

Introduction to Programming Using C++ and MATLAB -- EECE 231

Fall 2015, Section 5,6,13

Course Description:

An introductory course for non-ECE students on the principles of programming using C++ and MATLAB. Basic data types, control structures, and arrays will be covered in C++. Algorithms, functions, and arrays will be covered in MATLAB. In addition, the course will expose students to the MATLAB environment and toolboxes with applications in Engineering. Weekly laboratory assignments are an integral part of this course. *This course is not considered equivalent to EECE 230, students who have taken this course and wish to transfer to ECE will need to take EECE 230.* (3 credits)

Lectures: MWF 9:00-9:50 am in IOEC 224B

Instructor: Professor Louay Bazzi

Current office: Engineering Annex 101, AUB extension: 3550

Office will move to Becthel Bldg. soon. Room: TBA.

Louay.Bazzi@aub.edu.lb

Office Hours: Mondays and Wednesdays 11:00 am - 1:00 pm.

Lab: Weekly 2 hours Lab session on Wednesdays from 2 pm to 4:00 pm starting Wednesday September 9. Lab rooms: TBA

Prerequisites:

By course: No Prerequisite

By topic: Elementary calculus and arithmetic

Textbook(s) and/or required materials

Textbook: Notes provided by instructors

References:

Alex. Bielajew, Introduction to Computers and Programming using C++ and MATLAB, University of Michigan, 2004, <http://www-personal.umich.edu/~paulko/book.pdf>

Course Objectives

<i>The objectives of this course are to give students:</i>	<i>Correlates to program objectives</i>
Introduces students to Computer Programming.	1,2,3 and 4

Basic principles of structured and object-oriented programming using C++ and MATLAB	1,2,3 and 4
Basic techniques of formulating problems for computer programming implementation and solution.	1,2,3 and 4
Practical computer programming skills through the solution of engineering problems using the MATLAB	1,2,3 and 4

Course Topics

No.	Subjects covered	50 min. lectures
1	Introduction to programming	1
2	Basic elements of C++ Data Types and Programming Basics (C++), Primitive data types	3
3	Control structures in C++ Boolean expression, selection (if-else, switch/case) and repetition (while/for)	5
4	Arrays and programming examples	3
5	Functions in C++, sorting, and searching	4
6	Introduction to programming with MATLAB: arrays, loops, script, and functions	7
7	Recursion	4
8	Graphics in MATLAB : 2D plots, 3D plots, contours, meshes...	3
9	Manipulating files in MATLAB; computing statistical parameters of imported data	4
10	Numerical analysis applications: finding roots	4
11	Introduction to Symbolic Computations in MATLAB	3

Resources of the course

C++ IDE, MATLAB IDE, and Moodle

Computer usage

Programming in C++ and MATLAB

Evaluation methods

- 1- Participation (5%)
- 2- Assignments (15%)
- 3- Two Quizzes (45%)
- 4- Final Exam (35%)