

School of Engineering and Natural Sciences / Industrial Engineering (English)

2023 - 2024 Academic Year

INTRODUCTION to PROGRAMMING

Syllabus

| Course Description | | | | | |
|---|---|--------------------------------|-------------------------|---------------------------|------|
| Name | Code | Semester | T+A Hour | Credit | ECTS |
| INTRODUCTION to PROGRAMMING | IND1213180 | Spring Semester | 3+2 | 4 | 6 |
| Prerequisites Courses | | | | | |
| Recommended Elective Courses | | | | | |
| Language of Instruction | English | | | | |
| Course Level | First Cycle (Bachelor's Degree) | | | | |
| Course Type | Required | | | | |
| Course Coordinator | Prof.Dr. Selim AKYOKUŞ | | | | |
| Name of Lecturer(s) | Prof.Dr. Selim AKYOKUŞ, Lect. Malek Jamal Abdulah MALKAWI | | | | |
| Assistant(s) | | | | | |
| Aim | This course introduces fundamentals of programming, problem solving and algorithm development for students with little or no prior programming experience using Python programming language. The objective of this course is to prepare students for more advanced programming courses as well as providing an understanding of computation in problem solving and engineering as a self-contained course for those students who want to write programs for their studies and professional work. The course emphasizes structured programming, algorithmic and object thinking in a problem-driven way after teaching fundamental concepts and structures. Topics include an introduction to computers, programming languages and Python; elementary programming, selections, data types, strings, iteration, functions, GUIs (graphical user interfaces), objects and classes, inheritance and polymorphism, lists (arrays) and multidimensional lists, sets and dictionaries, files, exceptions and recursion. Weekly laboratories and assignments with different problems, practice and coding exercises will improve student's capabilities and fluency in programming. | | | | |
| Course Content | This course contains; Introduction to Computers, Programming, and Python,Elementary Programming,Mathematical Functions, Strings, and Objects,Selection statements,Loops,Loops,Functions,Lists, Multidimensional Lists, Tuples, Sets, and Dictionaries,Basic GUI Programming,Advanced GUI Programming ,Inheritance and Polymorphism,Files and Exception Handling,Recursion,Developing Efficient Algorithms. | | | | |
| Course Learning Outcomes | | | Teaching Methods | Assessment Methods | |
| Understand programming concepts and techniques using Python Language. | | | 12, 16, 9 | A, E | |
| Use control statements, loops, functions, and lists. | | | 12, 14, 17, 9 | A, E, F | |
| Understand the differences between procedural and object-oriented paradigms. | | | 12, 14, 17, 9 | A, E, F | |
| Develop custom classes using encapsulation, polymorphism, inheritance, and abstraction. | | | 12, 14, 16, 17, 2, 9 | A, E, F | |
| Learn how to use files, exceptions and build GUIs. | | | 12, 14, 16, 17, 2, 9 | A, E, F | |
| Analyze and design strategies for solving basic programming problems. | | | 12, 14, 16, 17, 9 | A, E, F | |
| Teaching Methods | 12: Problem Solving Method, 14: Self Study Method, 16: Question - Answer Technique, 17: Experimental Technique, 2: Project Based Learning Model, 9: Lecture Method | | | | |
| Assessment Methods | A: Traditional Written Exam, E: Homework, F: Project Task | | | | |
| Lecture Schedule | | | | | |
| Sequence | Topics | Preliminary Preparation | | | |
| 1 | Introduction to Computers, Programming, and Python | | | | |
| 2 | Elementary Programming | | | | |
| 3 | Mathematical Functions, Strings, and Objects | | | | |
| 4 | Selection statements | | | | |
| 5 | Loops | | | | |
| 6 | Loops | | | | |
| 7 | Functions | | | | |
| 8 | Lists, Multidimensional Lists, Tuples, Sets, and Dictionaries | | | | |
| 9 | Basic GUI Programming | | | | |
| 10 | Advanced GUI Programming | | | | |
| 11 | Inheritance and Polymorphism | | | | |
| 12 | Files and Exception Handling | | | | |
| 13 | Recursion | | | | |
| 14 | Developing Efficient Algorithms | | | | |
| Evaluation Methods | | Weight(%) | | | |
| Midterm Exam | | 30 | | | |
| General Exam | | 70 | | | |

| Resources | |
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| - Y. Daniel Liang, Introduction to Programming Using Python, 2nd Ed., Pearson, 2019. | |
| - Allen B. Downey, Think Python How to Think Like a Computer Scientist 2nd Ed., O'Reilly Media, 2015.Lecture notes that will be delivered during the classes. | |