**ESOGU MECHANICAL ENGINEERING DEPARTMENT**

**COURSE INFORMATION FORM**

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| **Course Name** | **Course Code** |
| Tool and Die Design | **151817662** |

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

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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** |
| Turkish | Undergraduate | Elective |

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| **Prerequisite(s) if any** | İmalat Mühendisliği ve İmalat Teknolojileri |
| **Objectives of the Course** | To teach the design of cutting tools, sheet metal forming, extrusion, forging, and plastic mold design. |
| **Short Course Content** | The course provides detailed knowledge about the design of molds and cutting tools used in production, which are of great importance in the professional lives of engineers. |

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| **Learning Outcomes of the Course** | **Contributed PO(s)**  | **Teaching Methods \*** | **Measuring Methods \*\*** |
| **1** | Knowledge of cutting tool design | 1, 2, 3, 4, 5 | 6, 10, 12, 14 | 1 |
| **2** | Knowledge of mold design | 1, 2, 3, 4, 5 | 6, 10, 12, 14 | 2 |
| **3** | Application of cutting tool and mold design using learned knowledge | 1, 2, 3, 4, 5, 6 | 6, 10, 12, 14, 15 | 3 |
| **4** | Analysis of design needs and evaluation of proper design | 6, 7, 8, 9, 10, 11 | 6, 10, 12, 14, 15 | 4 |
| **5** |  |  |  |  |
| **6** |  |  |  |  |
| **7** |  |  |  |  |
| **8** |  |  |  |  |

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| **Main Textbook** |  Fundamentals of Tool Design, Fourth Edition, Dr. John G. Nee, 1998, SME Principles and Methods of Sheet Metal Fabricating, George Sachs, 1966, Reinhold Publishing New York Tool Design, C. Donaldson, G.H. LeCain, V.C. Goold, 1973, McGraw-Hill |
| **Supporting References** |  Pres İşleri Tekniği, A. Turan Güneş, 1981 Handbook of Die Design, Ivana Suchy, 1997, McGraw-Hill |
| **Necessary Course Material** |  |

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| **Course Schedule** |
| **1** | Role of the tool and die designer |
| **2** | Tool design materials |
| **3** | Cutting tool design |
| **4** | Holder design |
| **5** | Jig and fixture design |
| **6** | Design of press molds: Forces |
| **7** | Design of press molds: Applications |
| **8** | Mid-Term Exam |
| **9** | Design of bending and forming dies |
| **10** | Design of progressive dies and deep drawing dies |
| **11** | Design of extrusion and forging dies |
| **12** | Design of gauges |
| **13** | Cost analysis of molds |
| **14** | Design of plastic molds |
| **15** | Use of CAD in tool and die design |
| **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 | 1 | 14 |
| Homework | 1 | 10 | 10 |
| 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) | 2 | 20 | 40 |
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|  |  |  |  |
| Mid-Term Exam | 1 | 2 | 2 |
| Studying for Mid-Term Exam | 1 | 10 | 10 |
| Final Exam | 1 | 2 | 2 |
| Studying for Final Exam | 1 | 20 | 20 |
|  | **Total workload** | **140** |
|  | **Total workload / 30** | **4,7** |
|  | **Course ECTS Credit** | **5** |

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| **Evaluation** |
| **Activity Type** | **%** |
| Mid-term | 30 |
| Homework | 30 |
|   |  |
| Bir öğe seçin. |  |
| Bir öğe seçin. |  |
| **Final Exam** | 40 |
| **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** | Adequate knowledge in Mathematics, Science, and Mechanical Engineering subjects; ability to use theoretical and applied knowledge in these areas in complex engineering problems. | 5 |
| **2** | Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose. | 5 |
| **3** | Ability to design a complex system, process, device, or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose. | 5 |
| **4** | Ability to develop, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively. | 4 |
| **5** | Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems. | 2 |
| **6** | Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually. | 4 |
| **7** | Ability to communicate effectively in Turkish, both orally and in writing; knowledge of at least one foreign language. | 3 |
| **8** | Recognition of the need for lifelong learning; ability to access information, follow developments in science and technology, and constantly renew oneself. | 3 |
| **9** | Consciousness of professional and ethical responsibility. | 2 |
| **10** | Knowledge about business life practices such as project management, risk management, and change management; awareness of entrepreneurship, innovation, and sustainable development. | 5 |
| **11** | Knowledge about the effects of engineering practices on health, environment, and safety in universal and social dimensions and the legal consequences of engineering solutions. | 3 |
| **12** |  |  |

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| **LECTUTER(S)** |
| **Prepared by** | Dr. Öğr. Üyesi Gökçe Mehmet AY |  |  |  |
| **Signature(s)** |  |  |  |  |

**Date:**06.06.2024