



**AMERICAN UNIVERSITY
OF CYPRUS**

Course Code MSE 241	Course Name Advanced Programming	ECTS Credit 7.5
Pre-Requisite CSC102	Course Type Major Elective	Language of Instruction English
Year of Study 2 nd / 2 nd	Level of Course BSc/1st Cycle	Mode of Delivery On Campus

Course Objectives:

The aim of the course is to learn intermediate and advanced concepts and programming techniques through a programming language that is compiled into machine code.

Learning Outcomes

Upon completion of the course, students will be able to:

- Explain the basic concepts and how they are implemented in C language
- Read and modify some C programs
- Make right design choices for small and medium software systems
- Implement correct, modular, reusable and sustainable code
- Develop programming solutions using C language standardized constructions

Teaching Methodology:

Lectures 42 hours

Labs 30 hours

Course Content:

Concepts for C for Developers:

X86 / x64 operators, flow control and repeats, numeric and logical expressions, file management, functions, program organization.

Advanced programming concepts:

program anatomy and processes, memory and markers (pointers & tables, strings, pointers to pointers, static and dynamic memory management), structures, associations and enumeration types, examples and memory data management applications with data structures.

Advanced compiler themes and tools:

multiprocessor commands, static (.a), and dynamic (.so) linking of object files (.o), error management (assert.h), static and dynamic source code analysis (valgrind and gprof).

Low-level programming:

Binary operators and examples, binary files and hexdump.

Basic commands of the UNIX operating system developer: file system, funnel and redirect, access rights, and base filters.

Assessment Methods:

Final Exam

Mid-Term/Lab Exam

Assignments

Required Textbooks/Reading:

Title	Author(s)	Publisher	Year
C Programming: A Modern Approach	K.N. King	W.W. Norton & Company	2008
Your UNIX/Linux: The Ultimate Guide	Sumitabha Das	McGraw Hill	2013