**Form No: ÜY-FR-0331**

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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**  | CE 462 |
| **Course Name** | Intelligent Transportation Systems |
| **Language of Instruction** | English |
| **Type of Course** | Lecture, Problem Solving, Project |
| **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 provide timely information on many of the key state of the art Intelligent Transportation Systems (ITS) being adopted by the transportation industry; to introduce students to perform why technology has been developed to support the management and control of the transportation sector, and how the systems have influenced on transportation policy and development; to guide the students to provide an application of the basic techniques used in the delivery of ITS services including the main communications and information backbones. |
| **Course Description** | The background of Intelligent Transportation Systems (ITS), the relationship of ITS to other areas of transportation, the current implementations of ITS, analysis of sample deployments, the practical issues and implications of ITS will be introduced. Topics covered in this course include introduction to intelligent transportation systems, introduction to traffic data, introduction to accident data, and introduction to security systems in case of emergency, systems used for road user charging, vehicle detection and classification. Radio waves and functions in transport, non-motorized vehicles and global positioning systems, assisted transport systems, smart cards in transportation. |
| **Learning Outcomes**  | **LO1** | 1. Perform a list of traffic data, accident data based on the traffic. 2. Theoretically define the use and methods of simple intelligent transport systems. 3. Distinguish between safety and road safety issues. 4. Define road usage charges and technologies. 5. List radio waves and positioning techniques in transportation. 6. Accomplish the effects of global positioning systems for non-motorized vehicles. 7. Undertake the benefits of intelligent transport systems and intelligent infrastructure systems. |
| **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, LO 2, LO 3, LO 4, LO 5, LO 6, LO 7 |
| **PO2** | **Ability** to work individually, and in intra-disciplinary and multi-disciplinary teams. | LO 2, LO 3, LO 5 |
| **PO3** | **Recognition** of the need for life-long learning and **ability** to access information , follow developments in science and technology, and continually reinvent oneself. | LO 3, LO 4, LO 7 |
| **PO4** | **Knowledge** of project management, risk management, innovation and change management, entrepreneurship, and sustainable development. | LO 1, LO 2 |
| **PO5** | **Awareness** of sectors and **ability** to prepare a business plan. | LO 2, LO 3, LO 5, LO 6 |
| **PO6** | **Understanding** of professional and ethical responsibility and **demonstrating** ethical behavior. | LO 6, LO 7 |
| **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. | LO 2, LO 3, LO 6 |
| **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. | LO 2, LO 4 |
| **PO9** | Ability to identify, define, formulate and solve complex engineering problems; and electing and applying appropriate analysis and modeling methods for this purpose. | LO 4, LO 5 |
| **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. | LO 1, LO 2, LO 3, LO 4 |
| **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. | LO 4, LO 5, LO 6, LO 7 |
| **PO12** | Ability to design experiments, conduct experiments, collect data, analyze and interpret results for the examination of civil engineering problems. | LO 4, LO 5, LO 6 |
| **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** | **LO7** |
| **S1** | 1 | Introduction to Traffic Data | A1 |  |  |  | A2 |  |  |
| **S2** | 2 | Introduction to Crash Data | A1 | A2 |  |  |  |  |  |
| **S3** | 3 | Introduction to ITS | A1 | A2 |  |  | A2, A7 |  | A2, A7 |
| **S4** | 4 | Emergency of ITS for Safety and Security Systems | A1 | A2 | A2 | A2, A7 |  | A7 |  |
| **S5** | 5 | Introduction to Future Real-time Passenger Information | A1 |  |  | A2, A7 |  |  |  |
| **S6** | 6 | Introduction to Road User Charging and Electronic Tolling | A1 | A2 | A2 |  |  |  | A2, A7 |
| **S7** | 7,8 | Vehicle Detection and Classification | A1 | A2 |  |  | A7 |  |  |
| **S8** | 9 | Overview of Radio Positioning Localization Technologies | A1 |  | A2, A7 |  |  | A7 |  |
| **S9** | 10 | Global Positioning Systems for Pedestrians | A1 | A2 |  | A2, A7 |  |  |  |
| **S10** | 11 | ITS for Assistive Technology | A1 |  | A2 | A7 |  | A2, A7 |  |
| **S11** | 12 | Smartcards in Transportation | A1 |  |  |  |  |  | A7 |
| **S12** | 13,14 | Intelligent Infrastructure Systems and Its Effects | A1 |  |  | A2, A7 |  | A7 |  |
| **Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules**  | **No.** | **Type** | **Weight** | **Implementation Rule** | **Make-Up Rule** |
| **A1** | **Exam** | *90%* | 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** |  |  |  |
| **A4** | **Project** |  |  |  |
| **A5** | **Report** |  |  |  |
| **A6** | **Presentation** |  |  |  |
| **A7** | **Attendance/ Interaction** |  | 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, quiz work 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.The table shows the maximum points to be collected.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Assessment** | Midterm | Quiz | Final exam | TOTAL |
| **Points** | 40 | 10 | 50 | 100 |

Letter grade is determined using the table below. It may be subjected to change depending on the performance of the students:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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. | 28 |
| **2** | **Interactive Lecture** |  |  |
| **3** | **Recitation** |  |  |
| **4** | **Laboratory** | Research/Report/Others and their preparations | 4 |
| **5** | **Practical** | Total number of hours in semester. | 14 |
| **6** | **Field Work** |  |  |
| ***Time expected to be allocated by student*** |
| **7** | **Project** |  |  |
| **8** | **Homework** | Quiz work and preparations | 24 |
| **9** | **Pre-class Learning of Course Material**  | Pre-class/ after class individual study | 35 |
| **10** | **Review of Course Material** | Midterm and preparations | 20 |
| **11** | **Studio** | End of semester exams, final exam and preparation | 25 |
| **12** | **Office Hour** |  |  |
| **TOTAL** | *150* |
| **IV. PART** |
| **Instructor** | **Name** | Dr. Emre Demir |
| **E-mail** | emre.demir@antalya.edu.tr |
| **Phone Number** | +902422450322 |
| **Office Number** | *A1-66* |
| **Office Hours** |  |
| **Course Materials** | **Mandatory** |  |
| **Recommended** | Traffic Technology International, ITS world journals and publicationsIntelligent Transportation Systems academic journals |
| **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 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.  |