IZMIR UNIVERSITY OF ECONOMICS COURSE OUTLINE FORM

1. GENERAL INFORMATION

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| **Course Name** | | <Coursename> | | | | |
|  | | | | | | |
| **Code** | **Fall** | **Spring** | **Theory**  *(hour/week)* | **Application/Lab**  *(hour/week)* | **Local Credits** | **ECTS** |
| CE216 |  | X | <Theory> | <Application> | <Local> | 6 |

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| **Prerequisites** |  | | | | | | | |
| **Course Language** | ☒ | English | ☐ | Turkish | ☐ | Second Foreign Language | | |
| **Course Type** | ☒ | Required | ☐ | Elective |  |  |  |  |
| **Course Level** | ☐ | Short Cycle | ☒ | First Cycle | ☐ | Second Cycle | ☐ | Third Cycle |

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| **Course Coordinator** | Asst. Prof. Dr. Kaya Oğuz |
| **Course Lecturer(s)** | Asst. Prof. Dr. Kaya Oğuz |
| **Assistant(s)** | - |
|  | |
| **Course Objectives** | This course introduces practicalities of programming to students to improve their practical skills. Students will be exposed to commonly used libraries, methodologies, tools, and APIs by experiencing them first in theory, then in practical laboratory sessions. |
| **Learning Outcomes** | The students who succeed in this course will be able to,   * Implement advanced programs that accomplish the intended task, * Identify fundamental design patterns, * Use threads to apply concurrent execution, * Examine the program to locate and remove bugs, * Use test driven development to create robust programs, * Design an experiment to improve the performance of a program, * Operate as part of a team to develop a project. |
| **Course Description** | The course covers programming topics such as; File I/O, object oriented design, JavaFX, design patterns, concurrency, debugging, testing, and profiling. |

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| **Course Category** | X | Core Course |
|  | Major Area Course |
|  | Supportive Course |
|  | Communication and Management Skills Course |
|  | Transferable Skill Course |

2. WEEKLY SUBJECTS AND REQUIRED MATERIALS

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| **Week** | **Subjects** | **Required Materials** |
| **1** | Programming Style and Conventions | Practice of Programming, Chapter 1. |
| **2** | Build Automation and Software Deployment | Apache Maven Online Documentation, <http://maven.apache.org/guides/index.html> |
| **3** | Graphical User Interfaces: JavaFX | Java How to Program, Chapter 25; Java In Two Semesters, Chapter 10. |
| **4** | Working with files | Java How to Program, Chapter 15; Java in Two Semesters, Chapter 18 |
| **5** | Using data structures | Practice of Programming, Chapters 2 & 3. |
| **6** | Creational Design Patterns | Design Patterns, Chapter 1 and 3 |
| **7** | Structural Design Patterns | Design Patterns, Chapter 4 |
| **8** | Behavioral Design Patterns | Design Patterns, Chapter 5 |
| **9** | MIDTERM |  |
| **10** | Concurrency | Java How to Program, Chapter 23; Java In Two Semesters, Chapter 20. |
| **11** | Debugging and Testing | Java How to Program, Appendix E, Online JUnit Documentation - https://junit.org/junit5/docs/current/user- guide/ |
| **12** | Performance Tuning | Programming Pearls, Chapter 9. |
| **13** | Case Studies |  |
| **14** | Project Presentations |  |
| **15** | Semester Review |  |

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| **16** | Final Exam |  |

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| **Course Notes/Textbooks** | Java How to Program, 10/e (Early Objects), Global Edition, Paul Deitel and Harvey Deitel. Pearson, ISBN: 9781292018195 |
| **Suggested Readings/Materials** | Java in Two Semesters, Fourth Edition, Quentin Charatan and Aaron Kans. Springer, 2019. ISBN: 9783319994192.  The Practice of Programming, Brian W. Kernighan and Rob Pike. Addison-Wesley, 1999. ISBN: 9780201615869.  Programming Pearls, Jon Bentley. Addison-Wesley, 2000. ISBN: 9788177588583.  Design Patterns: Elements of Reusable Object-Oriented Software, Erich Gamma and Richard Helm and Ralph Johnson and John Vlissides. Addison-Wesley, 1995. ISBN: 9780201633610 |

3. ASSESSMENT

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Semester Activities** | **Number** | **Weigthing** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** | **LO7** |
| Participation |  |  |  |  |  |  |  |  |  |
| Laboratory/Application | 1 | 30 | 1 | 1 | 1 | 1 | 1 | 1 |  |
| Field Work |  |  |  |  |  |  |  |  |  |
| Quiz/Studio Critique |  |  |  |  |  |  |  |  |  |
| Homework/Assignment |  |  |  |  |  |  |  |  |  |
| Presentation/Jury |  |  |  |  |  |  |  |  |  |
| Project | 1 | 40 | 1 | 1 | 1 | 1 |  |  | 1 |
| Seminar/Workshop |  |  |  |  |  |  |  |  |  |
| Oral Exam |  |  |  |  |  |  |  |  |  |
| Midterm | 1 | 30 | 1 | 1 |  |  |  |  |  |
| Final Exam |  |  |  |  |  |  |  |  |  |
| **Total** | **3** | **100** | **3** | **3** | **2** | **2** | **1** | **1** | **1** |
|  | | |  |  |  |  |  |  |  |
| Weighting of Semester Activities on the Final Grade | | | | | | 3 | | 100 | |
| Weighting of End-of-Semester Activities on the Final Grade | | | | | |  | |  | |

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| --- | --- | --- |
| **Total** | **3** | **100** |

4. ECTS / WORKLOAD TABLE

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| **Semester Activities** | **Number** | **Duration (Hours)** | **Workload** |
| Course Hours  *(Including exam week: 16 x total hours)* | 16 | 2 | 32 |
| Laboratory/Application Hours  *(Including exam week: 16 x total hours)* | 16 | 2 | 32 |
| Study Hours out of Class | 14 | 2 | 28 |
| Field Work |  |  |  |
| Quiz/Studio Critique |  |  |  |
| Homework/Assignments |  |  |  |
| Presentation/Jury |  |  |  |
| Project | 1 |  | 64 |
| Seminar/Workshop |  |  |  |
| Oral Exam |  |  |  |
| Midterm | 1 |  | 24 |
| Final Examı |  |  |  |
| **Total** | | | 180 |

5. COURSE/PROGRAM OUTCOME MATRIX

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **#** | **Program Competencies/Outcomes** | **Contribution Level** | | | | | |
| **1** | **2** | **3** | **4** | **5** | **LO#** |
| **1** | To have adequate knowledge in Mathematics, Science and Computer Engineering; to be able to use theoretical and applied information in these areas on complex engineering problems. | X |  |  |  |  | 1,2 |
| **2** | To be able to identify, define, formulate, and solve complex Computer Engineering problems; to be able to select and apply proper analysis and modeling methods for this purpose. |  |  | X |  |  | 1,4,5  ,6 |

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| **3** | To be able to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the requirements; to be able to apply modern design methods for this purpose. |  |  | X |  |  | 2,7 |
| **4** | To be able to devise, select, and use modern techniques and tools needed for analysis and solution of complex problems in Computer Engineering applications; to be able to use information technologies effectively. |  |  |  |  | X | 2,3,4  ,7 |
| **5** | To be able to design and conduct experiments, gather data, analyze, and interpret results for investigating complex engineering problems or Computer Engineering research topics. | X |  |  |  |  | 6 |
| **6** | To be able to work efficiently in Computer Engineering disciplinary and multi-disciplinary teams; to be able to work individually. |  | X |  |  |  | 7 |
| **7** | To be able to communicate effectively in Turkish, both orally and in writing; to be able to author and comprehend written reports, to be able to prepare design and implementation reports, to present effectively, to be able to give and receive clear and comprehensible instructions. |  |  |  |  |  |  |
| **8** | To have knowledge about global and social impact of Computer Engineering practices on health, environment, and safety; to have knowledge about contemporary issues as they pertain to engineering; to be aware of the legal ramifications of Computer Engineering solutions. |  |  |  |  |  |  |
| **9** | To be aware of ethical behavior, professional and ethical responsibility; to have knowledge about standards utilized in engineering applications. |  |  |  |  |  |  |
| **10** | To have knowledge about industrial practices such as project management, risk management, and change management; to have awareness of entrepreneurship and innovation; to have knowledge about sustainable development. |  |  |  |  |  |  |
| **11** | To be able to collect data in the area of Computer Engineering, and to be able to communicate with colleagues in a foreign language. ("European Language Portfolio Global Scale", Level B1) |  |  |  |  |  |  |
| **12** | To be able to speak a second foreign language at a medium level of fluency efficiently. |  |  |  |  |  |  |
| **13** | To recognize the need for lifelong learning; to be able to access information, to be able to stay current with developments in science and technology; to be able to relate the knowledge accumulated throughout the human history to Computer Engineering. |  |  |  |  |  |  |