Course Title	**Advanced Programming**				
Course Code	**MS571**				
Course Type	**Major Elective**				
Level	BSc/1st Cycle				
Year / Semester	2nd/2nd				
Teacher's Name	Hikmat Farhat				
ECTS	7.5	**Lectures / week**	3 hours	**Laboratories / week**	2 hours
Course Purpose and 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				
Prerequisites	CSC102	**Required**	-		
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.				

Teaching Methodology	Lectures 42 hours Labs 30 hours
Bibliography	C Programming: A Modern Approach, K.N. King, Second Edition, ISBN-10: 0393979504, ISBN-13: 978-0393979503, 832 pages, W. W. Norton & Company, 2008. Your UNIX/Linux: The Ultimate Guide, 3rd Edition, Sumitabha Das, McGraw Hill, ISBN-13 9780073376202, 800 pages, 2013.
Assessment	Final Exam 60% Mid-Term/Lab Exam 20% Assignments 20%
Language	English