**ESOGU MECHANICAL ENGINEERING DEPARTMENT**

**COURSE INFORMATION FORM**

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| **Course Name** | **Course Code** |
| Computer Aided Design | **151818671** |

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| **Semester** | **Number of Course Hours per Week** | **ECTS** |
| **Theory** | **Practice** |
|  | 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** | Teknik Resim 1 ve 2 |
| **Objectives of the Course** | To teach the basics of 2D and 3D design in a computer environment and parametric modeling techniques, and to teach simulation. |
| **Short Course Content** | This course provides an introduction to computer-aided design. It focuses on what can be done using a CAD program rather than how to use the program itself. The first six weeks will be spent working with Fusion 360 on 2D and 3D designs, assembly drawings, and technical drawings. The second half of the course will cover visualization (rendering), simulation, and an introduction to topology design methods. |

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| **Learning Outcomes of the Course** | **Contributed PO(s)**  | **Teaching Methods \*** | **Measuring Methods \*\*** |
| **1** | Teaching 2D and 3D part design with a computer | 1, 2, 3, 4, 5, 6, 7, 8 | 1, 6, 11, 12 | 1 |
| **2** | Teaching assembly and preparation of technical drawings of the designs made | 1, 2, 3, 4, 5, 6, 7, 8 | 1, 6, 11, 12 | 2 |
| **3** | Introduction to rendering and simulation | 1, 2, 3, 4, 5, 6, 7, 8 | 1, 6, 11, 12 | 3 |
| **4** | Introduction to advanced design techniques including topology design | 1, 2, 3, 4, 5, 6, 7, 8 | 1, 6, 11, 12 | 4 |
| **5** |  |  |  |  |
| **6** |  |  |  |  |
| **7** |  |  |  |  |
| **8** |  |  |  |  |

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| **Main Textbook** |  ÜÇ BOYUTLU KATI MODELLEME MEGEP 2018  Katıların Montajı Ve Teknik Resmini Alma MEGEP 2018  Tasarım Ve Animasyon MEGEP 2018  |
| **Supporting References** |  Autodesk Design Academy <https://academy.autodesk.com/> Tasarım ve Teknik <http://www.tasarimveteknik.com/> |
| **Necessary Course Material** |  |

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| **Course Schedule** |
| **1** | Using the Fusion 360 program, simple 2D drawing |
| **2** | Intersection curves and geometric relationships |
| **3** | Solid modeling commands |
| **4** | Solid modeling commands |
| **5** | Assembly of solids |
| **6** | Animations in assemblies |
| **7** | Taking technical drawings of solids |
| **8** | Mid-Term Exam |
| **9** | Design studies |
| **10** | Simulation: Static stress |
| **11** | Simulation: Modal frequency |
| **12** | Heat and thermal stresses |
| **13** | Design optimization |
| **14** | Generative design |
| **15** | Student project presentations |
| **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 |  |  |  |
| Studying for Mid-Term Exam | 1 | 10 | 10 |
| Final Exam | 1 | 2 | 2 |
| Studying for Final Exam | 1 | 20 | 20 |
|  | **Total workload** | **138** |
|  | **Total workload / 30** | **4,6** |
|  | **Course ECTS Credit** | **5** |

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| **Evaluation** |
| **Activity Type** | **%** |
| Mid-term | 30 |
| Homework | 30 |
| Homework |  |
| 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. | 5 |
| **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. | 2 |
| **12** |  |  |

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

**Date:**06.06.2024