

Course Description Form	
Course Code and Name	CENG205 DATA STRUCTURES
Course Semester	3
Catalog Content	Introduction to C++ and data structures, Pointers, arrays and structures, Stacks and queues, Linked lists, Binary trees, Binary Search Trees, AVL trees, Priority queues, B-trees, Graphs, Hashing
Textbook	Data Structures with C++, William Ford and William Topp, 1996.
Supplementary Textbooks	Data Structures and Algorithms in C++ 2nd Edition by Michael T. Goodrich, Roberto Tamassia , David M. Mount, 2011. Data Structures and Algorithms in Java 2nd Edition by Robert Lafore, 2002.
Credit	6
Prerequisites of the Course (Attendance Requirements)	BM102 Computer Programming II
Type of the Course	Compulsory
Instruction Language	English
Course Objectives	To teach the basics of data structures, how to select suitable data structures for efficient solutions
Course Learning Outcomes	<ol style="list-style-type: none"> 1. Defining and manipulating variables using pointers 2. Developing and using the linked lists 3. Developing and using the queues 4. Understanding the tree structures and indexing 5. Developing and using the trees 6. Using stacks in problem solving
Instruction Methods	The mode of delivery of this course is face to face.

Weekly Schedule	<ol style="list-style-type: none"> 1. Week: Introduction to C++ and data structures 2. Week: Pointers, arrays and structures 3. Week: Stacks and queues 4. Week: Stacks and queues cont. 5. Week: Linked lists 6. Week: Linked lists cont. 7. Week: Binary trees 8. Week: Binary trees cont. 9. Week: Binary Search Trees 10. Week: AVL trees 11. Week: Priority queues 12. Week: B-trees 13. Week: Graphs 14. Week: Hashing
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Teaching and Learning Methods <i>(These are examples. Please fill which activities you use in the course)</i>	Weekly theoretical course hours: 3 Reading Activities Internet browsing, library work Designing and implementing materials Preparation for Midterm and Midterm Exam Final Exam and Preparation for Final Exam
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Assessment Criteria	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 15%; text-align: center;">Numbers</th> <th style="width: 25%; text-align: center;">Total Weighting (%)</th> </tr> </thead> <tbody> <tr> <td>Midterm Exams</td> <td style="text-align: center;">1</td> <td style="text-align: center;">40</td> </tr> <tr> <td>Assignment</td> <td style="text-align: center;">2</td> <td style="text-align: center;">10</td> </tr> <tr> <td>Application</td> <td></td> <td></td> </tr> <tr> <td>Projects</td> <td></td> <td></td> </tr> <tr> <td>Practice</td> <td></td> <td></td> </tr> <tr> <td>Quiz</td> <td style="text-align: center;">4</td> <td style="text-align: center;">10</td> </tr> <tr> <td>Percent of In-term Studies (%)</td> <td></td> <td style="text-align: center;">60</td> </tr> <tr> <td>Percentage of Final Exam to Total Score (%)</td> <td></td> <td style="text-align: center;">40</td> </tr> <tr> <td>Attendance</td> <td></td> <td></td> </tr> </tbody> </table>		Numbers	Total Weighting (%)	Midterm Exams	1	40	Assignment	2	10	Application			Projects			Practice			Quiz	4	10	Percent of In-term Studies (%)		60	Percentage of Final Exam to Total Score (%)		40	Attendance		
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Workload	Activity	Total Number of Weeks	Duration (weekly hour)	Total Period Work Load			
	Weekly Theoretical Course Hours	14	3	42			
	Weekly Tutorial Hours						
	Reading Tasks	14	2	28			
	Studies	14	2	28			
	Material Design and Implementation	14	2	28			
	Report Preparing						
	Preparing a Presentation						
	Presentations						
	Midterm Exam and Preparation for Midterm Exam	2	6	12			
	Final Exam and Preparation for Final Exam	2	6	12			
	Other (should be emphasized)						
	Total Workload			150			
	Total Workload / 25			6			
	Course Credit (ECTS)			6			
Contribution Level Between Course Learning Outcomes and Program Outcomes	No	Program Outcomes	1	2	3	4	5
	1	Sufficient knowledge on mathematics, science and computer engineering; ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems					X
	2	Ability to identify, define, formulate and solve complex engineering problems; ability to choose and apply appropriate analysis and modelling methods for these purposes					X
	3	Ability to design a complex system, process, device, software, algorithm, or product under realistic constraints and circumstances to meet certain requirements; ability to apply modern design techniques for this purpose					
	4	Ability to choose, develop and use modern techniques and tools necessary for engineering applications; ability to effectively use computing technologies					
	5	Ability to design and implement systems or experiments to solve engineering problems, collect and interpret data to evaluate and analyze the results of solutions					
	6	Ability to work effectively in intradisciplinary and interdisciplinary teams or individually					
	7	Ability to efficiently prepare, evaluate and interpret reports					
	8	Ability to make presentations and conduct effective verbal and written communication in Turkish and English					
	9	Awareness of the necessity of lifelong learning; ability to access information, follow scientific and technological developments; ability to perpetually renew oneself					
	10	Awareness of professional and ethical responsibility, ability to act in accordance with ethical principles					

	11	Ability to apply knowledge on project management, risk management and change management						
	12	Awareness of entrepreneurship and innovation, ability to design and build sustainable systems						
	13	Ability to devise local and global solutions to contemporary issues considering the effects of engineering applications on health, environment and security						
	14	Awareness of the legal consequences of engineering solutions						
	15	Ability to apply knowledge on software development process and documentation rules						
	16	Knowledge on standards used in engineering applications						
	17	Awareness of occupational health and security, information security and privacy						
The Course's Lecturer(s) and Contact Information		<p>Assoc. Prof. Dr. Murat HACIÖMEROĞLU murath@gazi.edu.tr</p>						