

<b>Course Description Form</b>	
<b>Course Code and Name</b>	CENG452 DIGITAL SIGNAL PROCESSING (TECH.ELECT.)
<b>Course Semester</b>	8
<b>Catalog Content</b>	The course includes variety of multirate filter structures, time-varying and adaptive systems, transform domain processing, Fourier transform and applications, wavelet transform and applications, fast algorithms
<b>Textbook</b>	Understanding Digital Signal Processing (3rd Edition) by Richard G. Lyons, 2010.
<b>Supplementary Textbooks</b>	John G. Proakis, Dimitris K Manolakis, "Digital Signal Processing", 781292025735, 2013.  Blandford and Par, " Introduction to Digital Signal Processing", 978-0131394063, 2012.
<b>Credit</b>	6
<b>Prerequisites of the Course</b> ( Attendance Requirements)	There is no prerequisite or co-requisite for this course.
<b>Type of the Course</b>	Elective
<b>Instruction Language</b>	English
<b>Course Objectives</b>	To teach students the essential topics in digital signal processing
<b>Course Learning Outcomes</b>	<ol style="list-style-type: none"> <li>1. Signals and systems, continuous signals, discrete signals, Fourier analysis, sampling, matching, z-transform</li> <li>2. Z-transformation for convergence region, discrete Fourier transformation (DFT), fast Fourier transformation (FFT), digital filter design</li> </ol>
<b>Instruction Methods</b>	The mode of delivery of this course is Face to face
<b>Weekly Schedule</b>	<ol style="list-style-type: none"> <li>1. Week: Signals and Systems</li> <li>2. Week: Signals and Systems</li> <li>3. Week: Continuous signals</li> <li>4. Week: Discrete signals</li> <li>5. Week: Fourier analysis, sampling</li> <li>6. Week: Overlapping</li> <li>7. Week: z-transform</li> <li>8. Week: z-transform for the convergent area</li> <li>9. Week: Discrete Fourier Transform (DFT)</li> <li>10. Week: Discrete Fourier Transform (DFT)</li> <li>11. Week: Fast Fourier Transform (FFT)</li> <li>12. Week: Fast Fourier Transform (FFT)</li> <li>13. Week: Digital filter design</li> <li>14. Week: Digital filter design</li> </ol>
<b>Teaching and Learning Methods</b> (These are examples. Please fill which activities you use in the course)	Weekly theoretical course hours: 3 Reading Activities Internet browsing, library work Preparation of Midterm and Midterm Exam Final Exam and Preparation for Final Exam

<b>Assessment Criteria</b>		<b>Numbers</b>	<b>Total Weighting (%)</b>
	Midterm Exams	1	30
	Assignment	5	30
	Application	0	0
	Projects	0	0
	Practice	0	0
	Quiz	0	0
	Percent of In-term Studies (%)		60
	Percentage of Final Exam to Total Score (%)		40
	Attendance		

<b>Workload</b>	<b>Activity</b>	<b>Total Number of Weeks</b>	<b>Duration (weekly hour)</b>	<b>Total Period Work Load</b>			
	Weekly Theoretical Course Hours	14	3	42			
	Weekly Tutorial Hours	0	0	0			
	Reading Tasks	14	3	42			
	Studies	14	3	42			
	Material Design and Implementation	0	0	0			
	Report Preparing	0	0	0			
	Preparing a Presentation	0	0	0			
	Presentations	0	0	0			
	Midterm Exam and Preparation for Midterm Exam	1	12	12			
	Final Exam and Preparation for Final Exam	1	12	12			
	Other ( should be emphasized)	0	0	0			
	Total Workload			150			
	Total Workload / 25			6			
	Course Credit (ECTS)			6			
<b>Contribution Level Between Course Learning Outcomes and Program Outcomes</b>	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			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 sustainable systems	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>	Computer Engineering Department Chair bmbb@gazi.edu.tr					