**ESOGU MECHANICAL ENGINEERING DEPARTMENT**

**COURSE INFORMATION FORM**

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| **Course Name** | **Course Code** |
| Fundamentals of Computer Programming | 151814557 |

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| **Semester** | **Number of Course Hours per Week** | **ECTS** |
| **Theory** | **Practice** |
| 4 | 3 |  | 4 |

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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** |
| English | Undergraduate | Compulsory |

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| **Prerequisite(s) if any** |  |
| **Objectives of the Course** | To adapt to the Python programming language.To develop basic programming logic and techniques.To gain the ability to write, test, and debug programs.To develop the competence to use numerical techniques to solve advanced scientific and engineering problems and to transform these techniques into effective computer algorithms and programs. |
| **Short Course Content** | The course aims to provide the ability to solve engineering problems encountered during and after engineering education using computer programming techniques. |

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| **Learning Outcomes of the Course** | **Contributed PO(s)**  | **Teaching Methods \*** | **Measuring Methods \*\*** |
| **1** | Gains basic knowledge about Python. | 1, 2, 5 | 1, 2, 5, 7 | A, B, D |
| **2** | Understands basic programming logic and techniques. | 1, 3, 5, 10 | 1, 2, 5, 7 | A, B, C, D |
| **3** | Writes, compiles, and runs programs for engineering problems. | 6, 10, 11, 12, 14 | 1, 2, 5, 7 | A, D, G, I, J |
| **4** | Learns to use various data structures in Python (lists, sets, dictionaries, etc.) effectively. | 1, 4, 6, 7, 10 | 1, 2, 5, 7 | A, B, D, I, J |
| **5** |  |  |  |  |
| **6** |  |  |  |  |
| **7** |  |  |  |  |
| **8** |  |  |  |  |

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| **Main Textbook** | Think Python: How to Think Like a Computer Scientist, 2nd edition, Allen B. Downey, Green Tea Press |
| **Supporting References** | Sweigart, A. (2015). Automate the Boring Stuff with Python. No Starch Press. Available at automatetheboringstuff.com.Severance, C. (2016). Python for Everybody: Exploring Data Using Python 3. CreateSpace Independent Publishing Platform. Available at pythonlearn.com.Swaroop, C.H. (2014). A Byte of Python. Self-published. Available at swaroopch.com. |
| **Necessary Course Material** |  |

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| **Course Schedule** |
| **1** | Introduction |
| **2** | Variables and Expressions |
| **3** | Functions |
| **4** | Quiz |
| **5** | Functions |
| **6** | Conditional Statements |
| **7** | Efficient Functions |
| **8** | Mid-Term Exam |
| **9** | Loops and Iteration |
| **10** | Loops and Iteration |
| **11** | Strings |
| **12** | Lists |
| **13** | Dictionaries |
| **14** | Tuples |
| **15** | Engineering 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 | 1 | 14 |
| Homework |  |  |  |
| Quiz Exam | 2 | 0.5 | 1 |
| Studying for Quiz Exam | 2 | 5 | 10 |
| Oral exam  |  |  |  |
| Studying for Oral Exam  |  |  |  |
| Report (Preparation and presentation time included) |  |  |  |
| Project (Preparation and presentation time included) | 1 | 20 | 20 |
| Presentation (Preparation time included) |  |  |  |
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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** | **121** |
|  | **Total workload / 30** | **4** |
|  | **Course ECTS Credit** | **4** |

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| **Evaluation** |
| **Activity Type** | **%** |
| Mid-term | 30 |
| Quiz | 5 |
| Quiz | 5 |
| Project Observation | 20 |
| 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. | 2 |
| **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. | 3 |
| **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** | Doç.Dr. M. Alper SOFUOĞLU | Dr. Öğr. Üyesi Gökçe Mehmet AY |  |  |
| **Signature(s)** |  |  |  |  |

**Date:**06.06.2024