**ESOGU MECHANICAL ENGINEERING DEPARTMENT**

**COURSE INFORMATION FORM**

|  |  |
| --- | --- |
| **Course Name** | **Course Code** |
| Manufacturing Technology | 151814236 |

|  |  |  |
| --- | --- | --- |
| **Semester** | **Number of Course Hours per Week** | **ECTS** |
| **Theory** | **Practice** |
| 6 | 3 | 0 | 5 |

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

|  |  |  |
| --- | --- | --- |
| **Course Language** | **Course Level** | **Course Type** |
| Turkish | Undergraduate | Compulsory |

|  |  |
| --- | --- |
| **Prerequisite(s) if any** | -- |
| **Objectives of the Course** | The student will understand metal forming technology and will gain the ability to make choices in part production with this course. It is aimed to gain the ability to determine, develop and design methods for production.The student will learn part production and its applications with this course. He/she will gain the ability to decide how to manufacture a machine part and the methods he/she will use for this. |
| **Short Course Content** | The Manufacturing Technology course includes the basic production methods of solidification, particle processing (powder metallurgy), forming, joining-welding, and auxiliary topics. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Learning Outcomes of the Course** | **Contributed PO(s)**  | **Teaching Methods \*** | **Measuring Methods \*\*** |
| **1** | Has knowledge about the basic properties of metal forming and the basic concepts of part forming. | 1,2,6 | 1,5,8 | A |
| **2** | The ability to develop the manufacturing of a machine or machine part in the desired qualities (cost, time, workmanship...) | 1,2,6 | 1,5,8 | A |
| **3** | The ability to use current professional topics | 1,2,6 | 1 | A |
| **4** | The ability to apply knowledge of basic sciences (Mathematics, Physics, Chemistry) | 1,2,6 | 1,8 | A |
| **5** | The ability to define, formulate and solve problems in the part production and forming | 5 | 1,10 | A |
| **6** | The ability to collect and analyze data during manufacturing and design | 5 | 1,5,8 | A |
| **7** |  |  |  |  |
| **8** |  |  |  |  |

|  |  |
| --- | --- |
| **Main Textbook** | Fundamentals of Modern Manufacturing: Materials, Processes, and Systems, Mikell P Groover, WILEY |
| **Supporting References** | Manufacturing Engineering and Technology in SI Units, Global Edition,Pearson Education , Serope Kalpakjian , Steven Schmid |
| **Necessary Course Material** |  |

|  |
| --- |
| **Course Schedule** |
| **1** | Information about the course. Introduction and overview of manufacturing |
| **2** | The mechanical properties of materials and engineering materials |
| **3** | Solidification Processes - Metal Casting |
| **4** | Solidification Processes - Metal Casting |
| **5** | Solidification Processes - Glass Processing  |
| **6** | Solidification Processes - Forming of Plastics |
| **7** | Particulate Processing Methods- Powder Metallurgy |
| **8** | Mid-Term Exam |
| **9** | Plastic Forming and Sheet Metal Forming  |
| **10** | Plastic Forming and Sheet Metal Forming |
| **11** | Plastic Forming and Sheet Metal Forming |
| **12** | Surface Processing Operations and Surface Treatment Methods |
| **13** | Joining and Assembly Processes - Welding |
| **14** | Joining and Assembly Processes - Welding |
| **15** | Joining and Assembly Processes - Welding and other methods |
| **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 | 3 | 28 |
| 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) |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Mid-Term Exam | 1 | 2 | 2 |
| Studying for Mid-Term Exam | 1 | 32 | 32 |
| Final Exam | 1 | 2 | 2 |
| Studying for Final Exam | 1 | 32 | 32 |
|  | **Total workload** | **138** |
|  | **Total workload / 30** | **4.6** |
|  | **Course ECTS Credit** | **5** |

|  |
| --- |
| **Evaluation** |
| **Activity Type** | **%** |
| Mid-term | 50 |
| Quiz |  |
| Homework |  |
| Bir öğe seçin. |  |
| Bir öğe seçin. |  |
| **Final Exam** | 50 |
| **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 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. | 1 |
| **4** | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | 5 |
| **5** | In order to investigate 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. | 4 |
| **9** | Understanding of professional and ethical issues and taking responsibility  | 4 |
| **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. | 2 |

|  |
| --- |
| **LECTUTER(S)** |
| **Prepared by** | Prof.Dr. Mustafa Ulutan | Prof.Dr. Koray Kılıçay |  |  |
| **Signature(s)** |  |  |  |  |

**Date:**18.11.2024