**ESOGU AERONAUTICAL ENGINEERING DEPARTMENT**

**COURSE INFORMATION FORM**

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| **Course Name** | **Course Code** |
| CORROSION |  |

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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** | Understanding corrosion and oxidation damage, knowing types of corrosion, understanding measures to prevent corrosion and oxidation damage. Comprehend the relationship between corrosion and oxidation with design, production, and maintenance activities. Knowing how corrosion and oxidation damage can be remedied. Recognizing types of corrosion that can occur in aircraft systems. |
| **Short Course Content** | Definition and history of corrosion and oxidation, their fundamental principles. Types of corrosion. Methods for corrosion prevention.Relationship between corrosion and design, production, maintenance.Detection and mitigation of corrosion damage. Corrosion in aircraft systems |

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| **Learning Outcomes of the Course** | **Contributed PO(s)**  | **Teaching Methods \*** | **Measuring Methods \*\*** |
| **1** | Recognizes corrosion and oxidation damage. | 1-11 | 1,2 | A |
| **2** | Knows types of corrosion | 1-11 | 1,2 | A |
| **3** | Can take necessary measures against corrosion and oxidation damage | 1-11 | 1,2 | A |
| **4** | Understands the relationship between corrosion, oxidation, and design, production, and maintenance activities | 1-11 | 1,2 | A |
| **5** | Knows how to remedy corrosion and oxidation damage | 1-11 | 1,2 | A |
| **6** | Knows about types of corrosion that can occur in aircraft systems. | 1-11 | 1,2 | A |
| **7** |  |  |  |  |
| **8** |  |  |  |  |

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| **Main Textbook** | ASM Metal Handbook Vol 13. Corrosion |
| **Supporting References** |  |
| **Necessary Course Material** | Computer, Projector |

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| **Course Schedule** |
| **1** | Corrosion Definition, History |
| **2** | Corrosion Cell, Electrochemical Principles |
| **3** | Types of Corrosion, Uniform Corrosion, Galvanic Corrosion |
| **4** | Types of Corrosion, Pitting Corrosion, Crevice Corrosion |
| **5** | Types of Corrosion, Stress Corrosion Cracking, High-Temperature Corrosion, Oxidation |
| **6** | Methods for Corrosion Prevention, Coating, Painting |
| **7** | Methods for Corrosion Prevention, Cathodic Protection |
| **8** | Mid-Term Exam |
| **9** | Corrosion, Oxidation, and Design, Production |
| **10** | Corrosion, Oxidation, and Maintenance |
| **11** | Detection and Remediation of Corrosion Damage |
| **12** | Corrosion in Aircraft Systems |
| **13** | Corrosion in Aircraft Systems |
| **14** | Corrosion in Aircraft Systems |
| **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** | **5** |

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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