UNIVERSITY of NICOSIA

Course Syllabus

Course Code	Course Title	ECTS Credits
ENGR-111	Programming for Engineers	8
Prerequisites	**Department**	**Semester**
None	Engineering	Fall, Spring
Type of Course	**Field**	**Language of Instruction**
Required	Computer Science	English
Level of Course	**Lecturer(s)**	**Year of Study**
1st Cycle	Dr Stelios Neophytou	1st
Mode of Delivery	**Work Placement**	**Corequisites**
Face-to-face	N/A	None

Course Objectives:

The main objectives of the course are to:

- Introduce students to structured programming by means of the syntax and semantics of a structured high-level programming language.
- Provide students a good working knowledge of a programming language. This includes programming constructs such as expressions, selection statements, loops, functions and arrays.
- Provide practical experience in problem solving, coding, debugging, and testing.
- Guide the student in order to develop good programming practices.
- Obtain a foundation that will allow the student to pursue more advanced programming topics.

Learning Outcomes:

After completion of the course students should be able to:

- Deal with the practicalities of writing a computer program.
- Think and plan in a logical manner.
- Apply a structured approach to problem solving.
- Analyze and explain the behavior of simple programs involving the fundamental programming constructs.
- Modify and expand short programs that use standard conditional and iterative controls structures and functions.
- Design, implement, test and debug a program that uses each of the following fundamental

programming constructs:

- Basic computation
- Simple I/O
- Standard conditional and iterative structures
- Functions
- Arrays

- Choose appropriate conditional and iteration constructs for a given programming task.
- Apply the techniques of structured (functional) decomposition to break a program into smaller pieces.
- Describe the mechanisms of parameter passing (value and reference) and write programs with actual and formal parameters.

Course Content:

- Program design fundamental. Problem solving and Flow charts. Program structure and basic programming concepts
- Primitive data types and declarations. Input / Output. Constants, Variables, Numbers Expressions, Arithmetic Statements, Standard functions. Formatted output
- Decision statements. Boolean expressions. Relational operators. Decision Statements
- Repetition statements. Pre-test loops. Post-test loops
- Functions and scope rules. Parameter passing to functions (value and reference). Function returning values. Scope and life-time of variables
- Introduction to Arrays and Pointers.

Learning Activities and Teaching Methods:

Lectures, homework assignments, in-class Computer Lab Exercises.

Assessment Methods:

Midterm Exam, Homework Assignments, Lab Assignments, Final Examination(comprehensive)

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Just Enough C/C++ Programming	G. W. Lecky-Thompson	Cengage Learning PTR	2007	*E-book available Click here

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Introduction to Engineering Programming: In C	M. Austin, D. Chancogne	Wiley	1999	978-0-471-00116-4
Ivor Horton's Beginning ANSI C++: The Complete Language	Ivor Horton	Springer	2004	978-1-59059-227-4
Programming for Engineers. A Foundational Approach to Learning C and Matlab	Bradley A. R.	Springer	2011	978-3-642-23303-6