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| COURSE DESCRIPTION FORM | |
| **Course Code and Title** | CE421 SEDIMENT TRANSPORT IN RIVERS |
| **Semester** | 7 |
| **Catalog description** | Introduction, suspended sediment concentration distribution, initiation of particle motion, bed forms and resistance, bed load computation, reservoir sedimentation, sediment transport by pipelines, measurement of sediment by sampling, scouring, river training and channel protection, sediment control structures for head-works and intakes, design of intakes and settling basin |
| **Required reading** | * Bayazıt, M., Avcı, İ. Akarsularda Sediment Taşınımı (2010), Birsen Yayınevi |
| **Recommended reading** | * Sediment Transport Technology, (Post-Graduate Course General Directorate of State Hydraulic Works(DSİ) * Sedimentation Engineering American Society of Civil Engineers * Raudkivi, A.J. Loose boundary hydraulics, Pergamon Press * Selim Y., Mechanics of Sediment Transport, Pergamon Press * Simons, D.B., Şentürk F., Sediment Transport Technology |
| **ECTS** | 4 |
| **Prerequisites and co-requisites** | No prerequisite |
| **Compulsory/Elective** | Technical elective course |
| **Language of instruction** | English |
| **Aim of course** | To learn about the sediment movement (transport, storage), scouring and sediment control in the rivers |
| **Learning outcomes of the course unit** | At the end of this course, the students will be able to make approximate calculations of the transported sediment in the rivers with the help of theoretical and practical information they have, and have information about the scouring and sediment control. |
| **Mode of delivery** | The mode of delivery of this course is face to face. |
| **Course content** | 1.Introduction  2. Properties of a sediment particle  3. Suspended sediment concentration distribution  4. Initiation of particle motion  5. Bed forms and resistance  6. Bed load computation  7. Reservoir sedimentation  8. Sediment transport by pipelines  9. Midterm  10. Measurement of sediment by sampling  11. Scouring  12. River training and channel protection  13. Sediment control structures for head-works and intakes  14. Design of intakes and settling basin  15. Presentation |
| **Planned learning activities and teaching methods** | 3 lecture hours per week (3+0)  Reading activity  Web search and library use  Report and presentation preparation  Midterm exam and required works  Final exam and required works |
| **Assessment methods and criteria** | |  |  |  | | --- | --- | --- | |  | Quantity | Percentage (%) | | Mid-terms | 1 | 35 | | Assignment | 3 | 5 | | Exercises | - | - | | Projects | 1 | 20 | | Practice | - | - | | Quiz | - | - | | Contribution of In-term Studies to Overall Grade % |  | 60 | | Contribution of Final Examination to Overall Grade (%) |  | 40 | | Attendance |  |  | |
| **Workload** | |  |  |  |  | | --- | --- | --- | --- | | **Efficiency** | **Total Week Count** | **Weekly Duration (in hour)** | **Total Workload in Semester** | | Theoretical Study Hours of Course Per Week | 14 | 3 | 42 | | Practicing Hours of Course Per Week | 14 | 0 | 0 | | Reading | 14 | 1 | 14 | | Searching in Internet and Library | 14 | 1 | 14 | | Designing and Applying Materials | 14 | 0 | 0 | | Preparing Reports | 14 | 0 | 0 | | Preparing Presentation | 14 | 1 | 14 | | Presentation | 14 | 0 | 0 | | Mid-Term and Studying for Mid-Term | 1 | 5 | 5 | | Final and Studying for Final | 1 | 10 | 10 | | Other | 0 | 0 | 0 | | Total Workload: |  |  | 99 | | Total Workload / 25: |  |  | 3.96 | | ECTS: |  |  | 4 | |
| **Course's contribution to program** | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | No | Program Learning Outcomes | 1 | 2 | 3 | 4 | 5 | | 1 | Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems. |  |  |  | X |  | | 2 | Ability to identify, formulate, and solve complex civil engineering problems; ability to select and apply proper analysis and modeling methods for this purpose. |  |  |  | X |  | | 3 | Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose. | X |  |  |  |  | | 4 | Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in civil engineering practice; ability to employ information technologies and to use at least one computer programming language effectively. | X |  |  |  |  | | 5 | Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex civil engineering problems or discipline specific research questions. | X |  |  |  |  | | 6 | Ability to work efficiently in intra-disciplinary and multi-disciplinary teams. |  |  | X |  |  | | 7 | Ability to work individually. |  |  |  | X |  | | 8 | Ability to communicate effectively in Turkish, both orally and in writing; ability to write effective reports and comprehend written reports. | X |  |  |  |  | | 9 | Knowledge of English of B1 level according to [Common European Framework of Reference](https://www.efset.org/english-score/cefr/). |  |  | X |  |  | | 10 | Prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions. | X |  |  |  |  | | 11 | Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself. |  |  | X |  |  | | 12 | Consciousness to behave according to ethical principles and professional and ethical responsibility. |  |  | X |  |  | | 13 | Knowledge on standards used in civil engineering practice. | X |  |  |  |  | | 14 | Knowledge about business life practices such as project management, risk management, and change management. | X |  |  |  |  | | 15 | Awareness in entrepreneurship, innovation; knowledge about sustainable development. | X |  |  |  |  | | 16 | Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering. | X |  |  |  |  | | 17 | Awareness of the legal consequences of engineering solutions. | X |  |  |  |  | |
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