**Form No: ÜY-FR-0291**

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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 | Area Elective |
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|  |  |
| **Course Code**  | CIVE 411 |
| **Course Name** | Concrete And Its Components |
| **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** | 5 |
| **Grading Mode** | Letter Grade |
| **Pre-requisites** | - |
| **Co-requisites** | - |
| **Registration Restriction** | - |
| **Educational Objective** | This course is designed to give students an advanced understanding of concrete and its components. It is aimed to convey the innovations in concrete technology, to give effect to the concrete properties of alternative materials used in concrete, to explain the new types of concrete admixtures, to give the production methods and properties of some special production concretes and to convey the quality control methods of concrete as building material. |
| **Course Description** | In the course, advanced level concrete and concrete components are given information. Information on binder types used in concrete, cement content and additives, fresh concrete and solid concrete properties are provided. With this information, it is possible to solve technical problems related to concrete that can be encountered in business life. |
| **Learning Outcomes**  | **LO1** | 1. Being able to define the properties of concrete forming components,2. Technically comparable to the advantages and disadvantages of alternative materials used in concrete,3. Mineral and chemical additives used in concrete production can be selected appropriately for the purpose of use,4. To be able to specify the concrete information about the concrete standard,5. Being able to evaluate concrete with different quality control methods, |
| **LO2** |
| **LO3** |
| **LO4** |
| **LO5** |
| **LO6** |
| **n..** |
| **PART II ( Faculty Board Approval)** |
| **Basic Outcomes (University-wide)** | **No.** | **Program Outcomes** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** |
| **PO1** | **Ability** to communicate effectively and write and present a report in Turkish and English.  | LO1, LO2, LO3, LO4, LO5 |
| **PO2** | **Ability** to work individually, and in intra-disciplinary and multi-disciplinary teams. | LO1, LO2, LO3, LO4, LO5 |
| **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 |
| **PO4** | **Knowledge** of project management, risk management, innovation and change management, entrepreneurship, and sustainable development. | LO1, LO2, LO3, LO4, LO5 |
| **PO5** | **Awareness** of sectors and **ability** to prepare a business plan. | LO1, LO2, LO3, LO4, LO5 |
| **PO6** | **Understanding** of professional and ethical responsibility and **demonstrating** ethical behavior. | LO1, LO2, LO3, LO4, LO5 |
| **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 |
| **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 and awareness of the legal consequences of engineering solutions. | LO1, LO2, LO3, LO4, LO5 |
| **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 |
| **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 |
| **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 |
| **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 |
| **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** |
| **S1** | 1 | Introduction, General Information About Concrete Technology | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
| **S2** | 2 | Portland Cement, aggregates and concrete mix water | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
| **S3** | 3 | Chemical and Mineral Additives Used in Concrete. | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
| **S4** | 4 | New developments in concrete design | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
| **S5** | 5 | Methods of accelerating concrete strength; Steam cure | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
| **S6** | 6 | Methods of accelerating concrete strength; Autoclave cure | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
| **S7** | 7 | Ready Mixed Concrete and Prefabricated Concrete Production | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
| **S8** | 8 | General information about TS EN 206-1 Standard | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
| **S9** | 9 | Fresh and Hardened Concrete Quality Control Methods | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
| **S10** | 10,11 | Non-Destructive Quality Control in Concrete | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
| **S11** | 12,13 | Destructive Quality Control in Concrete | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
| **S12** | 14 | Self-Compacting Concrete | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 | A1,A2,A3 |
|  |  |  |  |  |  |  |
| **Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules**  | **No.** | **Type** | **Weight** | **Implementation Rule** | **Make-Up Rule** |
| **A1** | **Exam** | *80%* | 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** | *10%* | Quiz exams will take place. Quiz will be in written test and all the course materials will be forbidden to use during the examination. | The official rules and regulations of the University apply. |
| **A3** | **Homework** | *10%* | Homework is due the following class. Late homework are not accepted. Homework is to be neat and orderly. All calculations of homework problems are to be in an orderly fashion. | There is no compensation for 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, quiz questions, and a final exam are used for grading. The table shows the maximum points to be collected.

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| --- | --- | --- | --- | --- | --- |
| **Assessment** | Midterm  | Homework | Quiz | Final exam | TOTAL |
| **Points** | 40 | 10 | 10 | 40 | 100 |

Letter grade is determined using the table below:

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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** | Research/Report/Others and their preparations |  |
| **5** | **Practical** |  |  |
| **6** | **Field Work** |  |  |
| ***Time expected to be allocated by student*** |
| **7** | **Project** |  |  |
| **8** | **Homework** | Homework Studies | 10 |
| **9** | **Pre-class Learning of Course Material**  | Pre-class/ after class individual study | 28 |
| **10** | **Review of Course Material** | Midterms and their preparations | 28 |
| **11** | **Studio** | End of semester exams, final exam and preparation | 42 |
| **12** | **Office Hour** |  |  |
| **TOTAL** | *150* |
| **IV. PART** |
| **Instructor** | **Name** | Niyazi Uğur Koçkal |
| **E-mail** | Ugur.kockal@antalya.edu.tr |
| **Phone Number** | 0532 6459878 |
| **Office Number** | A1-16 |
| **Office Hours** | *Be determined during term* |
| **Course Materials** | **Mandatory** | *Erdoğan, T. Y., (2003): Beton , ODTÜ Geliştirme Vakfı Yayıncılık ve İletişim Yayınları, 741s., Ankara.**Neville A.M. (1997) Properties of Concrete Fourth Edition, Longman Limited, England.* |
| **Recommended** | Academic journals and papers related to the material science |
| **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.  |