

| COURSE DESCRIPTION FORM | |
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| Course Code and Title | CE286 MATERIALS OF CONSTRUCTION |
| Semester | 4 |
| Catalog description | Introduction, general features of construction materials, experiments, Portland cement I: Manufacture, feature and hydration, Portland cement II: Manufacture, types, feature, pozzolan and fly ash, Cement experiments -1, Cement experiments -2, Aggregate I: Classification and sampling, Aggregate II: Gradation, fines modulus, physical properties, aggregate experiments, Fresh concrete: general features of fresh concrete, mixture calculation, mixture proportion, Fresh concrete: casting, curing and mixture proportions, Hardened concrete properties, Special concrete: high performance concrete, lightweight concrete, fiber reinforced concrete, heavyweight concrete, Gypsum: manufacture, casting and hardening reactions, types and features of pargets and plasters, Lime: manufacture, features, types and usage, Klay brick: types of brick, manufacture, classifications and features |
| Required reading | P. Domone, J. Illston, Construction Materials: Their nature and behavior, Spon press |
| Recommended reading | E.V. Amsterdam, Construction materials for civil engineering, Juta and company Ltd, 2000. |
| ECTS | 5 |
| Prerequisites and co-requisites | No prerequisite Required attendance to lectures is at least 70% |
| Compulsory/Elective | Technical course |
| Language of instruction | English |
| Aim of course | To give fundamental principles about the structural materials and its application at the fields. |
| Learning outcomes of the course unit | <ol style="list-style-type: none"> 1. Learning the classification of materials used at civil engineering applications 2. Having the ability to select suitable material among others for specific applications 3. Learning mixture calculations for special purpose 4. Learning how the other construction materials used for specific applications |
| Mode of delivery | The mode of delivery of this course is face to face. |
| Course content | <ol style="list-style-type: none"> 1. Introduction, general features of construction materials, experiments 2. Portland cement I: Manufacture, feature and hydration 3. Portland cement II: Manufacture, types, feature, pozzolan and fly ash 4. Cement experiments -1 5. Cement experiments -2 6. Aggregate I: Classification and sampling 7. Aggregate II: Gradation, fines modulus, physical properties, aggregate experiments 8. Midterm 9. Fresh concrete: general features of fresh concrete, mixture calculation, mixture proportion 10. Fresh concrete: casting, curing and mixture proportions 11. Special concrete: high performance concrete, lightweight concrete, fiber reinforced concrete, heavyweight concrete 12. Midterm / Gypsum: manufacture, casting and hardening reactions, types and features of pargets and plasters 13. Gypsum: manufacture, casting and hardening reactions, types and features of pargets and plasters 14. Lime: manufacture, features, types and usage |

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| | 15. Klay brick: types of brick, manufacture, classifications and features | | | | | | | | |
| Planned learning activities and teaching methods | 3 hours theoretical, 1 hour practical lectures per week (3+1) Design and implementation of material Presentation Report preparation Midterm exam and required works Final exam and required works | | | | | | | | |
| Assessment methods and criteria | | Quantity | | Percentage (%) | | | | | |
| | Mid-terms | 2 | | 45 | | | | | |
| | Assignment | 5 | | 10 | | | | | |
| | Exercises | 2 | | 5 | | | | | |
| | Projects | - | | - | | | | | |
| | 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 | 1 | | 14 | | | |
| | Reading | | 14 | 0 | | 0 | | | |
| | Searching in Internet and Library | | 14 | 0 | | 0 | | | |
| | Designing and Applying Materials | | 14 | 1 | | 14 | | | |
| | Preparing Reports | | 14 | 1 | | 14 | | | |
| | Preparing Presentation | | 14 | 0 | | 0 | | | |
| | Presentation | | 14 | 1 | | 14 | | | |
| | Mid-Term and Studying for Mid-Term | | 2 | 5 | | 10 | | | |
| | Final and Studying for Final | | 1 | 10 | | 10 | | | |
| | Other | | 0 | 0 | | 0 | | | |
| | Total Workload: | | | | | 118 | | | |
| | Total Workload / 25: | | | | | 4.72 | | | |
| | ECTS: | | | | | 5 | | | |
| 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 | | | | | | | X |

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| | | problems or discipline specific research questions. | | | | | |
| | 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. | 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 | | | | | |
| Name of lecturer(s) and contact information | | Prof. Dr. Abdussamet ARSLAN, aarslan@gazi.edu.tr | | | | | |