

EECE 230 – Introduction to Computation and Programming
Spring 2018-19
Course Information

Catalog Description

This is an introductory programming course with an emphasis on abstractions and elementary algorithmic ideas. It uses the Python programming language. Topics include data types, selection, repetition, lists, tuples, strings, functions, files, exception handling, program efficiency, recursion, divide and conquer algorithms, recurrence relations, sorting and searching algorithms, binary search, merge sort, randomized quicksort, dictionaries, memoization, classes and object oriented programming, stacks and queues, applications, and selected topics. The course has a weekly lab.

Lectures

Time: TR 8:00 - 9:15 am
Place: Bechtel 212

Lab

Tuesday from 2:00 to 4:45 pm in SRB labs. Rooms: 1 for Section 4, 2 for Section 5

Course instructor:

Prof. Ibrahim Issa
Bechtel 404, AUB Extension: --
E-mail: ii19@aub.edu.lb
Office Hours: Tuesdays and Thursdays 12:15- 2:15 pm.

Textbook(s) and/or required materials

Gutttag, John. *Introduction to Computation and Programming Using Python: With Application to Understanding Data, Second Edition*. MIT Press, 2016.

Brief list of topics Covered

No.	Topics covered	Number of 50 minute lectures
Unit I: Foundations		17.5
1	Introduction to computation using Python, data types, selection, repetitions, and bisection method	7 lectures
2	Lists, tuples, strings, and functions	5 lectures
3	Files, exception handling, and plotting	1.5 lectures

4	Introduction to program efficiency and asymptotic analysis, binary search, and insertion sort	4 lectures
Unit II: Recursion, searching and sorting, divide and conquer, recurrence relations, data structures, memoization, and applications		14.5
5	Recursion: elementary examples, merge sort, divide and conquer algorithms, recurrence relations, recursion tree method	6.5 lectures
6	Elementary data structures: two-dimensional lists, dictionaries, and stacks	2 lectures
7	Applications: randomized quick sort, Monte Carlo simulation, recursive enumeration, maze depth-first traversal, and memorization	6 lectures
Unit III: Object Oriented Programming with applications and selected topics		10
8	Object Oriented Programming, classes, and inheritance	3.5 lectures
9	Implementation of stacks and queues	1.5 lectures
10	Graphs: representation, depth-first search, and breadth-first search	2.5 lectures
11	Selected topics	2.5 lectures
<i>Total</i>		42

Course Objectives

The objectives of this course are to give students:

1. An understanding of the principles of programming using Python
2. An understanding of elementary algorithms concepts including searching, sorting, recursion, and time analysis
3. An ability to write programs to solve simple engineering problems

Computer usage

Python

Evaluation methods

- Lab assignments (10%)
- In-Lab Quiz 1 (25%)
- In-Lab Quiz 2 (25%)
- In-Lab Final (40%)

Educational Diversity

AUB strives to make learning experiences as accessible as possible. If you anticipate or experience academic barriers due to a disability (such as ADHD, learning difficulties, mental health conditions, chronic or temporary medical conditions), please inform the Accessible Education Office (AEO). In order to ensure that you receive the support you need and to facilitate a smooth accommodations process, you must register with the AEO as soon as possible. AEO's email address is accessibility@aub.edu.lb. The Office is located in West Hall room 318, and its AUB phone extension is 3246

Person(s) who prepared this description

Louay Bazzi, April 2017

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