

## 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:**

2021-2022 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/cemergun/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)**

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

<b>Laboratory</b>	<b>(2 hours per week)</b>		
<b>Weeks 1, 2</b>	No Lab		
<b>LAB 1</b>	Introduction to Python Programming Environment/ Numbers and Variable Assignment		
<b>LAB 2</b>	Strings and Printing formatting		
<b>LAB 3</b>	Sequential code structure in Python Programming		
<b>LAB 4</b>	Selective code structure in Python Programming		
<b>LAB 5</b>	Repetitive code structure in Python Programming		
	Midterm		
<b>LAB 6</b>	Lists and Other Data Structures to Store Data		
<b>LAB 7</b>	Functions and Their Use in a Program / File Input/Output		
<b>LAB 8</b>	Object Oriented Programming		
<b>Last Week</b>	Lab Final Exam (if time permits)		
<b>Course learning outcomes:</b>			
Upon successful completion of the course, students are expected to have the following competencies:			
<ol style="list-style-type: none"> <li>1. Construct an algorithm for solving a computational problem</li> <li>2. Use interactive development environment (IDE) to edit, compile, and execute Python code</li> <li>3. Write a complete Python program for solving a problem</li> <li>4. Use of selection and repetition structures within a Python Program</li> <li>5. Creating lists and other data structures for storing and manipulation of data</li> <li>6. Using functions and implementing modular programming approach in Python</li> <li>7. Develop understanding of writing object-oriented programs that combine functions and data.</li> </ol>			
<b>Assessment Method (tentative)</b>			
		<b>No</b>	<b>Percentage</b>
	Midterm	1	35%
	Final Examination	1	45%
	Lab + Lab final	7+1	20%
<b>Policy on makeups:</b> For eligibility to take a makeup exam, the student should bring a doctor's <i>report within 3 working days</i> 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.			
<b>Attendance to lectures</b> Attendance will be taken in every lecture but will not be graded.			
<b>Attendance to labs</b> 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.			
<b>Policy on cheating and plagiarism:</b> 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.			
<b>Policy on NG grades:</b> 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 program outcomes**

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

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

**Prepared by:** Asst. Prof. Dr. Cem ERGÜN

**Date Prepared**

15 July 2020

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5 October 2021