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|  |  |  **ECTS Course Description Form** |
|  | **PART I (Senate Approval)** |
|  | **Offering School**  |  **Engineering** |
|  | **Offering Department** |  **Computer Engineering** |
|  | **Program(s) Offered to** | **Computer Engineering** |  |
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|  | **Course Code**  | **CS201** |
|  | **Course Name** | **Object Oriented Software Development (Java)** |
|  | **Language of Instruction** | **English** |
|  | **Type of Course** | **Compulsory – Lectures** |
|  | **Level of Course** | **Undergraduate** |
|  | **Hours per Week** | **Lecture:** **3** | **Laboratory: 2** | **Recitation:**  | **Practical:**  | **Studio:** | **Other:** |
|  | **ECTS Credit** | **6** |
|  | **Grading Mode** | **Letter Grade** |
|  | **Pre-requisites** |  |
|  | **Co-requisites** |  |
|  | **Registration Restriction** |  |
|  | **Educational Objective** | **The main objective of this course is to introduce students to programming in an object-oriented language. The students will gain an understanding of how to solve problems using software.** |
|  | **Course Description** | **This course provides the advanced concepts of Object-Oriented Programming with Java. List of topics to be covered include but not limited to polymorphism (via inheritance and via interfaces), use of abstract classes, graphical user interfaces, exception handling, introduction to Unified Modelling Language (UML) use-case and class diagrams.** |
|  | **Learning Outcomes**  | **LO1: Explain the concepts of class, object, method, attribute. Write classes, create objects, invoke method (both static and non-static)** |  |
|  | **LO2: Explain what inheritance is, subclass, superclass, relationship between inheritance and reusability, differences between method overloading and overriding.** |
|  | **LO3: Explain what polymorphism is, what are usages of polymorphism, what are ways to implement polymorphism. Explain differences between abstract class and interface.** |
|  | **LO4: Explain what an exception is, what are the types of exceptions, when it’s thrown, how it’s caught, differences between exceptions and errors.** |
|  | **LO5: Write programs with graphical user interfaces; explain GUI components and layout managers.** |
|  | **LO6: Explain what is UML, why do we need UML? Which UML diagram is used in what stage of software development (analysis, design, implementation, maintenance) Explain what is a use-case diagram, class diagram, sequence diagram and activity diagram.** |
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|  | **PART II ( Faculty Board Approval)** |
|  | **Basic Outcomes (University-wide)** | **PO1** | **Program Outcomes** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** |
|  | **PO1** | **Ability** to communicate effectively and write and present a report in Turkish and English.  |  1 0 0 0 0 0  0 0 0 0 0 0  0 0 0 0 0 0  0 0 0 0 0 0  0 0 0 0 0 0  0 0 0 0 0 0  3 1 1 1 1 1  1 1 0 0 1 2  0 0 1 1 0 0  0 0 0 0 0 0  2 1 3 1 0 1  2 1 1 0 1 1  1 0 0 0 1 0  |
|  | **PO2** | **Ability** to work individually, and in intra-disciplinary and multi-disciplinary teams. |
|  | **PO3** | **Recognition** of the need for life-long learning and **ability** to access information, follow developments in science and technology, and continually reinvent oneself. |
|  | **PO4** | **Knowledge** of project management, risk management, innovation and change management, entrepreneurship, and sustainable development. |
|  | **PO5** | **Awareness** of sectors and **ability** to prepare a business plan. |
|  | **PO6** | **Understanding** of professional and ethical responsibility and **demonstrating** ethical behaviour. |
|  | **Faculty/ Program Specific Outcomes** | **PO7** | **Ability** to define complex engineeringproblems, develop models andimplement solutions for theseproblems |
|  | **PO8** | **Ability** to conduct lab experiments by usingcomputers and the ability of collecting, analysing and interpreting data.  |
|  | **PO9** | **Ability** to apply the knowledge ofmathematics, science and engineeringprinciples to solve problems in computerengineering. |
|  | **PO10** | An **understanding** of current contemporaryissues and impact of engineering solutionsin legal and ethical levels |
|  | **PO11** | **Ability** to understand and apply discretemathematics concepts. |
|  | **PO12** | **Ability** to use modern engineeringtechniques, tools and informationtechnologies and develop softwareequipment and software. |
|  | **PO13** | **Ability** to analyse, design and manage thehardware/software computer systemrequirements with limited resources andconditions by modern engineeringprinciples. |
| **PART III ( Department Board Approval)** |
| **Course Subjects, Contribution of Course Subjects to Learning Outcomes, and Methods for Assessing Learning of Course Subjects** | **Subject** | **Week** |  | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** |
| **S1** | 1 | Introduction, JDK, JRE, Integrated Development Environments | A/1/2/3/4 |  |  |  |  |  |
| **S2** | 2 | Review: Control Structures, Arrays | A/1/2/3/4 |  |  |  |  |  |
| **S3** | 3 | Introduction to Object-Oriented Programming, Concept of class and objects | A/1/2/3/4 | A/1/2/3/4 |  |  |  |  |
| **S4** | 4 | Writing classes, methods, attributes, creating objects. | A/1/2/3/4 |  |  |  |  |  |
| **S5** | 5 | Inheritance, sub-class, super-class | A/1/2/3/4 | A/1/2/3/4 |  |  |  |  |
| **S6** | 6 | Abstract classes, polymorphism |  | A/1/2/3/4 | A/1/2/3/4 |  |  |  |
| **S7** | 7 | Interfaces, polymorphism via interface |  |  | A/1/2/3/4 |  |  |  |
| **S8** | 8 | Exception Handling |  |  |  | A/1/2/3/4 |  |  |
| **S9** | 9 | Graphical User Interfaces, Swing Components, JButton, JTextArea, JLabel, JList, JTable |  |  |  |  | A/1/2/3/4 |  |
| **S10** | 10 | Layout Managers |  |  |  |  | A/1/2/3/4 |  |
| **S11** | 11 | UML, Use-case diagrams, Class Diagrams, Sequence Diagrams, Activity Diagrams | A/1/2/3/4 | A/1/2/3/4 | A/1/2/3/4 |  |  | A/1/2/3/4 |
| **Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules**  |  | **Type** | **Weight** | **Implementation Rule** | **Make-Up Rule** |
| **A1** | **Exam** | **45** | **There is a midterm exam with a weight of 20 and a final exam with a weight of 25 for the course. Exam dates will be shown on the tentative schedule and it can be changed according to the course schedule.** | **If a student misses an exam and provides an acceptable legitimate document, a make-up exam will be provided.** |
| **A2** | **Quiz** | **5** | **There are between 4 and 8 unannounced quizzes given in class. The cumulative weight of the quizzes together is 10.** | **If a student misses an exam and provides an acceptable legitimate document, a make-up quiz will be provided.** |
| **A3** | **Homework** | **20** | **There are approximately 4 assignments with a weight of 5 for each. Each student should prepare the assignment individually and submissions are done electronically.** | **There will be no make-up for the homework.** |
| **A4** | **Project** | **30** | **A group project including a final presentation.** | **There will be no make-up for the group presentation.** |
| **A5** | **Report** |  |  |  |
| **A6** | **Presentation** |  |  |  |
| **A7** | **Attendance/ Interaction** |  |  |  |
| **A8** | **Class/Lab./****Field Work** |  |  |  |
| **A9** | **Other** |  |  |  |
| **TOTAL** | **100%** |
| **Evidence of Achievement of Learning Outcomes** | **Students will demonstrate learning outcomes through midterm exam, homework assignments, and the final exam. Every topic is tested with at least one exam or homework question. In order to pass, a student needs to accumulate certain percentage of points and this percentage is determined by the class mean.** |
| **Method for Determining Letter Grade** | **The method on which the letter grade is based on will be announced at the beginning of the semester. All items given the weights above will be used to determine the student’s overall score out of 100 possible points. Each student’s score will be calculated to give the class mean a value of 75 points. Then the following table will be used to determine overall letter grade.**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Total points | 97 – 100 | 93 – 96.99 | 90 – 92.99 | 87 – 89.99 | 83 – 86.99 | 80 – 82.99 | 77 – 79.99 | 73 – 76.99 | 70 – 72.99 | 67 – 69.99 | 60 – 66.99 | < 60 |
| Letter Grade | A+ | A | A- | B+ | B | B- | C+ | C | C- | D+ | D | F |

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| **Teaching Methods, Student Work Load** |  | **Method** | **Explanation** | **Hours** |
| ***Time applied by instructor*** |
| **1** | **Lecture** | Lecturing utilizing slides and white board. Sample questions and answers to strengthen learning. In class quizzes. | 3 X 14 = 42 |
| **2** | **Interactive Lecture** |  |  |
| **3** | **Recitation** |  |  |
| **4** | **Laboratory** |  |  |
| **5** | **Practical** |  |  |
| **6** | **Field Work** |  |  |
| ***Time expected to be allocated by student*** |
| **7** | **Project** | Preliminary readings, coding, testing, presentation | 24 |
| **8** | **Homework** | Answers of given questions are prepared at home | 4 X 7 = 28 |
| **9** | **Pre-class Learning of Course Material**  | New subjects are learned by watching videos or reading course notes before class. | 3 X 14 = 42 |
| **10** | **Review of Course Material** | Review of the subjects before exams in order to prepare. | 8 X 2 = 16 |
| **11** | **Studio** |  |  |
| **12** | **Office Hour** | Two office hours per week are allocated for students’ questions | 2 X 14 = 28 |
| **TOTAL** | 180 |
| **IV. PART** |
| **Instructor** | **Name** | Cafer Çalışkan |
| **E-mail** | cafer.caliskan@antalya.edu.tr |
| **Phone Number** | +90 242 245 00 00 |
| **Office Number** | A1-70 |
| **Office Hours** | TBA |
| **Course Materials** | **Mandatory** | Java: How to Program, 8th Edition, by Harvey M. Deitel, Paul J. DeitelA Java IDE |
| **Recommended** | For the Java IDE, the student may choose any they find usable. The suggested options are Eclipse (https://www.eclipse.org/downloads/), IntelliJ (http://www.jetbrains.com/idea/download/), and jGrasp (http://jgrasp.org/) |
| **Other** | **Scholastic Honesty** | Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Any for of scholastic dishonesty is a serious academic violation and will result in a disciplinary action. |
| **Students with Disabilities** | Reasonable accommodations will be made for students with verifiable disabilities. |
| **Safety Issues**  |  |
| **Flexibility** | Circumstances may arise during the course that prevents the instructor from fulfilling each and every component of this syllabus; therefore, the syllabus is subject to change. Students will be notified prior to any changes. |