**ESOGU ELECTRICAL-ELECTRONICS ENGINEERING DEPARTMENT**
**COURSE INFORMATION FORM**

| Course Title | Course Code |
|---|---|
| OBJECT ORIENTED PROGRAMMING I | 151228619 |

| Semester in Program | Number of Course Hours per Week | | ECTS Credit |
|---|---|---|---|
| | Theory | Practice | |
| Fall | 3 | 2 | 7 |

| Course ECTS Credit Distribution | | | | |
|---|---|---|---|---|
| Basic Sciences | Engineering Sciences | Design | General Education | Social |
| 20 | 40 | 30 | 10 | 0 |

| Language of Instruction | Course Level | Course Type |
|---|---|---|
| English | Undergraduate | Elective |

| Prerequisite | NONE |
|---|---|
| **Objectives of the Course** | In this course, students will be familiar with object-oriented programming techniques which are used to develop high-quality and large-scale software. They will also learn to model real-world problems. Then, they will learn to choose appropriate tools to implement software which is proposed a solution to these problems. |
| **Brief Course Content** | Basic Concepts, Classes and Objects, Encapsulation, Operator Overloading, Inheritance, Polymorphism, Standard Template Library. |

| | Learning Outcomes of the Course | Contributed POs | Teaching Methods * | Assessment Methods ** |
|---|---|---|---|---|
| 1 | Students will learn basic concepts about the object-oriented programming. | 2, 3, 4, 5a, 6b | 1,3,5,11,14,15 | A,D,E,G,I,J |
| 2 | Students will learn how to design software by using object-oriented concepts such as class and object. | 2, 3, 4, 5a, 6b | 1,3,5,11,14,15 | A,D,E,G,I,J |
| 3 | Students will learn and use encapsulation concept. | 2, 3, 4, 5a, 6b | 1,3,5,11,14,15 | A,D,E,G,I,J |
| 4 | Students will learn why operator overloading is an important concept and how it is implemented. | 2, 3, 4, 5a, 6b | 1,3,5,11,14,15 | A,D,E,G,I,J |
| 5 | Students will learn and use inheritance and polymorphism concepts. | 2, 3, 4, 5a, 6b | 1,3,5,11,14,15 | A,D,E,G,I,J |
| 6 | Students will learn how to be used Standard Template Library (STL). | 2, 3, 4, 5a, 6b | 1,3,5,11,14,15 | A,D,E,G,I,J |
| 7 | | | | |
| 8 | | | | |

*Teaching Methods 1:Lecture, 2:Discussion, 3:Experiment, 4:Simulation, 5:Question-Answer, 6:Tutorial, 7:Observation, 8:Case Study, 9:Technical Visit, 10:Problem Solving, 11:Induvidual Work, 12:Team/Group Work, 13:Brain Storm, 14:Project Design / Management, 15:Report Preparation and/or Presentation
**Assessment Methods A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

| Main Textbook | Paul Deitel and Harley Deitel, C++ How to Program, 5th Edition, Pearson Education. |
|---|---|
| Supplementary Resources | Bruce Eckel, Thinking In C++ Vol.1 and Vol.2, Second Edition, Prentice-Hall, 2000. Web sites and other sources. |
| Necessary Course Material | NONE |

| Course Weekly Schedule | |
|---|---|
| 1 | Introduction to C++ programming |
| 2 | Introduction to classes and objects |

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|---|---|
| **3** | Basic Concepts (References and Reference Parameters, Unary Scope Resolution Operator, Function Overloading and so on) |
| **4** | Classes and Objects 1: Encapsulation, public, private data members and member functions |
| **5** | Classes and Objects 2: Constructors, Destructors, Composition |
| **6** | Classes and Objects 3: static members, this pointer, friend functions and classes |
| **7** | Operator Overloading 1 |
| **8** | Mid-Term Exams |
| **9** | Operator Overloading 2: Dynamic Memory Allocation |
| **10** | Standard Template Library (STL) (vector, linked-list, map, stack, queue) |
| **11** | Standard Template Library (STL) (Algorithms) |
| **12** | Inheritance 1 |
| **13** | Inheritance 2 |
| **14** | Polymorphism 1 |
| **15** | Polymorphism 2 |
| **16,17** | Final Exams |

| Calculation of Course Workload | | | |
|---|---|---|---|
| **Activities** | **Count** | **Time (Hour)** | **Total Workload (Hour)** |
| Weekly classroom time | 14 | 3 | 42 |
| Weekly study time (review, reinforcing, preparation) | 14 | 2 | 28 |
| Working Questions | 5 | 3 | 15 |
| Lab Experiments | 11 | 2 | 22 |
| Studying for experiments | 11 | 2 | 22 |
| Lab Project (Preparation and presentation time included) | 1 | 20 | 20 |
| Project (Preparation and presentation time included) | 1 | 20 | 20 |
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| Mid-Term Exam | 1 | 2 | 2 |
| Studying for Mid-Term Exam | 1 | 20 | 20 |
| Final Exam | 1 | 2 | 2 |
| Studying for Final Exam | 1 | 20 | 20 |
| | **Total workload** | | **213** |
| | **Total workload / 30** | | **7.1** |
| | **Course ECTS Credit** | | **7** |

| Assessment | |
|---|---|
| **Activity Type** | **%** |
| Mid-term | 25 |
| Experimental Skill | 15 |
| Project Observation | 20 |
| Bir öğe seçin. | |
| Bir öğe seçin. | |

| Final Exam | 40 |
|---|---|
| **Total** | 100 |

<table>
<tr><td colspan="3" align="center"><b>COURSE CONTRIBUTION TO THE PROGRAM OUTCOMES</b><br>(5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)</td></tr>
<tr><td align="center"><b>NO</b></td><td align="center"><b>PROGRAM OUTCOMES</b></td><td align="center"><b>Contribution</b></td></tr>
<tr><td rowspan="4"><b>1</b></td><td>a.   Sufficient knowledge of mathematics</td><td></td></tr>
<tr><td>b.   Sufficient knowledge of basic sciences</td><td></td></tr>
<tr><td>c.   Sufficient basic engineering and Electrical-Electronics engineering knowledge</td><td></td></tr>
<tr><td>d.   Skill of applying all these knowledge and experience to complicated Electrical-Electronics engineering problems</td><td></td></tr>
<tr><td><b>2</b></td><td>Skill of defining, identifying, formulating and solving the complicated problems in Electrical-Electronics engineering and related areas by applying appropriate analysis and modelling methods.</td><td>3</td></tr>
<tr><td><b>3</b></td><td>Skill of designing a complicated process, system, equipment or product by applying modern design methods under realistic constraints and conditions.</td><td>4</td></tr>
<tr><td rowspan="2"><b>4</b></td><td>To analyze and solve the complicated engineering problems:<br>a.   skill of developing, selecting and applying the required techniques and devices</td><td>5</td></tr>
<tr><td>b.   skill of using information technologies effectively</td><td>5</td></tr>
<tr><td rowspan="2"><b>5</b></td><td>To study the complicated on the complicated Electrical-Electronics engineering problems and research subjects:<br>a.   skill of experimental design</td><td></td></tr>
<tr><td>b.   skill of performing the experiments, collecting the data and analyzing and interpreting the results</td><td>5</td></tr>
<tr><td rowspan="2"><b>6</b></td><td>a.   Skill of performing individual studies</td><td>2</td></tr>
<tr><td>b.   Skill of performing intra and interdisciplinary and multidisciplinary teamwork and studies</td><td></td></tr>
<tr><td rowspan="4"><b>7</b></td><td>a.   Skill of effective oral and written communication in Turkish and English</td><td></td></tr>
<tr><td>b.   Skill of improving and using foreign language knowledge</td><td></td></tr>
<tr><td>c.   Skill of effective reporting, understanding the reports and preparing the design and production reports</td><td></td></tr>
<tr><td>d.   Skill of effective presentation and giving and getting clear and understandable instructions.</td><td></td></tr>
<tr><td><b>8</b></td><td>Awareness of the necessity of life-long learning and skill of accessing to information and following the improvements in contemporary science and technology</td><td></td></tr>
<tr><td rowspan="2"><b>9</b></td><td>a.   Awareness of necessity of behaving in accordance with the ethical principles and awareness of the importance of having professional ethical responsibilities</td><td></td></tr>
<tr><td>b.   Knowledge about legal regulations and standards of engineering</td><td></td></tr>
<tr><td rowspan="3"><b>10</b></td><td>a.   Knowledge about project management, risk management and change management</td><td></td></tr>
<tr><td>b.   Awareness of the significance of entrepreneurship and innovation</td><td></td></tr>
<tr><td>c.   Knowledge about sustainable development</td><td></td></tr>
<tr><td><b>11</b></td><td>Knowledge about the effects of engineering applications and practices on the global and social health, ecology and safety, knowledge about the current problems in relation to the working areas of Electrical-Electronics engineering; and awareness of the legal issues resulting from engineering solutions</td><td></td></tr>
<tr><td><b>12</b></td><td>Knowledge about modern problems in local and universal scale</td><td></td></tr>
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| INSTRUCTORS | | | | |
|---|---|---|---|---|
| **Prepared by** | Dr. Burak KALECİ | | | |

**Date:**06.07.2024