt systems,5. Being able to compare the results of analysis for various load combinations and section properties,6. To be able to relate soil-foundation-superstructure behavior within a term paper. |
| **LO2** |
| **LO3** |
| **LO4** |
| **LO5** |
| **LO6** |
| **n..** |
| **PART II ( Faculty Board Approval)** |
| **Basic Outcomes (University-wide)** | **No.** | **Program Outcomes** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** |
| **PO1** | **Ability** to communicate effectively and write and present a report in Turkish and English.  | LO1, LO2, LO3, LO4, LO5,LO6 |
| **PO2** | **Ability** to work individually, and in intra-disciplinary and multi-disciplinary teams. | LO1, LO2, LO3, LO4, LO5,LO6 |
| **PO3** | **Recognition** of the need for life-long learning and **ability** to access information , follow developments in science and technology, and continually reinvent oneself. | LO1, LO2, LO3, LO4, LO5,LO6 |
| **PO4** | **Knowledge** of project management, risk management, innovation and change management, entrepreneurship, and sustainable development. | LO1, LO2, LO3, LO4, LO5,LO6 |
| **PO5** | **Awareness** of sectors and **ability** to prepare a business plan. | LO1, LO2, LO3, LO4, LO5,LO6 |
| **PO6** | **Understanding** of professional and ethical responsibility and **demonstrating** ethical behavior. | LO1, LO2, LO3, LO4, LO5,LO6 |
| **Faculty Specific Outcomes** | **PO7** | Ability to develop, select and use modern techniques and tools necessary for engineering applications and ability to use information technologies effectively. | LO1, LO2, LO3, LO4, LO5,LO6 |
| **PO8** | Recognition of the effects of engineering applications on health, environment and safety in the universal and societal dimensions and the problems of the time andawareness of the legal consequences of engineering solutions. | LO1, LO2, LO3, LO4, LO5,LO6 |
| **PO9** | Ability to identify, define, formulate and solve complex engineering problems; and electing and applying appropriate analysis and modeling methods for this purpose. | LO1, LO2, LO3, LO4, LO5,LO6 |
| **Discipline Specific Outcomes (program)** | **PO10** | Sufficient knowledge in mathematics, science and civil engineering; and the ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems. | LO1, LO2, LO3, LO4, LO5,LO6 |
| **PO11** | Ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions of economic, environmental, sustainability, manufacturability, ethics, health, safety, social and political issues; and the ability to apply modern design methods for this purpose. | LO1, LO2, LO3, LO4, LO5,LO6 |
| **PO12** | Ability to design experiments, conduct experiments, collect data, analyze and interpret results for the examination of civil engineering problems. | LO1, LO2, LO3, LO4, LO5,LO6 |
| **Specialization Specific Outcomes** | **PO N….** | **-** | **-** |
| **PART III ( Department Board Approval)** |
| **Course Subjects, Contribution of Course Subjects to Learning Outcomes, and Methods for Assessing Learning of Course Subjects** | **Subjects** | **Week** |  | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** |
| **S1** | 1 | Introduction and Theoretical Definitions | A1 | A1 | A1 | A1 | A1 | A1 |
| **S2** | 2 | General principles in sizing and selection of basic system, application examples | A1 | A1 | A1 | A1 | A1 | A1 |
| **S3** | 3 | Planning of soil investigations, field experiments, determination of soil class | A1 | A1 | A1 | A1 | A1 | A1 |
| **S4** | 4 | Static bearing capacity of shallow foundations (footings, raft foundations) | A1 | A1 | A1 | A1 | A1 | A1 |
| **S5** | 5 | Settlement analysis of shallow foundations | A1 | A1 | A1 | A1 | A1 | A1 |
| **S6** | 6 | Eccentrical loading of shallow foundations | A1 | A1 | A1 | A1 | A1 | A1 |
| **S7** | 7 | Sample problem solutions on shallow foundations | A1 | A1 | A1 | A1 | A1 | A1 |
| **S8** | 8 | Concept of beams on elastic foundation and modulus of subgrade reaction | A1 | A1 | A1 | A1 | A1 | A1 |
| **S9** | 9 | Pile foundations, classification, construction techniques | A1 | A1 | A1 | A1 | A1 | A1 |
| **S10** | 10 | Pile foundations axial load capacity. | A1 | A1 | A1 | A1 | A1 | A1 |
|  | **S11** | 11 | Bearing capacity and settlement of pile groups | A1 | A1 | A1 | A1 | A1 | A1 |
|  | **S12** | 12 | Lateral earth pressures and introduction to retaining structures | A1 | A1 | A1 | A1 | A1 | A1 |
|  | **S13** | 13 | Design of gravity, cantilever and reinforced earth walls | A1 | A1 | A1 | A1 | A1 | A1 |
|  | **S14** | 14 | Sheet pile walls and shored excavations | A1 | A1 | A1 | A1 | A1 | A1 |
| **Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules**  | **No.** | **Type** | **Weight** | **Implementation Rule** | **Make-Up Rule** |
| **A1** | **Exam** | *100%* | Midterm exams and final exams will take place. Exams will be in written test and all the course materials will be forbidden to use during the examination. Midterm dates are tentative and announced at the beginning of semester. | The official rules and regulations of the University apply. |
| **A2** | **Quiz** |  |  |  |
| **A3** | **Homework** |  |  |  |
| **A4** | **Project** |  |  |  |
| **A5** | **Report** |  |  |  |
| **A6** | **Presentation** |  |  |  |
| **A7** | **Attendance/ Interaction** | *0%* | Attendance is strongly recommended and obligatory.  | The official rules and regulations of the University apply. |
| **A8** | **Class/Lab./****Field Work** |  |  |  |
| **A9** | **Other** |  |  |  |
| **TOTAL** | **100%** |
| **Evidence of Achievement of Learning Outcomes** | Students will demonstrate learning outcomes through midterm exams, homework, quiz work, presentation and preparation and the final exam. Every topic is tested with at least one exam question. In order to pass, a student needs to accumulate certain percentage of points and this percentage is determined by the class mean. |
| **Method for Determining Letter Grade** | The method on which the letter grade is based on will be announced at the beginning of the semester, and this method may be subjected to change depending on the performance of the students.One midterm, homework, presentation and a final exam are used for grading. The table shows the maximum points to be collected.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Assessment** | Midterm 1 | Midterm 2 | Final exam | TOTAL |
| **Points** | 30 | 30 | 40 | 100 |

Letter grade is determined using the table below:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Total points** | 100-95 | 94-85 | 84-80 | 79-75 | 74-65 | 64-60 | 59-55 | 54-50 | 49-45 | 44-40 |
| **Letter Grade** | A | A- | B+ | B | B- | C+ | C | C- | D+ | D |

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| **Teaching Methods, Student Work Load** | **No** | **Method** | **Explanation** | **Hours** |
| ***Time applied by instructor*** |
| **1** | **Lecture** | Lecturing and utilizing chalkboard/whiteboard. Sample questions and answers. Total number of hours in semester. | 42 |
| **2** | **Interactive Lecture** |  |  |
| **3** | **Recitation** |  |  |
| **4** | **Laboratory** |  |  |
| **5** | **Practical** |  |  |
| **6** | **Field Work** |  |  |
| ***Time expected to be allocated by student*** |
| **7** | **Project** |  |  |
| **8** | **Homework** | Pre-Homework |  |
| **9** | **Pre-class Learning of Course Material**  | Pre-class/ after class individual study | 20 |
| **10** | **Review of Course Material** | Midterms and their preparations | 20 |
| **11** | **Studio** | End of semester exams, final exam and preparation | 38 |
| **12** | **Office Hour** |  |  |
| **TOTAL** | *120* |
| **IV. PART** |
| **Instructor** | **Name** | Assoc.Prof.Dr. Nihat Dipova |
| **E-mail** | ndipova@akdeniz.edu.tr |
| **Phone Number** |  |
| **Office Number** |  |
| **Office Hours** |  |
| **Course Materials** | **Mandatory** | Principles of Foundation Engineering, Eighth Edition, Braja M. Das, Global Engineering, 2016, ISBN: 9781305081550 |
| **Recommended** | Academic journals and papers related to the foundation engineering |
| **Other** | **Scholastic Honesty** | Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Any for of scholastic dishonesty is a serious academic violation and will result in a disciplinary action. |
| **Students with Disabilities** | Reasonable accommodations will be made for students with verifiable disabilities. |
| **Safety Issues**  | The handling of the course does not require any special safety requirements. |
| **Flexibility** | Circumstances may arise during the course that prevents the instructor from fulfilling each and every component of this syllabus; therefore, the syllabus is subject to change.  Students will be notified prior to any changes.  |