

<b>Course Description Form</b>	
<b>Course Code and Name</b>	BM218 ALGORITHMS
<b>Course Semester</b>	4
<b>Catalog Content</b>	Algorithm design, search algorithms, shortest path algorithms, sort algorithms, greedy algorithms
<b>Textbook</b>	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, Introduction to Algorithms (3 <sup>rd</sup> edition), MIT Press, 2009.
<b>Supplementary Textbooks</b>	J. Kleinberg, E. Tardos. Algorithm Design. Addison-Wesley, 2005.  Sara Baase, Allen Van Gelder, Computer Algorithms: Introduction to Design and Analysis (3rd edition), Addison-Wesley, 2000.
<b>Credit</b>	6
<b>Prerequisites of the Course</b> ( Attendance Requirements)	CENG205 Data Structures
<b>Type of the Course</b>	Compulsory
<b>Instruction Language</b>	Turkish
<b>Course Objectives</b>	Teaching algorithms design and analysis abilities
<b>Course Learning Outcomes</b>	At the end of the course, the students will have basic knowledge about; 1) Understanding problem solving techniques 2) Being able to compare different problem solving techniques 3) For a given problem being able to design an algorithm 4) Being able to analyze algorithms
<b>Instruction Methods</b>	The mode of delivery of this course is Face to face
<b>Weekly Schedule</b>	1. Week: Problem Solving and Algorithm Design 2. Week: Algorithm analysis 3. Week: Algorithm analysis 4. Week: Recurrences 5. Week: Recurrences 6. Week: Sorting Problem 7. Week: Sorting Problem 8. Week: Searching Problem and Binary Search Trees 9. Week: Red Black Trees 10. Week: Graph Algorithms 11. Week: Graph Algorithms 12. Week: Dynamic Programming 13. Week: Dynamic Programming 14. Week: Greedy Algorithms

<p><b>Teaching and Learning Methods</b></p>	<p>Weekly theoretical course hours: 3  Weekly tutorial hours: 2  Reading tasks  Material design and implementation  Midterm exam and preparation for midterm exam  Final exam and preparation for final exam</p>					
<p><b>Assessment Criteria</b></p>		<p><b>Numbers</b></p>	<p><b>Total Weighting (%)</b></p>			
	Midterm Exams	1	30			
	Assignment					
	Application	10	30			
	Projects					
	Practice					
	Quiz					
	Percent of In-term Studies (%)		60			
	Percentage of Final Exam to Total Score (%)		40			
	Attendance					
<p><b>Workload</b></p>	<p><b>Activity</b></p>	<p><b>Total Number of Weeks</b></p>	<p><b>Duration (weekly hour)</b></p>	<p><b>Total Period Work Load</b></p>		
	Weekly Theoretical Course Hours	14	3	42		
	Weekly Tutorial Hours	14	2	28		
	Reading Tasks	13	2	26		
	Studies					
	Material Design and Implementation	5	5	25		
	Report Preparing					
	Preparing a Presentation					
	Presentations					
	Midterm Exam and Preparation for Midterm Exam	1	14	14		
	Final Exam and Preparation for Final Exam	1	15	15		
	Other ( should be emphasized)					
	<b>Total Workload</b>			150		
	<b>Total Workload / 25</b>			6		
	<b>Course Credit (ECTS)</b>			6		
<p><b>Contribution Level Between Course Learning Outcomes and Program Outcomes</b></p>	<p>No</p> <p>Program Outcomes</p>	<p>1</p>	<p>2</p>	<p>3</p>	<p>4</p>	<p>5</p>
	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			X			
	4	Ability to choose, develop and use modern techniques and tools necessary for engineering applications; ability to effectively use computing technologies				X		
	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				X		
	6	Ability to work effectively in intradisciplinary and interdisciplinary teams or individually	X					
	7	Ability to efficiently prepare, evaluate and interpret reports			X			
	8	Ability to make presentations and conduct effective verbal and written communication in Turkish and English			X			
	9	Awareness of the necessity of lifelong learning; ability to access information, follow scientific and technological developments; ability to perpetually renew oneself		X				
	10	Awareness of professional and ethical responsibility, ability to act in accordance with ethical principles				X		
	11	Ability to apply knowledge on project management, risk management and change management			X			
	12	Awareness of entrepreneurship and innovation, ability to design and build	X					
	13	Ability to devise local and global solutions to contemporary issues considering the effects of engineering applications on health, environment and security	X					
	14	Awareness of the legal consequences of engineering solutions	X					
	15	Ability to apply knowledge on software development process and documentation rules		X				
	16	Knowledge on standards used in engineering applications				X		
	17	Awareness of occupational health and security, information security and privacy	X					
	<b>The Course's Lecturer(s) and Contact Information</b>		Prof. Dr. Suat OZDEMIR suatozdemir@gazi.edu.tr					

