

EEE 301 Algorithm Analysis

EEE 301 Algorithm Analysis								
Course Name	Course Code	Semester	h/w	Appl.	Lab. h/w	Credit	ECTS	
Algorithm Analysis	EEE301	1	3	0	0	3	4	
,	LLLOOT		•	v	•	Ū		

Prerequisites	No
Course Language	English
Course Type	Compulsory
Course Level	Graduate
Way of teaching	Face to face, online
Learning and teaching techniques	Expression, question answer, homework

Course Objectives

The aim of the course is to introduce students to current techniques, methods and results from the active field of database systems and data management. Students who attend this course will gain the information about system implementation techniques, data storage, representing data elements, database system architecture, the system catalog, query processing and optimization, transaction processing concepts, concurrency control techniques, database recovery techniques, database security and authorization, enhanced data models for advanced applications, temporal databases, deductive databases, database technology for decision support systems, distributed databases and client server architecture, advanced database concepts, and emerging technologies and applications.

Course Educational / Learning Outcomes					
Students who can successfully complete this course will gain the;					
1.	Ability to use asymptotic notations, solve recurrences, perform algorithm analysis				
2	Ability to design, analyze, and prove correctness of algorithms based on Divide-and- Conquer techniques				
3	Ability to design, analyze, and prove correctness of algorithms based on Greedy techniques				
4	Ability to design, analyze, and prove correctness of algorithms based on Dynamic Programming techniques				
5	Ability to design, analyze and prove correctness of graph algorithms				
6					
7					

Topics Covered

The complexity and correctness of algorithms: big oh, big omega, and big theta notations, recurrence relations and their solutions. Worst, average and amortized analysis of algorithms with examples. Basic and advanced data structures for searching, sorting, compression and graph algorithms. Students will be given programming assignments on a regular basis.



Weekly Topics and Releated Preparation Studies				
Week	Topics	Preparation		
1	Introduction			
2	Asymptotic Analysis			
3	Sorting			
4	Sorting			
5	Probabilistic Analysis			
6	Order Statistics and Hashing			
7	Trees			
8	Midterm Exam			
9	Dynamic Programming			
10	Greedy Algorithms, Amortized Analysis			
11	Graphs			
12	Graphs			
13	Midterm Exam			
14	Graphs			
15	Final Exam			
16				

Textbook

Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, *Introduction to Algorithms*, 3rd edition, MIT Press, 2009. Skiena S. S., "*The Algorithm Design Manual*", Springer, 2008

Assessment System				
Works	Number	Contribution		
Attendance				
Laboratory				
Practice				
Field Study				
Course-Specific Internship (if applicable)				
Quizzes				
Homework	4	20		
Presentation				
Project				
Report				
Seminar				
Midterm Exams / Midterm Jury	2	40		
Final Exam / Final Jury	1	40		
	Total	% 100		
Contribution to the success grade of semester studies		% 60		
Contribution of the studies at the end of semester to the success grade		% 40		
	Total	% 100		

Course Category				
Basic Vocational Courses	Х			
Expertise / Field Courses				
Support Courses				



Communication and Management Skills Courses Transferable Skill Courses

The Relationship between Course Learning Outcomes and Program Competencies						
No	Brogram Compotencies / Outcomes	Co	Contribution Leve	vel		
NO	Program competencies / Outcomes	1	2	3	4	5
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						

ECTS/Workload Table					
Activities	Number	Time (h)	Total Workload		
Course hours (Including exam week: 16 x total weekly course hoursi)	16	3	48		
Laboratory					
Application					
Course specific internship					
Field Study					
Out-of-class study time					
Presentation/Seminar Preparation					
Projects					
Reports					
Homeworks	4	2	8		
Quizzes					
Preparation time for Midterm Exams / Midterm Jury	2	20	40		
Preparation time for Final Exam / Final Jury	1	20	20		
Total Workload	(116/23) = 5.04	116		