**ESOGU AERONAUTICAL ENGINEERING DEPARTMENT**

**COURSE INFORMATION FORM**

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| **Course Name** | **Course Code** |
| TESTING AND EVALUTION OF ENGINEERING MATERIALS |  |

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| **Semester** | **Number of Course Hours per Week** | | **ECTS** |
| **Theory** | **Practice** |
| 8 | 3 | 0 | 3 |

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| **Course Category (Credit)** | | | | |
| **Basic Sciences** | **Engineering Sciences** | **Design** | **General Education** | **Social** |
|  | 3 |  |  |  |

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| **Course Language** | **Course Level** | **Course Type** |
| English | Undergraduate | Compulsory |

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| **Prerequisite(s) if any** |  |
| **Objectives of the Course** | Recognize the main engineering materials.  Know the physical, chemical, and mechanical properties of these materials.  Learn which methods are used to measure the physical, chemical, and mechanical properties of engineering materials.  Be able to interpret and compare measurement results.  Acquire the ability to use test data in material selection, design, production, and maintenance processes. |
| **Short Course Content** | Key Engineering Material Types.  Physical Properties, Measurement, and Evaluation of Engineering Materials. Chemical Properties, Measurement, and Evaluation of Engineering Materials.  Mechanical Properties, Measurement, and Evaluation of Engineering Materials.  Selection of Engineering Materials. |

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| **Learning Outcomes of the Course** | | **Contributed PO(s)** | **Teaching Methods \*** | **Measuring Methods \*\*** |
| **1** | Knows important engineering materials. | 1-11 | 1,2 | A |
| **2** | Recognizes the physical, chemical, and mechanical properties of engineering materials. | 1-11 | 1,2 | A |
| **3** | Understands how to measure these properties. | 1-11 | 1,2 | A |
| **4** | Can interpret measurement results. | 1-11 | 1,2 | A |
| **5** | Can use test data in material usage processes. | 1-11 | 1,2 | A |
| **6** |  |  |  |  |
| **7** |  |  |  |  |
| **8** |  |  |  |  |

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| **Main Textbook** | ASM Metal Handbook Vol. 8 Mechanical Testing and Evaluation |
| **Supporting References** |  |
| **Necessary Course Material** | Computer, Projector |

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| **Course Schedule** | |
| **1** | Main Engineering Materials: Metals |
| **2** | Main Engineering Materials: Ceramics |
| **3** | Main Engineering Materials: Polymers |
| **4** | Main Engineering Materials: Composites |
| **5** | Measurement and Evaluation of Physical Properties of Engineering Materials |
| **6** | Measurement and Evaluation of Physical Properties of Engineering Materials |
| **7** | Measurement and Evaluation of Chemical Properties of Engineering Materials |
| **8** | Mid-Term Exam |
| **9** | Measurement and Evaluation of Chemical Properties of Engineering Materials |
| **10** | Measurement and Evaluation of Mechanical Properties of Engineering Materials |
| **11** | Measurement and Evaluation of Mechanical Properties of Engineering Materials |
| **12** | Evaluation of Test Measurement Results in Material Selection |
| **13** | Evaluation of Test Measurement Results in Material Selection |
| **14** | Review |
| **15** | Review |
| **16,17** | Final Exam |

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| **Calculation of Course Workload** | | | |
| **Activities** | **Number** | **Time (Hour)** | **Total Workload (Hour)** |
| Course Time (number of course hours per week) | 14 | 3 | 52 |
| Classroom Studying Time (review, reinforcing, prestudy,….) | 10 | 2 | 20 |
| Homework |  |  |  |
| Quiz Exam |  |  |  |
| Studying for Quiz Exam |  |  |  |
| Oral exam |  |  |  |
| Studying for Oral Exam |  |  |  |
| Report (Preparation and presentation time included) |  |  |  |
| Project (Preparation and presentation time included) |  |  |  |
| Presentation (Preparation time included) | 10 | 1 | 10 |
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| Mid-Term Exam | 1 | 2 | 2 |
| Studying for Mid-Term Exam | 1 | 2 | 2 |
| Final Exam | 1 | 2 | 2 |
| Studying for Final Exam | 1 | 20 | 20 |
|  | **Total workload** | | **108** |
|  | **Total workload / 30** | | **3.6** |
|  | **Course ECTS Credit** | | **3** |

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| **Evaluation** | |
| **Activity Type** | **%** |
| Mid-term | 30 |
| Quiz |  |
| Homework |  |
| Bir öğe seçin. |  |
| Bir öğe seçin. |  |
| **Final Exam** | 70 |
| **Total** | 100 |

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| **RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO)** (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low) | | |
| **NO** | **PROGRAM OUTCOME** | **Contribution** |
| **1** | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | 5 |
| **2** | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | 5 |
| **3** | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. | 3 |
| **4** | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | 2 |
| **5** | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | 5 |
| **6** | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | 2 |
| **7** | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | 3 |
| **8** | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | 3 |
| **9** | Understanding of professional and ethical issues and taking responsibility | 2 |
| **10** | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. | 2 |
| **11** | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | 3 |
| **12** |  |  |

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| **LECTUTER(S)** | | | | |
| **Prepared by** | Assist. Prof. S. Fehmi DİLTEMİZ |  |  |  |
| **Signature(s)** | A blue line drawing of a person's signature  Description automatically generated |  |  |  |

**Date:**06.06.2024