**ESOGU MECHANICAL ENGINEERING DEPARTMENT**

**COURSE INFORMATION FORM**

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| **Course Name** | **Course Code** |
| Manufacturing Engineering | 151815331 |

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

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| **Course Category (Credit)** | | | | |
| **Basic Sciences** | **Engineering Sciences** | **Design** | **General Education** | **Social** |
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| **Course Language** | **Course Level** | **Course Type** |
| Turkish | Undergraduate | Compulsory |

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| **Prerequisite(s) if any** | -- |
| **Objectives of the Course** | Students learn about machining and machine tools. They gain the ability to use and develop the methods required for part manufacturing. |
| **Short Course Content** | Manufacturing Engineering course includes machining and auxiliary subjects. Machining, cutting tools, manufacturing methods, machinability and economics in machining are the main topics. |

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| **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** |  |  |  |  |

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| **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** |  |

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| **Course Schedule** | |
| **1** | Information about the course. Introduction and overview of manufacturing-machining |
| **2** | Machining parameters -Cutting tool materials and wear |
| **3** | Machining parameters -Cutting tool materials and wear |
| **4** | Cutting tool selection |
| **5** | Machinability |
| **6** | Turning and its principles |
| **7** | Milling and its principles |
| **8** | Mid-Term Exam |
| **9** | Manufacturing and machining methods |
| **10** | Manufacturing and machining methods |
| **11** | Manufacturing and machining methods |
| **12** | High speed machining |
| **13** | Cutting fluids and their use -Surface structure after machining |
| **14** | Machining and economy |
| **15** | Computer controlled machines (CNC) and applications |
| **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 | 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) |  |  |  |
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| 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** |

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| **Evaluation** | |
| **Activity Type** | **%** |
| Mid-term | 50 |
| Quiz |  |
| Homework |  |
| Bir öğe seçin. |  |
| Bir öğe seçin. |  |
| **Final Exam** | 50 |
| **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 modelling of  engineering problems. | 4 |
| **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 |

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

**Date:**18.11.2024