

Course Description Form			
Course Code and Name	5181329 Advanced Logic Circuit Design		
Course Semester	Fall - Spring		
Catalog Content	Circuit design with programmable logic controllers, error analysis in logic circuits, state reduction methods		
Textbook	SAZHINA, N. and GRUSHINSKY, N., 1971. Gravity Prospecting. Mir Publishers, Moscow		
Supplementary Textbooks	Sayısal Sistem Tasarımı Bülent Sankur, Yorgo istefenapolos Ardişıl Lojik Devreler II Emin Ünalın G. De Micheli, Synthesis and Optimization of Digital Circuits, McGraw-Hill, R. Murgai, R.K. Brayton and Sangiovanni-Vincentelli, Logic Synthesis for Field Programmable Gate Arrays, Kluwer Academic Publishers, 1995. S. Brown, Z. Vranesic, Fundamentals of Digital Logic with VHDL Design, McGraw-Hill, 2000.		
Credit	8		
Prerequisites of the Course (Attendance Requirements)	None		
Type of the Course	Elective		
Instruction Language	Turkish		
Course Objectives	Learning circuit design with programmable logic controllers Error analysis in logic circuits Learning State reduction methods		
Course Learning Outcomes	1.The students can produce both theoretical and practical solutions to problems that may encounter in circuit design issues. 2.The students can develop applications that require logic circuit design.		
Instruction Methods	Face to face		
Weekly Schedule	1. Week Equivalence relations 2. Week Partially ordered sets 3. Week Mesh structures 4. Week Boolean algebra 5. Week State reduction in certain cases completely sequential machine 6. Week State reduction in certain cases completely sequential machine 7. Week State reduction in certain cases completely sequential machine 8. Week Circuit design with Field Programmable Gate Arrays 9. Week Circuit design with Field Programmable Gate Arrays 10. Week The design of asynchronous sequential circuits 11. Week Circuit design with programmable logic controllers 12. Week Circuit design with programmable logic controllers 13. Week Error analysis in logic circuits 14. Week Error analysis in logic circuits		
Teaching and Learning Methods <i>(These are examples. Please fill which activities you use in the course)</i>	Weekly theoretical course hours Weekly applied course hours Reading Activities Internet browsing, library work Designing and implementing materials Report preparing Preparing a Presentation Presentations Preparation of Midterm and Midterm Exam Final Exam and Preparation for Final Exam		
Assessment Criteria		Numbers	Total Weighting (%)
	Midterm Exams	1	30
	Assignment	1	10

	Application						
	Projects						
	Practice						
	Quiz						
	Percent of In-term Studies (%)			40			
	Percentage of Final Exam to Total Score (%)			60			
	Attendance						
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	10	4	40			
	Studies	10	3	30			
	Material Design and Implementation	10	3	30			
	Report Preparing						
	Preparing a Presentation						
	Presentations						
	Midterm Exam and Preperation for Midterm Exam	5	4	20			
	Final Exam and Preperation for Final Exam	5	3	15			
	Other (should be emphasized)	10	3	30			
	Total Workload			207			
	Total Workload / 25			8.28			
	Course Credit (ECTS)			8			
	Contribution Level Between Course Learning Outcomes and Program Outcomes	No	Program Outcomes	1	2	3	4
1		Reaches the expansion of knowledge by conducting scientific research in the field of engineering and evaluation, interpretation and application of information.					x
2		Has extensive and in depth knowledge including the latest techniques, methods applied and their limitations in engineering.					x
3		Completes and applies knowledge by using scientific methods by using limited or missing data and integrates information from different disciplines.		x			
4		Be aware of new and developing practices of the profession, examines and learns when needed.					x
5		Defines and formulates problems related to the field, develops methods to solve them and applies innovative methods in solutions.				x	

	6	Develops new and / or original ideas and methods, designs complex systems or processes and develops innovative / alternative solutions in their designs.				x	
	7	Designs and applies theoretical, experimental and modeling based researches, examines and solves the complex problems encountered in this process.					x
	8	Works effectively in disciplinary and multidisciplinary teams, leads such teams and develops solution approaches in complex situations, works independently and takes responsibility.				x	
	9	Communicates oral and written using a foreign language at least at the level of European Language Portfolio B2.				x	
	10	Conveys the process and results of the studies in written and oral form in a systematic and clear manner in national and international environments within or outside the field.				x	
	11	Knows the social, environmental, health, security, legal aspects of engineering applications; project management, and business life applications and be aware of the constraints of these engineering applications.				x	
	12	Considers social, scientific and ethical values in the stages of data collection, interpretation and announcement and in all professional activities.		x			
The Course's Lecturer(s) and Contact Informations		Name Surname: Asst. Prof. Dr. Uraz YAVANOĞLU E-mail address: uraz@gazi.edu.tr					