Course Title	**Digital and Logical Design**				
Course Code	**CSC107**				
Course Type	**Compulsory**				
Level	BSc/1st Cycle				
Year / Semester	1st /2nd				
Teacher's Name	George Dekoulis				
ECTS	7.5	**Lectures / week**	3 hours	**Laboratories / week**	2 hours
Course Purpose and Objectives	The course provides basic knowledge and understanding of Boolean Algebra and Digital Logic principles, with emphasis on design and analysis of combinational and sequential digital logic. In addition, it provides the basis for advanced study in the organization of computer systems, computer architecture.				
Learning Outcomes	After successful completion of the course, the students will have: • Basic knowledge of Boolean logic principles and its implementation in digital planning • In-depth understanding of combinational and sequential digital / logic circuits and hierarchical design principles • Ability to analyze and logically synthesize digital circuits				
Prerequisites	-	**Required**	-		
Course Content	Digital numerical systems and representation of information. Numeric functions (operations), decimal and alphanumeric codes. Binary logic, Boolean algebra (identities, actions, equations, manipulation), regular forms, simplifications. Logic gates, switch logic, CMOS logic implementation, integrated circuits. Combined logic design: Circuits (gate level). Design hierarchy and processes, computer-aided design (CAD). Implementation of combinational logic, of two and more levels. Numerical operations (addition, subtraction, multiplication) and other widespread operations (multiplexers, coders, decoders). Programmable logic design (ROMs, PLAs, PALs, FPGAs). Sequential logic design: locks, flip-flops, finite state machines and minimization problems (Mealy and Moore models). Registrars, registrar transfer and counters				
Teaching Methodology	Lectures 42 hours Labs 30 hours				

Bibliography	M. M. Mano and C. R. Kime, Logic and Computer Design Fundamentals, 5th Edition, Pearson, 2016 J. F. Wakerly, Digital Design Principles and Practice, 5th Edition, Pearson, 2017.
Assessment	Final Exam 60% Mid-Term/Lab Exam 20% Assignments 20%
Language	English