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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**  | **CS306** |  |
|  | **Course Name** | **Software Engineering** |  |
|  | **Language of Instruction** | **English** |  |
|  | **Type of Course** | **Compulsory – Lectures** |  |
|  | **Level of Course** | **Undergraduate** |  |
|  | **Hours per Week** | **Lecture: 3** | **Laboratory:**  | **Recitation:**  | **Practical:**  | **Studio:** | **Other:** |
|  | **ECTS Credit** | **6** |  |
|  | **Grading Mode** | **Letter Grade** |  |
|  | **Pre-requisites** | **CS102** |  |
|  | **Co-requisites** |  |  |
|  | **Registration Restriction** |  |  |
|  | **Educational Objective** | **The main objective of this course is to introduce students to the nature of developing processes to increase the reliability and correctness of software developed.** |  |
|  | **Course Description** | **This course introduces the basics of developing professional software systems including requirement specification, design plans and methods, verification and testing. Topics include software design process models, software verification, debugging, quality assurance, prediction of software reliability.** |  |
|  | **Learning Outcomes**  | **LO1: Understand basics the software development process** |  |  |
|  | **LO2: Create a set of UML diagrams to describe a software system** |  |
|  | **LO3: Use a variety of techniques to develop a set of requirements** |  |
|  | **LO4: Use history and analysis to estimate the size and time for the completion of a software project** |  |
|  | **LO5: Understand basics of software quality including validation and verification** |  |
|  | **LO6: Develop a set of test cases to adequately test a software system** |  |
|  |  |
|  | **PART II ( Faculty Board Approval)** |  |
|  | **Basic Outcomes (University-wide)** |  | **Program Outcomes** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** |
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|  | **PO1** | **Ability** to communicate effectively and write and present a report in Turkish and English.  |  |
|  | **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. |  |
|  | **Faculty/ Program Specific Outcomes** | **PO6** | **Understanding** of professional and ethical responsibility and **demonstrating** ethical behaviour. |  |
|  | **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 to Software Engineering | A1/2/3 |  |  |  |  |  |
| **S2** | 2 – 3 | Modelling with UML |  | A1/2/3 |  |  |  |  |
| **S3** | 4 | Project Organization and Communication | A1/2/3 |  | A1/2/3 | A1/2/3 |  |  |
| **S4** | 5 | Requirements |  |  | A1/2/3 | A1/2/3 |  |  |
| **S5** | 6 | Analysis |  |  | A1/2/3 | A1/2/3 |  |  |
| **S6** | 7 | Size Estimation |  |  |  | A1/2/3 |  |  |
| **S7** | 8 | System Design |  | A1/2/3 |  |  |  |  |
| **S8** | 9 | Object Design and Mapping Models to Code |  | A1/2/3 |  |  |  |  |
| **S9** | 10 | Testing and Test-driven development |  |  |  |  | A1/2/3 | A1/2/3 |
| **S10** | 11 | Software Quality Assurance | A1/2/3 |  |  |  | A1/2/3 | A1/2/3 |
|  |  |  |  |  |  |  |  |  |
| **Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules**  |  | **Type** | **Weight** | **Implementation Rule** | **Make-Up Rule** |
| **A1** | **Exam** | **75** | **There are two midterm exams and a final exam each 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 2 and 4 announced quizzes given in class. The cumulative weight of the quizzes together is 5.** | **If a student misses a quiz and provides an acceptable legitimate document, a make-up quiz will be provided.** |
| **A3** | **Homework** | **20** | **There are approximately 5 assignments with a weight of 4 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** |  |  |  |
| **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.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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** |  |  |
| **8** | **Homework** | Answers of given questions are prepared at home | 5 X 10 = 50 |
| **9** | **Pre-class Learning of Course Material**  | New subjects are learned by watching videos or reading course notes before class. | 2 X 14 = 28 |
| **10** | **Review of Course Material** | Review of the subjects before exams in order to prepare. | 8 X 3 = 24 |
| **11** | **Studio** |  |  |
| **12** | **Office Hour** | Two office hours per week are allocated for students’ questions | 2 X 14 = 28 |
| **TOTAL** | 172 |
| **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** | I. Sommerville, Software Engineering, 10th Edition. Pearson, 2016. ISBN-13: 9780133943030A programming IDE or compiler with which to complete programming assignments |
| **Recommended** | B. Bruegge and A. H. Dutoit, Object-Oriented Software Engineering Using UML, Patterns, and Java, 3rd Edition. Pearson, 2010. ISBN-13: 9780136061250 |
| **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. |