



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

Adres: Ul. Major C. Filiposki No.1, Gostivar – Makedonya  
 tel: +389 42 222 325, [www.vizyon.edu.mk](http://www.vizyon.edu.mk), [info@vizyon.edu.mk](mailto:info@vizyon.edu.mk)

## SYLLABUS

COURSE NAME	COURSE CODE	SEMESTER	COURSE LOAD	ECTS
DATA STRUCTURES AND ALGORITHMS	4011	3	180	6

Prerequisite(s)	None
-----------------	------

Course Language	Turkish
Course Type	Required
Course Level	First Cycle
Course Lecturer	
Course Assistants	
Classroom	
Extra-Curricular Office Hours and Location	Meeting: Consultancy:

Course Goals	It is aimed to teach the storing information in computer memory and present basic data which is designed for accessing this information.
Program Outcomes	<p>Upon successful completion of the course; the students will be able to:</p> <ul style="list-style-type: none"> <li>• Design the data structures;</li> <li>• Compare recursive and recursion resolution;</li> <li>• Solve problems with the list and linked list data structures;</li> <li>• Performing more effective writing program with a stack structure;</li> <li>• Carry out effective programs on current problems with the queue structure;</li> <li>• Analyze the performance of the heap tree;</li> <li>• Search, sort and take advantage of the tree structure for special purposes;</li> <li>• Know the different applications of binary trees;</li> <li>• Know the benefits of balanced and unbalanced tree;</li> <li>• Use the application and problem solving;</li> <li>• Know applications of the hash table;</li> <li>• It is aware of the contribution brought by B Wood;</li> </ul>
Course Contents	The content includes: Fundamental data types, concepts of data analysis and algorithms, The concept of recursion and recursive algorithms, List data structure, static and dynamic arrays, Stack data structure and applications, Priority queues and account tree, Tree of data structure, General Wood applications etc.

## WEEKLY SUBJECTS AND RELATED PREPARATION STUDIES

<b>Week</b>	<b>Subjects</b>	<b>Related Preparation</b>
<b>1</b>	Fundamental data types, concepts of data analysis and algorithms	Related Chapters of Course Sources
<b>2</b>	The concept of recursion and recursive algorithms	Related Chapters of Course Sources
<b>3</b>	List data structure, static and dynamic arrays	Related Chapters of Course Sources
<b>4</b>	Linked list, linked lists unidirectional, bidirectional lists, circular lists	Related Chapters of Course Sources
<b>5</b>	Stack data structure and applications	Related Chapters of Course Sources
<b>6</b>	Queuing data structures, linear tail circular queue	Related Chapters of Course Sources
<b>7</b>	Mid-term Exam	Related Chapters of Course Sources
<b>8</b>	Priority queues and account tree	Related Chapters of Course Sources
<b>9</b>	Data structure of tree	Related Chapters of Course Sources
<b>10</b>	Binary tree, binary search tree and Expression tree	Related Chapters of Course Sources
<b>11</b>	AVL trees	Related Chapters of Course Sources
<b>12</b>	RB Trees	Related Chapters of Course Sources
<b>13</b>	B Trees	Related Chapters of Course Sources
<b>14</b>	General Wood applications	Related Chapters of Course Sources
<b>15</b>	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
<b>Total Work Load</b>			
<b>ECTS</b>		<b>6</b>	

### GENERAL PRINCIPLE RELATED WITH COURSE

Dear students,

In order to be included, learn and achieve full success that you deserve in the courses you need to come well prepared by reading the basic and secondary textbooks. We are expecting from you carefully to obey to the course hours, not to interrupt the lessons unless is very indispensable, to be an active participant on the courses, easily to communicate with the other professor and classmates, and to be interactive by participating to the class discussions. In case of unethical behavior both in courses or on exams, will be acting in framework of the relevant regulations. The attendance of the students will be checked in the beginning, in the middle or at the end of the lessons. Throughout the semester the students who attend to all lectures will be given 15 activity-attendance points in addition to their exam grades.

### SOURCES

COMPULSORY LITERATURE		
No	Name of the book	Author's Name, Publishing House, Publication Year
1	"C/C++ ile Veri Yapıları ve Çözümlü Uygulamalar"	Nejat YUMUŞAK, M. Fatih ADAK, Seçkin yayıncılık, 2014
2	Algorithms and Data Structures	Niklaus Wirth, Hardcover – November, 1985
3		

ADDITIONAL LITERATURE		
No	Name of the book	Author's Name, Publishing House, Publication Year
1	Veri yapıları ve algoritmalar	Dr.Rifat ÇÖLKESEN, Papatya yayıncılık, 2002.
2		
3		

## EVALUATION SYSTEM

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

## ETHICAL CODE OF THE UNIVERSITY

In case of the students are cheating or attempt to cheat on exams, and in the case of not to reference the sources used in seminar studies, assignments, projects and presentations, in accordance to the legislations of the Ministry of Education and Science of Republic of Macedonia and International Vision University, will be applied the relevant disciplinary rules. International Vision University students are expected never to attempt to this kind of behavior.