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|  | **ECTS Course Description Form** |
| **PART I ( Senate Approval)** |
| **Offering School**  | Engineering Faculty |
| **Offering Department** | Civil Engineering |
| **Program(s) Offered to** | Civil Engineering | Area Elective |
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|  |  |
| **Course Code**  | CE 463 |
| **Course Name** | Highway Materials |
| **Language of Instruction** | English |
| **Type of Course** | Lecture |
| **Level of Course** | Undergraduate |
| **Hours per Week** | **Lecture:** 3 | **Laboratory: -** | **Recitation:** - | **Practical: -** | **Studio:** - | **Other:** - |
| **ECTS Credit** | 5 |
| **Grading Mode** | Letter |
| **Pre-requisites** | **-** |
| **Co-requisites** | **-** |
| **Registration Restriction** | - |
| **Educational Objective** | The main objective is to give essential information about various asphalt and asphalt mixtures which are to be used in highway design and analysing general topics about the other mixes used in the industry. |
| **Course Description** | Topics like as flexible pavements, structure of asphalt, rheology of asphalt, liquid asphalts, asphalt mixture experiments, aggregate mixtures, surface treatment, bituminous hot mixture, stiffness of asphalt mixtures, other mixtures are introduced to the students. |
| **Learning Outcomes**  | **LO1** | Checking general definitions about highway materials.Analyzing and performing tests applied to aggregate and bitumen.Distinguishing asphalt-aggregate mixtures and mixture propertiesRecognizing general information about bituminous hot mixtures.Analyzing the rigidity of asphalt mixtures.Giving general information about other mixtures. |
| **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 LO1, LO2, LO3, LO4, LO5, LO6LO1, LO2, LO3, LO4, LO5, LO6LO3, LO4, LO5, LO6LO3, LO4, LO5, LO6LO1, LO2, LO3, LO4, LO5, LO6LO2, LO3, LO6LO2, LO4LO4, LO5LO1, LO2, LO3, LO4LO4, LO5, LO6LO4, LO5, LO6 |
| **PO2** | **Ability** to work individually, and in intra-disciplinary and multi-disciplinary teams. |
| **PO3** | **Recognition** of the need for life-long learning and **ability** to access information, follow developments in science and technology, and continually reinvent oneself. |
| **PO4** | **Knowledge** of project management, risk management, innovation and change management, entrepreneurship, and sustainable development. |
| **PO5** | **Awareness** of sectors and **ability** to prepare a business plan. |
| **PO6** | **Comprehending** of professional and ethical responsibility and **demonstrating** ethical behavior. |
| **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 |
| **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. |
| **PO9** | Ability to identify, define, formulate and solve complex engineering problems; and electing and applying appropriate analysis and modeling methods for this purpose. |
| **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. |
| **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. |
| **PO12** | Ability to design experiments, conduct experiments, collect data, analyze and interpret results for the examination of civil engineering problems. |
| **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 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |
| **S2** | 2-3 | Basic Definitions | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |
| **S3** | 4 | Flexible pavements | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |  A1-A2-A3 | A1-A2-A3 |
| **S4** | 5 | Structure of asphalt | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |
| **S5** | 6 | Rheology of asphalt | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |
| **S6** | 7 | Liquid asphalts | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |
| **S7** | 8 | Asphalt mixture experiments | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |
| **S8** | 9 | Aggregates | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |
| **S9** | 10 | Aggregate mixtures | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |
| **S10** | 11 | Surface treatment | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |
| **S11** | 12 | Bituminous hot mixture | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |
| **S12** | 13 | Stiffnes of asphalt mixtures | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 | A1-A2-A3 |
| **S13** | 14 | Other mixtures | A1-A2-A3 | 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** | %90 | In the exam none of electronical equipment are allowed except than calculators. | If the special case of the student is justified or if the report is accepted by the school, he is informed about the time of the make up exam. |
| **A2** | **Quiz** | %5 | The time and subject matter will be informed to the students at least one week in advance. | There is no makeup exam for quizzes. |
| **A3** | **Homework** | %5 | Homework announce with the deadline. Homework that submitted after deadline will not be accepted. | There is no makeup for homework. |
| **A4** | **Project** |  |  |  |
| **A5** | **Report** | - | Lab reports should be documented according to the criteria that specified by experiment conductor or ınstructor. | There is no makeup for reports. |
| **A6** | **Presentation** |  | - | - |
| **A7** | **Attendance/ Interaction** |  | - | - |
| **A8** | **Class/Lab./****Field Work** |  | - | - |
| **A9** | **Other** |  |  |  |
| **TOTAL** | **100%** |
| **Evidence of Achievement of Learning Outcomes** | Students will demonstrate learning outcomes through midterm exams, quiz work and homeworks 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.Two midterms, quiz questions, homeworks and a final exam are used for grading. The table shows the maximum points to be collected.

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| **Assessment** | Midterm 1 | Midterm 2 | Quiz | Homeworks | Final exam | TOTAL |
| **Points** | 25 | 25 | 5 | 5 | 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** |  | 3x14 |
| **2** | **Interactive Lecture** |  | - |
| **3** | **Recitation** |  | - |
| **4** | **Laboratory** |  | - |
| **5** | **Practical** |  | - |
| **6** | **Field Work** |  | - |
| **Time expected to be allocated by student** |
| **7** | **Project** |  | - |
| **8** | **Homework** |  | 12 |
| **9** | **Pre-class Learning of Course Material**  |  | 28 |
| **10** | **Review of Course Material** |  | 56 |
| **11** | **Studio** |  | - |
| **12** | **Office Hour** |  | 14 |
| **TOTAL** | 152 |
| **IV. PART** |
| **Instructor** | **Name** | Deniz Serkan Celalettin Tapkın |
| **E-mail** | serkan.tapkın@antalya.edu.tr |
| **Phone Number** | 0532 633 8671 |
| **Office Number** | A1-67 |
| **Office Hours** | Will be specified in semester |
| **Course Materials** | **Mandatory** | - |
| **Recommended** | Course Notes |
| **Other** | **Scholastic Honesty** | Violation of academic honesty; Not to cheat or attempt to make copies, to plagiarize, to not reveal false information or quote, to facilitate dishonest acts by others, to obtain exams without permission, to use an earlier study without giving information to the instructor, or to change the academic work of other students etc. Any violation of academic honesty is a serious academic offense and will be the consequence of the university's disciplinary rules. |
| **Students with Disabilities** | The course provides appropriate conditions for students with disabilities regarding the assessment of the process and learning. |
| **Safety Issues**  | The handling of the course does not require any special safety precautions. |
| **Flexibility** | In case of compulsory during the semester the course can be changed by informing the students by way of instruction. |