

DEPARTMENT OF MATERIALS SCIENCE AND TECHNOLOGY  
COURSE SYLLABUS

Course Details				
<b>Code</b>		<b>Academic Year</b>		<b>Semester</b>
ETE101		2		3
<b>Title</b>		<b>T</b>	<b>A</b>	<b>L</b>
Digital Design		2	1	1
<b>ECTS</b>		6		
<b>Language</b>	German			
<b>Level</b>	<b>Undergraduate</b>	X	<b>Graduate</b>	<b>Postgraduate</b>
<b>Department / Program</b>	Materials Science and Technology			
<b>Forms of Teaching and Learning</b>	Face to face			
<b>Course Type</b>	<b>Compulsory</b>		<b>Elective</b>	X
<b>Objectives</b>	In this lecture students will learn mathematical foundations of digital systems, analyzes, syntheses and minimizations.			
<b>Content</b>	Number systems, Boolean algebra, minimization methods, MUX, DEMUX, comparators, adders, enhancers, extractors, multipliers, BarrelShift, arithmetic logic unit, memory units, register, counter, RAM			
<b>Prerequisites</b>				
<b>Coordinator</b>				
<b>Lecturer(s)</b>	Asist Prof.Dr. M. Gökhan Habiboğlu			
<b>Assistant(s)</b>				
<b>Work Placement</b>	No			
Recommended or Required Reading				
<b>Books / Lecture Notes</b>	Grundlagen der Technischen Informatik, dirk w. Hoffmann, Hanser, 2007			
<b>Other Sources</b>				
Additional Course Material				
<b>Documents</b>				
<b>Assignments</b>				
<b>Exams</b>				
Course Composition				
<b>Mathematics und Basic Sciences</b>				20%
<b>Engineering</b>				20%
<b>Engineering Design</b>				%
<b>Social Sciences</b>				%
<b>Educational Sciences</b>				%

DEPARTMENT OF MATERIALS SCIENCE AND TECHNOLOGY  
COURSE SYLLABUS

Natural Sciences		100%
Health Sciences		%
Expert Knowledge		60%

**Assessment**

Activity	Count	Percentage (%)
Midterm Exam	1	30
Quiz		
Assignments		
Attendance		
Recitations	14	20
Projects		
Final Exam	1	50
<b>Total</b>		<b>100</b>

**ECTS Points and Work Load**

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	14	3	42
Assignments	5	15	75
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	14	1	14
Laboratory	14	2	28
Projects			
Final Exam	1	2	2
<b>Total Work Load</b>			<b>191</b>
<b>ECTS Points (Total Work Load / Hours)</b>			<b>6</b>

**Learning Outcomes**

1	The bases of digital design and computer engineering
2	Gaining the ability to operate in different types of algebra
3	Gaining the ability to perform transactions in different number systems
4	the ability to express logic operators, bool functions and logic formulas in different formations
5	Minimization in circuit design, KV-Diagram solving
6	Creation of basic circuits such as MUX, DEMUX, comparator, adder
7	Design of digital storage units with simple logic circuits
8	Access to Register and RAM from storage units

DEPARTMENT OF MATERIALS SCIENCE AND TECHNOLOGY  
COURSE SYLLABUS

9	
10	
11	
12	

**Weekly Content**

1	Number systems
2	Bool Algebra 1
3	Bool Algebra 2
4	Minimization 1
5	Minimization 2
6	MUX, DEMUX, Comparators
7	Collectors, enhancers, extractors
8	Multipliers, Barrel-Shift, Arithmetic Logic Unit
9	Memory units 1
10	Memory units 2
11	Register
12	Counter
13	RAM
14	
15	

**Contribution of Learning Outcomes to Program Objectives (1-5)**

	P1	P2	P3	P4	P5	P6	P7	P8
1	5	5	5	5	5	5	5	5
2	5	5	5	5	5	5	5	5
3	5	5	5	5	5	5	5	5
4	5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5	5
6	5	5	5	5	5	5	5	5
7	5	5	5	5	5	5	5	5
8	5	5	5	5	5	5	5	5
9								
10								
11								
12								

**Contribution Level** 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High



DEPARTMENT OF MATERIALS SCIENCE AND TECHNOLOGY  
COURSE SYLLABUS

Compiled by:	
Date of Compilation:	