

CMPE110 – Fundamentals of Computing and Programming

Department: Computer Engineering

Instructor information

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Assistant information

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Program Name: Computer Engineering

Program Code: 25

Course Number:

CMPE 110

Credits:

4 Cr

Year/Semester:

2023-2024 Fall

Required Course

Elective Course

Prerequisite(s):

None

Catalog description:

Design of computer algorithms with pseudo-code to solve problems, analyze engineering related problems using computer. Basic elements of a high level computer programming language: Data types, constants and variables, arithmetic and logical operators and expressions. Fundamental components of Python programming language: Storing and manipulating user-input data, design and use of selection structures, design and use of repetition structures, lists and other data structures, functions dictionaries and sets, file input/output. Explain the fundamental concepts of object-oriented programming and concept of a class: Define encapsulation, inheritance, and polymorphism

Course web page:

<https://staff.emu.edu.tr/johnolaifa/en/teaching/cmpe110>

Textbook(s):

Charles Dierbach, Computer Science using Python: A Computational Problem Solving Focus, Wiley,

ISBN 978-0-470-55515-6

Indicative basic reading list:

Eric Matthes, Python Crash Course: A Hands-on Project-based Introduction to Programming,

ISBN-10: 1-59327-603-6

Topics covered and class schedule (tentative):
(4 hours of lectures per week)

Week 1-2	Introduction to problem solving techniques, Algorithms and Pseudo Code
Week 3	Introduction to Python programming language: basic data types, constants and variables, basic operators and expressions.
Week 4	Data and Expressions: Writing code to store and manipulate user-input data.
Week 5-6	Control and repetition structures,
Week 7	Lists and List comprehensions
Week 8	Functions
Week 9-10	Midterm
Week 11	Dictionaries and Sets
Week 12	File Input/Output
Week 13	Object Oriented Programming- Class Object Attributes and Methods
Week 14	Object Oriented Programming- Encapsulation, Inheritance, and Polymorphism

Laboratory	(2 hours per week)
Weeks 1, 2	No Lab
LAB 1	Introduction to Python Programming Environment/
LAB 2	Numbers and Variable Assignment
LAB 3	Strings and Printing formatting
LAB 4	Sequential code structure in Python Programming
LAB 5	Selective code structure in Python Programming
	Repetitive code structure in Python Programming
LAB 6	Midterm
LAB 7	Lists and Other Data Structures to Store Data
LAB 8	Functions and Their Use in a Program / File Input/Output , Object Oriented Programming
Last Week	Lab Final Exam (if time permits)

Course learning outcomes:

Upon successful completion of the course, students are expected to have the following competencies:

1. Construct an algorithm for solving a computational problem
2. Use interactive development environment (IDE) to edit, compile, and execute Python code
3. Write a complete Python program for solving a problem
4. Use of selection and repetition structures within a Python Program
5. Creating lists and other data structures for storing and manipulation of data
6. Using functions and implementing modular programming approach in Python
7. Develop understanding of writing object-oriented programs that combine functions and data.

Assessment Method (tentative)

	No	Percentage
Midterm	1	35%
Final Examination	1	40%
Lab + Lab final	7+1	20%
Attendance		%5

Policy on makeups: For eligibility to take a makeup exam, the student should bring a doctor's *report within 3 working days* of the missed exam. You will have only one make-up for Midterm or final exams only. Make-up will be organized after final exam period and will cover all the material studied during the semester.

Attendance to lectures Attendance will be taken in every lecture but will not be graded.

Attendance to labs If the students have missed 2 and more lab sessions, those students will get a zero on the Lab and are not allowed to enter Lab Final Exam. There will be only one makeup for Labs.

Policy on cheating and plagiarism: Any student caught cheating at the exams or assignments will automatically fail the course and may be sent to the disciplinary committee at the discretion of the instructor.

Policy on NG grades: NG grade will be given in case of Missing Midterm and Final without official excuse.

Contribution of course to ABET criterion 5

Credit Hours for:

Mathematics & Basic Science : 0

Engineering Sciences and Design : 4

General Education : 0

Relationship of the course to student outcomes

The course has been designed to contribute to the following student outcomes:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Modified by: John Olaifa

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15 July 2020

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28 September 2023