

<b>GEDİZ</b> ÜNİVERSİTESİ izmir	Engineering and Architecture Faculty Computer Engineering Department	Course Information Form
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### COURSE INFORMATION

<b>Academic Year / Semester</b>	2011 – 2012 / Fall	
<b>Course Code, Name, Credits (T-A-C)</b>	EEE 251 Logic Design and Circuits (3-2-4)	
<b>Lecture and Lab Schedules</b>	<b>Theoretical</b>	Tuesday, 10:00 – 12:45
	<b>Lab</b>	Tuesday, 13:45 – 15:30
<b>Course Type</b>	Compulsory	
<b>Prerequisite</b>	None	

### ACADEMIC PERSONAL

<b>Title / First and Last Name</b>	Prof. Dr. Haluk Gümüşkaya
<b>Room</b>	D107
<b>E-Mail Address / Web Page</b>	<a href="mailto:haluk@gumuskaya.com">haluk@gumuskaya.com</a> <a href="http://www.gumuskaya.com">http://www.gumuskaya.com</a>
<b>Telephone</b>	0232-355 0000 – 2305
<b>Office Hours</b>	Tuesday: 09:00 – 10:00, Wednesday: 09:00 – 10:00
<b>Assistant</b>	Yavuz İnce

### COURSE DESCRIPTION

Data representation, number systems, arithmetic operations, Boolean algebra, logic functions and theorems, logic gates, canonical forms, simplification techniques, design of combinational circuits, decoders, encoders, multiplexers, arithmetic circuits, sequential circuits, design of sequential circuits and the algorithmic state machine, timing and timing problems, programmable logic devices, registers and register operations, buses and 3-state logic, basics of memory, SRAM and DRAM, introduction to basic computer organization and design.
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### COURSE TEXTBOOK AND OTHER MATERIALS

<b>Main Book</b>	1. <i>Digital Design with RTL Design, Verilog and VHDL</i> , 2nd ed., Frank Vahid, John Wiley, 2011.
<b>Lab Resources</b>	1. Hardware equipment provided in the Digital Systems Design Lab. 2. VHDL tools 3. NI Circuit Design Suit 11.0 – Multisim
<b>Recommended Books</b>	1. <i>Logic and Computer Design Fundamentals</i> , 4th Ed., M. Morris Mano, C. Kime, Prentice Hall, 2008. 2. <i>Digital Design</i> , 4th Ed., M. Morris Mano, M. D. Ciletti, Prentice Hall, 2007.

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### WEEKLY COURSE SCHEDULE

W	D	Topics Covered
1	27/09	Introduction, digital and binary data representation, DD Chp. 1
2	4/10	Switches, transistors, logic gates, Boolean algebra, DD Chp. 2.1-2.5
3	11/10	Truth tables, canonical forms, combinational design process, examples, DD Chp. 2.6-2.8
4	18/10	Decoders and MUXes, non-ideal behavior, Verilog modeling, DD Chp. 2.9, 2.10
5	25/10	Latches & flip-flops, basic register, clocking, FSMs, DD Chp. 3.1-3.3
6	1/11	Controller design, examples, non-ideal behavior, Verilog modeling, DD Chp. 3.4, 3.5, 3.8
7	8/11	<b>No classes, Kurban Bayram week</b>
8	15/11	Registers, adders, comparator, multiplier, <b>Midterm exam (Nov 15)</b> , DD Chp. 4.1-4.5
9	22/11	Signed numbers, subtractors, ALUs, shifters, counters, timers, register file, Verilog modeling, DD Chp. 4.6-4.10, 4.13
10	29/11	High-level state machines HLSM, RTL design process, examples, DD Chp. 5.1-5.3
11	6/12	RTL design (continued), clock frequency, behavioral design, memory, RAM, ROM, DD DD Chp. 5.4-5.7
12	13/12	Queues/FIFO, multiple processors, heirarchy, Verilog modeling, DD Chp. 5.6-5.10, 5.13
13	20/12	Optimizations and tradeoffs, DD Chp. 6
14	27/12	Physical implementation on ICs, DD Chp. 7
15	3/01	Reserved

### WEEKLY LABORATORY SCHEDULE

Week	Date	Subjects
1		
2		
3		
4		TBA
5		TBA
6		TBA
7		No classes, Kurban Baytam week
8		No lab

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<b>9</b>	TBA
<b>10</b>	TBA
<b>11</b>	TBA
<b>12</b>	TBA
<b>13</b>	TBA
<b>14</b>	TBA
<b>15</b>	TBA

### GRADING

	If Applicable Put (X) Sign	Percent (%)
Midterm I	X	20
Midterm II		
Quizzes		
Homework		20
Laboratory	X	30
Term Project	X	
Other (Attendance, ...)		
Final Exam	X	30

In order to pass EEE 251, students must show minimum competence in the exams. Any student who does not have a weighted average of 35.0 or greater for midterm and final exams will receive an automatic grade of FF, for lack of minimum competence. The weighted average will be calculated as follows:  $(0.20 \times \text{Midterm Exam} + 0.30 \times \text{Final Exam}) / 0.50$

**Attendance:** Students who fail to attend at least 70% of the classes will receive a grade of FF. Students must not miss more than 2 lab sessions (80% of the lab sessions), or they will receive a grade of FF.

Students who meet the above requirements will have their numerical course average calculated with the following weights:

Labs: 30%  
Homework: 20%  
Midterm Exam: 20%  
Final Exam: 30%

From the numerical course average grades, the students who meet the above two requirements, letter grades ranging from AA to FF will be determined in the usual way (taking into account overall performance and distribution of the scores, class and lab participation and effort, as well as the attendance (in class and lab) of the student.