Form No: ÜY-FR-0301

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|  | ECTS Course Description Form |
| PART I ( Senate Approval) |
| **Offering School**  | **Department of Civil Engineering** |
| **Offering Department** | **Faculty of Engineering** |
| **Program(s) Offered to** | **Undergraduate program** | *Compulsory* |
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|  |  |
| **Course Code**  | **CE 482**  |
| **Course Name** | **Environmental Engineering** |
| **Language of Instruction** | **English** |
| **Type of Course** | ***Lecture***  |
| **Level of Course** | **Undergraduate** |
| **Hours per Week** | **Lecture: 2** | Computer Laboratory: | Recitation: - | Practical: 1 | Studio: *-* | Other: *-Field Visit* |
| **ECTS Credit** | **5 ECTS** |
| **Grading Mode** | **Letter Grade** |
| **Pre-requisites** | **-** |
| **Co-requisites** | **-** |
| **Registration Restriction** | ***-*** |
| **Educational Objective** | The course aims at introducing the students to the environmental engineering by enabling them to analyze and test the water quality as per standards. It also aims to guide the students to design water treatment units and to be able to function the treatment process by guiding the students through the concept of treatment and enhance this by holding a site visit to one treatment plan in Antalya. It also aims at enabling the students to develop a solid waste management plan by and develop the concept of sustainable SWM. The course also develops the students’ understanding towards air pollution, sources and spreading  |
| **Course Description** | This course presents a broad introduction to Environmental Engineering. A set of fundamental principles that serves as the foundation for the entire field of environmental engineers is overviewed. The main topics include the fundamentals of ecosystems, sustainability, environmental risk, water quality engineering and water resources, water and wastewater treatment, solid and hazardous and radioactive waste management, air pollution, environmental regulation and climate change impacts. This course also deals with the ways of managing and treating construction and demolition wastes. |
| **Learning Outcomes**  | **LO1**  | Ability to identify ecosystems, hydrological cycle, and nutrient cycle components Ability to control and analyze environmental sustainabilityGetting familiar with geographical information system, remote sensing methods, technology, geo-spatial data and QGIS Software. Getting familiar with hydrological hazards (floods, droughts etc.) and risk analysisTo be able to work in multidisciplinary design teams and produce a research report in the field of environment.Getting familiar solid waste management and wastewater treatment methods |
| **LO2**  |
| * **LO3**
 |
| **LO4**  |
| **LO5**  |
| * **LO6**
 |
| **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 and awareness 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* |
| **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* |
| **Discipline Specific Outcomes (program)** | **PO13** | Awareness of the different possibilities of employ of a single building material, depending on the expected performances | *LO1, LO2, LO3, LO4, LO5, LO6* |
| **PO14** | Knowledge of the basic structural systems and the underlying principles of their behavior | *LO1, LO2, LO3, LO4, LO5, LO6* |
| **PO15** | Ability to recognize the steps of building cycle | *LO1, LO2, LO3, LO4, LO5, LO6, LO7* |
| **PO16** | Ability to recognize the steps of building materials’ manufacturing | *LO1, LO2, LO3, LO4, LO5, LO6* |
| **PO17** |  |  |
| **PO18** |  |  |
| **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** | **Subjects** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** |
| **S1** | 1 | Introduction to The Course Regulations and The Topics Covered | \* |  |  |  |  |  |
| **S2** | 2 | Ecosystems, Hydrological Cycle, Nutrient Cycle | \* |  |  |  |  |  |
| **S3** | 3 | Environmental Sustainability |  | \* |  |  |  |  |
| **S4** | 4 | GIS and Remote Sensing of Environment |  |  | \* |  |  |  |
| **S5** | 5 | Environmental Risk and Hydrological Hazards  |  |  | \* | \* |  |  |
| **S6** | 5 | Research Methods and Presentation Skills  |  |  |  |  | \* |  |
| **S7** | 6 | Water Supply |  |  | \* |  | \* | \* |
| **S8** | 7 | Water Pollution and Wastewater Treatment |  |  | \* |  | \* | \* |
| **S9** | 8 | \*\*\* Midterm Exam \*\*\* |  |  |  |  |  |  |
| **S10** | 9 | Solid Waste Management |  |  | \* |  | \* | \* |
| **S11** | 10 | \*\*\*\* Field Trip \*\*\*\* |  |  |  |  |  |  |
|  | 11 | Air Pollutions, Noise Pollutions,  |  |  | \* |  | \* | \* |
|  | 12 | Climate Change Impacts and Mitigations |  |  | \* |  |  |  |
|  | 13 , 14 | Project Presentation |  |  |  | \* |  |  |
| Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules  | **No.** | Type | Weight | Implementation Rule | Make-Up Rule |
| **A1** | Exam | *80%* | *There will be two exams: a midterm exam, scheduled according to the course schedule, and a final exam at the end of the semester* | *A make-up exam will be provided if the student provides an acceptable legitimate document, according to the university regulations* |
| **A2** | Quiz | *-* | *-* | - |
| **A3** | Homework | *-* |  | - |
| **A4** | Project | *-* |  |  |
| **A5** | Report |  | - | - |
| **A6** | Presentation | *20%* | *The students are called to conduct term research on a predetermined topic in the environmental engineering and present the reseach* | - |
| **A7** | Attendance/ Interaction | *-* |  |  |
| **A8** | Class/Lab./Field Work | *-* | *Class/Lab activities include quiz, debates, assignments based on the development of a specific topic introduced in class* | *There is no make-up for lab.*  |
| **A9** |  |  |  |  |
| TOTAL | 100% |
| Evidence of Achievement of Learning Outcomes | *Students will demonstrate learning outcomes through class activities, homework assignments and exams. These activities reflect a transdisciplinary approach, asking the student to make connections between different topics. Students are able to visit a treatment plant in Lara and see the facilities and the treatment process and report it. Lab demonstration is conducted in the plant itself. Generally, every topic is tested with at least one exam question.*  |
| Method for Determining Letter Grade |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| GRADE | A+ | A | A- | B+ | B | B- | C+ | C | C- | D+ | D | F |
| Equivalent number range |  |  |  |  |  |  |  |  |  |  |  |  |
| GPA | 4.00 | 4.00 | 3.70 | 3.30 | 3.00 | 2.70 | 2.30 | 2.00 | 1.70 | 1.30 | 1.00 | 0.00 |

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| **Assessment** | Presentation | Midterm Exam | Final exam | TOTAL |
| **Points** | 20 | 30 | 50 | 100 |

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| Teaching Methods, Student Work Load | No | Method | Explanation | Hours |
| *Time applied by instructor* |
| 1 | Lecture | Lecturing and utilizing whiteboard and slides | *3\*14=42* |
| 2 | Interactive Lecture |  |  |
| 3 | Recitation | - |  |
| 4 | Laboratory |  | *-* |
| 5 | Practical | - |  |
| 6 | Field Work | A field study from a wastewater treatment plant | 1\*6=6 |
| *Time expected to be allocated by student* |
| 7 | Project | The instructor asks the students to hold a research project | *3\*14 =42* |
| 8 | Homework |  |  |
| 9 | Pre-class Learning of Course Material  |  |  |
| 10 | Review of Course Material |  | *3\*14= 42* |
| 11 | Studio |  |  |
| 12 | Office Hour |  | *2 \*14 =28* |
| TOTAL | Estimated 160 working hours, 6 ECTS credits |
| IV. PART |
| Instructor | Name | Dr. Ali DANANDEH MEHR |
| E-mail | ali.danandeh@antalya.edu.tr |
| Phone Number | *0242 2452361* |
| Office Number | *A1-15* |
| Office Hours | *Will be announced each semester* |
| Course Materials | Mandatory | *Dawei Han. (2012). Conscience Environmental Engineering. Bookboon.com* |
| Recommended | *Gilbert M. Masters; Wendell P. Ela; 3rd Edition2014; Introduction to Environmental Engineering and Science: ISBN: 1-292-02575-1* |
| 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 form 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  | Students will be accompanied by the lecturer and TA during the site visit, will be having safety helmet and visibility jackets provided by ASAT |
| 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.  |