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|--|--|---|
| <b>Course UnitTitle</b>  |  | Materials of Construction                             |
| <b>Course UnitCode</b>   |  | CE244   |
| <b>Typeof Course Unit</b>  |  | Compulsory  |
| <b>Levelof Course Unit</b>   |  | 2   |
| <b>NationalCredits</b>   |  | 4   |
| <b>Number of ECTSCreditsAllocated</b>  |  | 6   |
| <b>Theoretical(hour/week)</b>  |  | 4   |
| <b>Practice(hour/week)</b>   |  |   |
| <b>Laboratory (hour/week)</b>  |  | 2   |
| <b>Yearof Study</b>  |  | 2 <sup>nd</sup>                                       |
| <b>Semester whenthecourse unit isdelivered</b>   |  | 2 <sup>nd</sup>                                       |
| <b>Course Coordinator</b>  |  | Assist Prof. Dr. Pinar Akpınar                        |
| <b>Name of Lecturer (s)</b>  |  | Assist Prof. Dr. Pinar Akpınar                        |
| <b>Name of Assistant(s)</b>  |  | Mahmoud Tarabishi                                     |
| <b>Modeof Delivery</b>   |  | Face to Face; Formal Lectures and Laboratory practice |
| <b>Language of Instruction</b>   |  | English   |
| <b>Prerequisitesandco-requisites</b>   |  |   |
| <b>RecommendedOptionalProgramme Components</b>   |  | none  |
| <b>Objectivesof theCourse:</b> This course is designed for providing the students a solid background on the history, raw materials, manufacture, types, properties and uses of: Gypsum, Lime, Cement. Aggregates: Classification, properties, uses, gradation, absorption capacity and moisture content, deleterious materials in aggregates, concrete durability problems related to aggregates. Properties and uses of admixtures. Manufacture of concrete, performance criteria for fresh and hardened concrete, strength and durability, concrete mix design calculations. |  |   |
| <b>Learning Outcomes</b>   |  |   |
| <b>When this course has been completed the students should be able to</b>  |  | <b>Assessment</b>                                     |
| 1  | Develop a thorough understanding on the manufacture, properties and the use of different construction materials. | 1 & 2   |
| 2  | Gain experience on the laboratory works while observing standard test methods on construction materials          | 5   |
| 3  | Gain additional experience on site applications by attending various designed field trips.                       | 3   |
| Assessment Methods: 1. Written Exam 2. Assignment 3. Project/Report 4. Presentation 5. Lab. Work   |  |   |
| <b>Course's Contribution to Program</b>  |  |   |
|  |  | <b>CL</b>   |

|  |  |   |
|--|--|---|
| 1  | Ability to relate and apply fundamental sciences to learning the essential civil engineering concepts and theories of different branches.  | 1 |
| 2  | Ability to understand the derivation of these concepts and theories by relating them to the real-life engineering cases within the related civil engineering branch.   | 5 |
| 3  | Ability to define clearly and analyze the engineering problems by applying the introduced civil engineering concepts and theories of the related branch.   | 3 |
| 4  | Ability to use decision-making skills and perform design calculations correctly for the solution of the defined problem/project by applying the introduced theories of the related civil engineering branch. | 5 |
| 5  | Ability to understand and carry out the practical applications of learned civil engineering concepts and theories on site and/or laboratory.   | 5 |
| 6  | Ability to use software packages for the analysis and/or the design of the defined civil engineering problems/projects.  | 1 |
| 7  | Ability to manage time and resources effectively and efficiently while carrying out civil engineering projects.  | 1 |
| 8  | Ability to participate in team-works for the solution of the targeted problem.   | 2 |
| 9  | Ability to write technical reports and/or to carry out presentations on the studied engineering project the modern techniques and facilities..   | 3 |
| 10   | Ability to carry out and finalize a civil engineering study/project by showing professional ethics.  | 1 |
| CL:Contribution Level(1:VeryLow, 2: Low, 3:Moderate,4:High,5:VeryHigh) |  |   |

| Course Contents |         |  |       |
|-----------------|---------|--|-------|
| Week            | Chapter |  | Exams |

|     |  |                       |  |
|-----|--|-----------------------|--|
| 91. |  | Gypsum                |  |
| 92. |  | Lime                  |  |
| 93. |  | Portland Cement Types |  |
| 94. |  | Other Cements Types   |  |
| 95. |  | Properties of Cements |  |
| 96. |  | Aggregates            |  |

|      |  |                                  |                      |
|------|--|----------------------------------|----------------------|
| 97.  |  | Aggregates                       |                      |
| 98.  |  |                                  | Mid-term Examination |
| 99.  |  | Admixtures                       |                      |
| 100. |  | Concrete Manufacture             |                      |
| 101. |  | Fresh Concrete                   |                      |
| 102. |  | Hardened Concrete                |                      |
| 103. |  | Hardened Concrete                |                      |
| 104. |  | Concrete Mix Design Calculations |                      |
| 105. |  |                                  | Final Examination    |

#### Recommended Sources

1. **Textbook:** Concrete Technology, Neville A. M., & Brooks J. J., Prentice Hall, 2008.
2. Concrete- Microstructure, Properties and Materials, Mehta P. K., Monteiro P. J. M., McGraw- Hill, 2006.
3. Materials of Construction, Turhan Y. Erdoğan, METU Press, 2002.

**Supplementary Material(s):** CE244 LECTURE NOTES-NEU.

#### Assessment

|                       |      |  |
|-----------------------|------|--|
| Kab Report            | 15   |  |
| Midterm Exam(Written) | 35   |  |
| Quiz (Written)        | -    |  |
| Final Exam(Written)   | 50   |  |
|                       |      |  |
| Total                 | 100% |  |

#### ECTS Allocated Based on the Student Workload

| Activities   | Number | Duration (hour) | Total Work load(hour) |
|--|--------|-----------------|-----------------------|
| Course duration in class (including the Exam week) | 15     | 4               | 60                    |
| Experiment   | 8      | 1               | 8                     |
| Assignments  | 6      | 4               | 24                    |
| Project/Presentation/Report Writing                | 8      | 2               | 8                     |
| E-learning Activities                              | -      | -               | -                     |
| Quizzes  | -      | -               | -                     |
| Midterm Examination                                | 1      | 2               | 2                     |

|                          |    |   |     |
|--------------------------|----|---|-----|
| FinalExamination         | 1  | 2 | 2   |
| Self-Study               | 15 | 4 | 60  |
| TotalWorkload            |    |   | 164 |
| TotalWorkload/30 (h)     |    |   | 5.5 |
| ECTS Creditof the Course |    |   | 6   |