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|  | **ECTS Course Description Form** |
| **PART I ( Senate Approval)** |
| **Offering School**  | **Engineering** |
| **Offering Department** | **Computer Engineering** |
| **Program(s) Offered to** | **Electrical and Electronics Engineering** | **Compulsory** |
| **Mechanical Engineering** | **Compulsory** |
| **Industrial Engineering** |  |
| **Course Code**  | CS104 |
| **Course Name** | **Introduction to Programming II (Python)** |
| **Language of Instruction** | English |
| **Type of Course** | Lecture  |
| **Level of Course** | Undergrad |
| **Hours per Week** | **Lecture: 3** | **Laboratory: 2** | **Recitation:**  | **Practical:**  | **Studio:** | **Other:** |
| **ECTS Credit** | **4** |
| **Grading Mode** | Letter grade |
| **Pre-requisites** | CS101 |
| **Co-requisites** |  |
| **Registration Restriction** | - |
| **Educational Objective** | **The main objective of this course is to introduce students to write object oriented program in Python. The students will gain an understanding of how to solve problems using software**. |
| **Course description** | **This is an introductory course to the Object Orıented Programmıng Python. Basic programming background is required. The course spans the concepts of classes and objects, writing classes, object oriented thinking, introduction to inheritance, graphical user interface design and basic graphics in Python.** |
| **Learning Outcomes** | **LO1** | *Develop Classes and instantiate Objects* |
| **LO2** | *Have a basic understanding of the differences between traditional programming and the object oriented approach.* |
| **LO3** | *Use different decision structure and objects in a computer program* |
| **LO4** | *Design graphical user interface involving labels, menu, check box* |
| **LO5** | *Create and manipulate graphical user interface* |
| **LO6** | *Design simple graphical mind games* |
| **PART II ( Faculty Board Approval)** |
| **Basic Outcomes (University-wide)** | **No.** | **Program Outcomes** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** |
| **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. | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO6** | **Understanding** of professional and ethical responsibility and **demonstrating** ethical behavior. | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **Faculty Specific Outcomes** | **PO7** | **Ability to develop, select and use modern techniques and tools necessary for engineering applications and ability to use information technologies effectively.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO8** | **Recognition of the effects of engineering applications on health, environment and safety in the universal and societal dimensions and the problems of the time and awareness of the legal consequences of engineering solutions.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO9** | **Ability to identify, define, formulate and solve complex engineering problems; and electing and applying appropriate analysis and modelling methods for this purpose.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **Discipline Specific Outcomes (program)** | **PO10** | **Gains comprehensive knowledge in mathematics, natural sciences, related engineering fields and general engineering subjects.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO11** | **Able to identify complex engineering problems and solve them with appropriate methods of analysis.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO12** | **Able to design a complex electronic system that meets the desired performance by using modern design techniques and taking real life conditions into account.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO13** | **Able to develop new techniques and tools for solution of current engineering problems.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO14** | **Able to use computer software and hardware technologies together with information technologies in an effective way.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO15** | **Able to produce innovative solutions for solution of current engineering problems by gathering data through experiment design and interpretation of results.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO16** | **Able to actively work individually or in teams where engineers from the same or different disciplines are involved.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO17** | **Gains competency in effective written and verbal communication, presentation and preparation of technical reports in Turkish and English.**  | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO18** | **Constantly increases knowledge with the awareness of lifelong learning by closely following the developments in science and technology .** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO19** | **Acts in accordance with scientific and ethical principles and the standards used in engineering practice at every stage of career** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO20** | **Able to describe concepts related to business life such as project management, risk management, change management, entrepreneurship and sustainability.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO21** | **Gains awareness of the legal consequences of engineering solutions developed together with the effect of engineering applications on health, environment and safety on a universal and social scale.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO22** | **Able to solve problems involving probability and statistics, derivative and integral calculations, multivariable mathematics, linear algebra, differential equations, and complex variables, and their electrical and electronics applications.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO23** | **Able to organize projects and events for the social environment they live in with the awareness of social responsibility and implement them.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
| **PO24** | **Able to plan and direct activities for employees under their responsibility to develop within the framework of a project.** | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 | 🗸 |
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| **PART III ( Department Board Approval)** |
| **Course Subjects, Contribution of Course Subjects to Learning Outcomes, and Methods for Assessing Learning of Course Subjects** | **Subjects** | **Week** |  | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** |
| **S1** | 1 | Introduction | A1-A2 |  |  |  |  |  |
| **S2** | 2 | Review of Conditional Statements, Loops, Strings and Functions | A1-A2 | A1-A2 |  |  |  |  |
| **S3** | 3 | Review of Lists and Tuples, Dictionaries and File Input / Output | A1-A2 | A1-A2 |  |  |  |  |
| **S4** | 4 | Thinking in Objects | A1-A2 | A1-A2 | A1-A2 |  |  |  |
| **S5** | 5,6 | Classes definition | A1-A2 | A1-A2 | A1-A2 |  |  |  |
| **S6** | 7,8 | Inheritance and Polymorphism | A1-A2 | A1-A2 | A1-A2 | A1-A2 |  |  |
| **S7** | 9,10 | Graphical User Interface | A1-A2 | A1-A2 | A1-A2 | A1-A2 | A1-A2 |  |
| **S8** | 11 | Introduce Simple Graphical Functions | A1-A2 | A1-A2 | A1-A2 | A1-A2 | A1-A2 |  |
| **S9** | 12 | Simple Graphical Drawing | A1-A2 | A1-A2 | A1-A2 | A1-A2 | A1-A2 | A1-A2 |
| **S10** | 13,14 | Create Graphical Mind Games like Tic-Tac-Toe | A1-A2 | A1-A2 | A1-A2 | A1-A2 | A1-A2 | A1-A2 |
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| **Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules**  | **No.** | **Type** | **Weight** | **Implementation Rule** | **Make-Up Rule** |
| **A1** | **Exam** | 70% | Midterm is 30% and final is 40% of the final grade. | A make-up exam is provided in case of a legitimate reason with a proof. |
| **A2** | **Quiz** | 10% | At least two quizzes are conducted. | No make-up |
| **A3** | **Homework** | *10%* | *There are 4 homeworks. Each student has to work alone* |  |
| **A4** | **Project** |  |  | - |
| **A5** | **Report** |  | - | - |
| **A6** | **Presentation** |  | - | - |
| **A7** | **Attendance/ Interaction** |  | *Attendance will be taken during the lectures.* | - |
| **A8** | **Class/Lab./****Field Work** | 10% | *5 Short programming exercises are solved with the guidance of teaching assistants. Students who miss 3 or more labs get 0 from the lab grade.*  | No make-up |
| **A9** | **Other** |  |  |  |
| **TOTAL** | **100%** |
| **Evidence of Achievement of Learning Outcomes** | Students will demonstrate learning outcomes through midterm exams, homework assignments, quizzes, 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 at least 50% of the total grade. |
| **Method for Determining Letter Grade** | The overall grade is converted to a letter grade using the table below.

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| **Total points** | 100-95 | 94-90 | 89-85 | 84-80 | 79-75 | 74-70 | 69-65 | 64-60 | 59-55 | 54-50 |
| **Letter Grade** | A | A- | B+ | B | B- | C+ | C | C- | D+ | D |

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| **Teaching Methods, Student Work Load** | **No** | **Method** | **Explanation** | **Hours** |
| ***Time applied by instructor*** |
| **1** | **Lecture** | Class content is explained by writing on the board and with computer presentations | 3x14 |
| **2** | **Interactive Lecture** |  |  |
| **3** | **Recitation** |  |  |
| **4** | **Laboratory** |  | 2x5 |
| **5** | **Practical** |  |  |
| **6** | **Field Work** |  |  |
| ***Time expected to be allocated by student*** |
| **7** | **Project** |  |  |
| **8** | **Homework** | Homework is completed in preparation for quizzes | 3x4 |
| **9** | **Pre-class Learning of Course Material**  | Next class’ material is read before the class | 1x14 |
| **10** | **Review of Course Material** | Previous class material is reviewed each week | 2x14 |
| **11** | **Studio** |  |  |
| **12** | **Office Hour** | One-to-one meetings for discussions | 1x14 |
| **TOTAL** | *120* |
| **IV. PART** |
| **Instructor** | **Name** | Shahram Taheri |
| **E-mail** | Shahram.taheri@antalya.edu.tr |
| **Phone Number** |  |
| **Office Number** | A1-20 |
| **Office Hours** | Determined during each semester, 2 hours per week |
| **Course Materials** | **Mandatory** | *Learning with Python,How to Think Like a Computer Scientist**by Allen Downey, Jeff Elkner and Chris Meyers.* |
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| **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**  | The course does not require any special safety precautions. |
| **Flexibility** | The level of detail can be made more in-depth or can be reduced depending on the students interests and time availability. |