

Course Title	Algorithms and Complexity				
Course Code	CSC207				
Course Type	Compulsory				
Level	BSc/1st Cycle				
Year / Semester	2 nd /4 th				
Teacher's Name	Sotirios D Kotsopoulos				
ECTS	7.5	Lectures / week	3 hours	Laboratories / week	2 hours
Course Purpose and Objectives	The course aims at introducing students to the basic concepts of algorithm analysis and complexity theory. An introductory approach to calculation models and basic problem classes is also made. Finally, the aim of the course is to apply theoretical techniques.				
Learning Outcomes	<p>Upon successful completion of the course, students will be able to:</p> <ul style="list-style-type: none"> • Understand the basic tools of analyzing algorithms • Apply basic algorithmic techniques and strategies • Analyze problems of algorithmic nature and classify them according to their difficulty • Implement and implement key algorithms for graphs • Analyze existing algorithms with the main criterion for their effectiveness • Choose the algorithm that will be the most appropriate for the "real" problem they have to deal with 				
Prerequisites	CSM104 CSC201	Required	-		
Course Content	Basic concepts in algorithms and complexity theory. Calculation models and Touring engine. P-NP, NP-full-text classes. Flash: Functions and applications. Dynamic programming: Beginning of Bellman, applications. Basic algorithm analysis: sorting, searching, selection and merging. Graphs: basic concepts and problems: deep and wide crossing, exhaustive search. The problem of minimal cohesive tree, minimum path, maximum flow, minimal intersection, bilateral matching. , finding a click of a specific size, coloring, etc. Introduction to guaranteed performance algorithms.				
Teaching Methodology	Lectures 42 hours Labs 30 hours				
Bibliography	T.H.Cormen, C.E.Leiserson, R.L.Rivest, C.Stein, Εισαγωγή στους Αλγόριθμους(Ενιαίος Τόμος), Πανεπιστημιακές Εκδόσεις Κρήτης, 2016 Λεβίτιν Α., Ανάλυση και Σχεδίαση Αλγορίθμων, Εκδόσεις Τζιόλα, Θεσσαλονίκη, 2010.				

Assessment	Final Exam 60% Mid-Term/Lab Exam 20% Assignments 20%
Language	English