

DEPARTMENT MECHATRONICS ENGINEERING **COURSE INFORMATION**

Course Details										
Code	Acad	emic Ye	ar	Semester						
ETE101	1			WS						
Title	Т	Α	L	ECTS						
Digital Design		3	1	1	6					
Language	German									
Level	Undergraduate	X		F	ostgra	duate				
Department / Program	Electrical and Electr									
Forms of Teaching and Learning	Face-to-Face study course									
Course Type	Compulsory		х	Ele	ective					
Objectives	Students will be able circuits, and also to	e to use nur analyze and	nber systems, examine com	codes and ibinational	logic fu /seque	nctions ntial log	for building digital gic circuits			
Content	Number systems an logic analysis and de programmable logic	Number systems and codes, Boolean algebra and gate level minimization, Combinational logic analysis and design, sequential logic analysis and design, Introduction to programmable logic devices								
Prerequisites	-									
Coordinator	-									
Lecturer(s)	DrIng. Sanam Moghaddamnia									
Assistant(s)	M.Sc. Ferrruh İlhan									
Work Placement	-									
Recommended or Required R	eading									
Books / Lecture Notes	 Grundlagen der Technischen Informatik, dirk w. Hoffmann, Hanser, 2007 Grundlagen der Digitaltechnik, Prof. DrIng. DrIng. h.c. Dr. h.c. Hans Martin Lipp, Prof. DrIng. Jürgen Becker, 7. Auflage, 2011 									
Other Sources	-									
Additional Course Material										
Documents	Lecture Slides, Exercises and Laboratory Tasks									
Assignments										
Exams	1 Midterm Exam, 1 Final Exam									
Course Composition										
Mathematics und Basic Sciences							20%			
Engineering							20%			
Engineering Design							%			
Social Sciences	%									



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		COORDENT				
Educational Scie	nces			%		
Natural Sciences	;			%		
Health Sciences				%		
Expert Knowledg	ge			60%		
Assessment						
Activ	ʻity	Cou	Percentage (%)			
Midterm Exam		35				
Quiz						
Assignments						
Attendance						
Recitations						
Projects			15			
Final Exam		1		50		
			Total	100		
ECTS Points and	d Work Load					
ECTS Points and Activ	d Work Load 'ity	Count	Duration	Work Load (Hours)		
ECTS Points and Activ Lectures	d Work Load ity	Count 14	Duration 3	Work Load (Hours) 42		
ECTS Points and Activ Lectures Self-Study	d Work Load ity	Count 14 14	Duration 3 4	Work Load (Hours) 42 56		
ECTS Points and Activ Lectures Self-Study Assignments	d Work Load ity	Count 14 14	Duration 3 4	Work Load (Hours) 42 56		
ECTS Points and Activ Lectures Self-Study Assignments Presentation / Se Preparation	d Work Load ity eminar	Count 14 14	Duration 3 4	Work Load (Hours) 42 56		
ECTS Points and Activ Lectures Self-Study Assignments Presentation / Se Preparation Midterm Exam	d Work Load ity eminar	Count 14 14 14 14	Duration 3 4 2	Work Load (Hours) 42 56 2		
ECTS Points and Activ Lectures Self-Study Assignments Presentation / So Preparation Midterm Exam Recitations	d Work Load ity eminar	Count 14 14 14 14 14 14 14 14 14 14 14 14	Duration 3 4 2 1	Work Load (Hours) 42 56 2 14		
ECTS Points and Activ Lectures Self-Study Assignments Presentation / Se Preparation Midterm Exam Recitations Laboratory	d Work Load ity eminar	Count 14 14 14 14 14 14 14 14 14 14 14 14	Duration 3 4 2 1 1	Work Load (Hours) 42 56 2 14 14		
ECTS Points and Activ Lectures Self-Study Assignments Presentation / Se Preparation Midterm Exam Recitations Laboratory Projects	d Work Load ity eminar	Count 14 14 14 14 14 14 14 14 14 14 14 14 14	Duration 3 4 2 1 52	Work Load (Hours) 42 56 2 14 14 14 40		
ECTS Points and Activ Lectures Self-Study Assignments Presentation / Se Preparation Midterm Exam Recitations Laboratory Projects Final Exam	d Work Load ity eminar	Count 14 14 14 14 14 14 14 14 14 14 14 14 14	Duration 3 4 2 1 52 2 2	Work Load (Hours) 42 56 2 14 14 40 2		
ECTS Points and Activ Lectures Self-Study Assignments Presentation / Se Preparation Midterm Exam Recitations Laboratory Projects Final Exam	d Work Load ity eminar	Count 14 14 14 14 14 14 1 14 14 14 14 14 14 14 14 14 14 14 14 14 14 1 1 1 1	Duration 3 4 2 1 52 2 2 1 52 2 2 52 2 52 2 52 2 52 2 52 2 52 2 52 2 54 55 55 50 51 52 52 52 52 52 52 53 54 55 55 55 55 55 55 55 55 55 55 55 55 55 55 55 55 5	Work Load (Hours) 42 56 2 14 14 40 2 170		
ECTS Points and Activ Lectures Self-Study Assignments Presentation / Se Preparation Midterm Exam Recitations Laboratory Projects Final Exam	d Work Load ity eminar	Count 14 14 14 14 14 1 1 1 14 14 14 14 14 14	Duration 3 4 - 2 1 52 2 2 1 52 2 1 52 2 1 52 2 2 1 52 2 1 52 2 1 52 2 1 52 2 1 52 2 1 52 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Work Load (Hours) 42 56 2 14 14 40 2 2 170 6		
ECTS Points and Activ Lectures Self-Study Assignments Presentation / Se Preparation Midterm Exam Recitations Laboratory Projects Final Exam	d Work Load	Count 14 14 14 14 14 14 14 14 14 14 14 14 14	Duration 3 4 - 2 1 52 2 2 2 2 2 2 4 52 2 Total Work Load mts (Total Work Load / Hour)	Work Load (Hours) 42 56 2 14 14 40 2 2 170 6		

2	Understanding fundamentals of boolean algebra, binary Logic and gates, and gate level minimization
3	Ability of analysis and synthesis of combinational and sequential circuits
4	
5	
6	

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7	
8	
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12	
Weekly Conten	t
1	Introduction to digital electronics
2	Number systems and codes
3	Boolean algebra 1
4	Boolean algebra 2
5	Binary logik, gates and gate level minimization
6	Combinational logic circuits - Part 1
7	Midterm Exam
8	Combinational logic circuits - Part 2
9	Latches and Flip-Flops 1
10	Latches and Flip-Flops 2
11	Sequential logic circuits – Registers
12	Sequential logic circuits – Counters
13	Introduction to register-transfer level and digital memory technologies
14	Introduction to programmable logic devices
15	

Contribution of Learning Outcomes to Program Objectives (1-5)												
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
1	5											
2		5	5									
3		5	4									
4												
5												
6												
7												
8												
9												



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10												
11												
12												
Contribution	Contribution Level 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High											
Compiled by:	Compiled by: Sanam Moghaddamnia											
Date of Comp	ilation		26.10.2021									