**ESOGU AERONAUTICAL ENGINEERING DEPARTMENT**

**COURSE INFORMATION FORM**

|  |  |
| --- | --- |
| **Course Name** | **Course Code** |
| GAS TURBINE ENGINE SYSTEMS |  |

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

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

|  |  |  |
| --- | --- | --- |
| **Course Language** | **Course Level** | **Course Type** |
| English | Undergraduate | Elective |

|  |  |
| --- | --- |
| **Prerequisite(s) if any** | None |
| **Objectives of the Course** | This course aims to convey to students the operating principles of gas  turbine engines and the subsystems of gas turbine engines. |
| **Short Course Content** | Subsystems of gas turbine engines |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Learning Outcomes of the Course** | | **Contributed PO(s)** | **Teaching Methods \*** | **Measuring Methods \*\*** |
| **1** | Will be able to explain gas turbine engine types and operating principles. | X | 1, 5, 10,11 | A |
| **2** | Will be able to explain starting, ignition and lubrication systems. | X | 1, 5, 10,11 | A |
| **3** | Will be able to explain fuel, air and APU systems.. | X | 1, 5, 10,11 | A |
| **4** | Will be able to identify malfunctions occurring in CMC and gas turbine engines. | X | 1, 5, 10,11 | A |

|  |  |
| --- | --- |
| **Main Textbook** | Karakoç H.K., Turgut E.T., Gaz Türbinli Motor Sistemleri, Anadolu  Üniversitesi Yayınları, ISBN 978-975-06-0534-5, 01/07/2008 |
| **Supporting References** |  |
| **Necessary Course Material** |  |

|  |  |
| --- | --- |
| **Course Schedule** | |
| **1** | Introduction to Gas Turbine Engines, Working Principles |
| **2** | Start-up systems |
| **3** | Ignition system |
| **4** | Lubricants and fuels |
| **5** | Lubrication systems |
| **6** | Engine internal air system |
| **7** | Engine internal air system |
| **8** | Mid-Term Exam |
| **9** | Fuel system |
| **10** | Fuel system |
| **11** | Engine indicator systems |
| **12** | Engine indicator systems |
| **13** | APU |
| **14** | APU |
| **15** | Review |
| **16,17** | Final Exam |

|  |  |  |  |
| --- | --- | --- | --- |
| **Calculation of Course Workload** | | | |
| **Activities** | **Number** | **Time (Hour)** | **Total Workload (Hour)** |
| Course Time (number of course hours per week) | 14 | 3 | 42 |
| Classroom Studying Time (review, reinforcing, prestudy,….) | 14 | 2 | 28 |
| Homework | 0 | 0 | 0 |
| Quiz Exam | 0 | 0 | 0 |
| Studying for Quiz Exam | 0 | 0 | 0 |
| Oral exam | 0 | 0 | 0 |
| Studying for Oral Exam | 0 | 0 | 0 |
| Report (Preparation and presentation time included) | 0 | 0 | 0 |
| Project (Preparation and presentation time included) | 0 | 0 | 0 |
| Presentation (Preparation time included) | 0 | 0 | 0 |
|  |  |  |  |
|  |  |  |  |
| Mid-Term Exam | 1 | 1 | 1 |
| Studying for Mid-Term Exam | 14 | 2 | 28 |
| Final Exam | 1 | 1 | 1 |
| Studying for Final Exam | 14 | 2 | 28 |
|  | **Total workload** | | **86** |
|  | **Total workload / 30** | | **2.86** |
|  | **Course ECTS Credit** | | **3** |

|  |  |
| --- | --- |
| **Evaluation** | |
| **Activity Type** | **%** |
| Mid-term | 40 |
| Quiz |  |
| Homework |  |
| Bir öğe seçin. |  |
| Bir öğe seçin. |  |
| **Final Exam** | 60 |
| **Total** | 100 |

|  |  |  |
| --- | --- | --- |
| **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 Aeronautical engineering; an ability to apply theoretical and practical knowledge on solving and modeling of Aeronautical engineering problems. | 4 |
| **2** | Ability to determine, define, formulate and solve complex Aeronautical engineering  problems for that purpose an ability to select and use convenient analytical and experimental methods | 4 |
| **3** | Ability to design a complex system, a component and/or an engineering process under real  life constrains or conditions, defined by environmental, economic and political problems  for that purpose, an ability to apply modern design methods | 4 |
| **4** | Ability to develop, select and use modern methods and tools required for Aeronautical engineering applications; ability to effective use of information technologies | 4 |
| **5** | In order to investigate Mechanical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | 3 |
| **6** | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | 3 |
| **7** | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language | 1 |
| **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 | 1 |
| **10** | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. | 1 |
| **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. | 1 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **LECTUTER(S)** | | | | |
| **Prepared by** |  |  |  |  |
| **Signature(s)** |  |  |  |  |

**Date:**06.06.2024