



Меѓународен Универзитет Визион - International Vision University
 Universiteti Ndërkombëtar Vizion - Uluslararası Vizyon Üniversitesi

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SYLLABUS

COURSE NAME	COURSE CODE	SEMESTER	COURSE LOAD	ECTS
ADVANCED ALGORITHMS	4028	5	180	6

Prerequisite(s)	None
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Course Language	Turkish
Course Type	Elective
Course Level	First Cycle
Course Lecturer	
Course Assistants	
Classroom	
Extra-Curricular Office Hours and Location	

Course Objectives	Algorithm design, learning simple and complex data structures and algorithms that use these structures, learning recursive programming and its use in solving problems, understand the importance of use appropriate data structures and algorithms and their use in problem solving and learn how to use them in an application, the use of appropriate data structures and algorithms to solve a problem to gain experience in decision-making, Determine the effectiveness of an algorithm and to gain theoretical and practical knowledge required in order to compare algorithms.
Course Learning Outcomes	1-Learning the importance and fundamentals of algorithm design 2-Learning simple and complex data structures and their use in solving problems 3-Learning the basics of dynamic data structures and gaining the experience of writing its application in C programming language 4-Learning the data structures (link list, stack, queue, tree etc.) and their use in an application and gaining the experience of determining which data structures are suitable for solving a problem 5-Learning the fundamental steps of software development processes, like analysis, design, implementation, testing, and learning the concept of debugging.
Course Contents	The course starts with highlighting algorithm design which is important in the software development, emphasizing the impact of data structures and used algorithms to the software performance and algorithm complexity. After explaining the basic concepts of data structure, the course continues with the importance of array for data structures, stacks, queues, trees, searching, sorting, graph algorithms, hash methods. Applications are made on the topics discussed in the C programming language and the students are given assignments to reinforce what they have learned for problem solving on their own. The course is completed by giving information on data compression which is one of the main application areas of data structures.

WEEKLY SUBJECTS AND RELATED PREPARATION STUDIES

Week	Subjects	Related Preparation
1	Introduction to data structures and Algorithms	Related Chapters of Course Sources
2	Algorithm complexity and Big-O notation	Related Chapters of Course Sources
3	Array data structure and dynamic memory allocation	Related Chapters of Course Sources
4	Recursive programming	Related Chapters of Course Sources
5	Linked Lists	Related Chapters of Course Sources
6	Stacks	Related Chapters of Course Sources
7	Mid-term Exam	Related Chapters of Course Sources
8	Queues	Related Chapters of Course Sources
9	Trees	Related Chapters of Course Sources
10	Searching methods	Related Chapters of Course Sources
11	Sorting methods	Related Chapters of Course Sources
12	Hashing methods	Related Chapters of Course Sources
13	Data compression methods	Related Chapters of Course Sources
14	Simple graph algorithms	Related Chapters of Course Sources
15	Final Exam	Related Chapters of Course Sources

ECTS / WORKLOAD TABLE

Presentation / Seminar			
Hours for off-the-classroom study (Pre-study, practice)	14	3	42
Midterm Exam	1	12	12
Final examination	1	14	14
Total Work Load			
ECTS		6	

GENERAL PRINCIPLE RELATED WITH COURSE

Dear students,

You need to be included in the flow, please follow the course of learning and using that to achieve our success you deserve, you need to practice every day on topics that are covered by the course. It takes practice reading basic and auxiliary literature that is strictly recommended. You should visit classes course I need to make an effort to visit all the professors' lectures. Your activity on the session will be assessed by your professors and the Battle active participant in the discussions that will take place during the time. Students visiting lectures for all at the end if an additional 15 points.

SOURCES

COMPULSORY LITERATURE		
No	Name of the book	Author's Name, Publishing house, Publication Year
1	Veri Yapıları ve Algoritmalar,	Rıfat Çölkesen
2		
3	Database System Concepts	Abraham Silberschatz, Henry Korth , S. Sudarshan Sixth Edition, McGraw-Hill 2010

ADDITIONAL LITERATURE		
No	Name of the book	Author's Name, Publishing house, Publication Year
1	Algoritmalar ve Programlamaya Giriş	Selçuk Alp , Arzu Kilitci UMUTTEPE YAYINLARI ,2015
2		
3	Fundamentals of Database Systems	R. Elmasri, S. Navathe Addison Wesley (6th Edition) 2010

EVALUATION SYSTEM

Underlying the Assessment Studies	NUMBER	PERCENTAGE OF GRADE
Attendance/Participation	15	%10
Project / Event	1	%20
Mid-Term Exam	1	%35
Final Exam	1	%35
TOTAL	17	%100

ETHICAL CODE OF THE UNIVERSITY

In case students are cheating on exams or preparation the same, it is not making reference to the source to be used in studies, as for example in assignments, projects and presentation (plagiarism), in accordance with legislations by Ministry of Education and Science of the Republic of Macedonia and International Vision University, apply relevant disciplinary rules. International Vision University students are expected never attempts in this kind of behavior.