MARMARA UNIVERSITY - FACULTY OF ENGINEERING

2017-2018 Fall

EE2032 Electronics

COURSE DESCRIPTION FORM

Offering Department	Department of Computer Engineering		Undergraduate must course
Course Code	EE2032		
Course Name	Electronics		
Language of Instruction	English		
ECTS	5		
Contact Hours	Theoretical (T): 2	Practice (U): 0	Laboratory(L): 2
Pre-requisites			
Instructor	**Name**	Emre Arslan	
	E-mail	emre.arslan@marmara.edu.tr	
Course Materials	**Mandatory**	Materials and announcements of the course are shared on the course web page: https://abys.marmara.edu.tr/emre.arslan/	
	Recommended	Sedra & Smith, “Microelectronic Circuits” and Behzad Razavi, “Fundamentals of Microelectronic Circuits”.	
Course Objectives	To learn the models of basic electronic elements. To improve the basic understanding of the theory and application of electronic circuits. To analyze and design electronic circuits.		
Course Content	Introduction to nonlinear systems, Semiconductor physics, The structure and working principle of semiconductor diode, Diode applications, BJT DC analysis, BJT AC analysis, The structure and working principle MOSFET, MOSFET DC analysis, MOSFET AC analysis		
Learning Outcomes	**LO1**	Explain the structure and working principles of electronic circuit elements such as diodes, transistors.	
	LO2	Explain the working principles of complex electronic circuits.	
	LO3	Design electronic circuits that perform a desired function.	
	LO4	Analyze electronic circuits by using computer aided design.	
	LO5	Apply laboratory experiments with the theoretical knowledge about transistors.	

Program Outcomes		**LO1**	**LO2**	**LO3**	**LO4**	**LO5**		
PO2	Ability to identify, formulate, and solve complex engineering problems (a); ability to select and apply appropriate analysis and modeling methods for this purpose (b).		a b					
PO13	Knowledge of complex electrical and electronic devices, software and mathematical knowledge necessary for the design and analysis of hardware and software systems, basic sciences (a), computer science (b) and engineering sciences (c).	c	c	c	c	c		

	No	**Week**	**Subjects**	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**		
Subjects (Knowledge, Skills and Behaviours),	**K1**	1	Introduction the nonlinear systems.	MF						
	K2	2	Semiconductor Physics.	MF						
Contributions of Subjects to Learning Outcomes,	**K3**	3	The structure and working principle of semiconductor diode		MF,Q			Q		
	K4	4-5	Diode uses and applications.					MF,Q		
	K5	6-8	BJT DC analysis.	MF						
	K6	9-10	BJT AC analysis.	MF						
	K7	11	The structure and working principle of MOSFET.		MF,Q			Q		
Assessment Methods	**K8**	12-13	MOSFET DC analysis.		MF,Q					
	K9	14	MOSFET AC analysis.		MF,Q			Q		

	No	**Type**	**Weight**	**Implementation Rule**	**Make-up Rule**
Assessment Methods and Weights	**MF**	Midterm-Final	70%	There are one midterm and one final exam. All course materials are closed in the exam. Use of calculator is allowed.	The students who fail to take the midterm exam due to one of the excuses listed in the Marmara University Excuse Examination Directive should inform the department secretary within five days following the exam. Those who are accepted by the board of directors in accordance with the principles determined by the Senate, take the make-up exam during the period specified in the academic calendar. The make-up exam for the final exam is given in the make-up exam week.

	Q	Laboratory	30%	There are five experiments held in laboratory. Grading is determined based on 3 phases: preparations before experiment, experimental performance and the reports written at end of the experiment.	Each student is responsible for all of the experiments. Students who do not participate in 2 experiments without any excuse are failed from the course regardless of their grades. In the last week of the semester, compensation experiments are performed.
	TOTAL		100%		

Determining Letter Grades

• The letter grades will be determined based on one midterm, five lab experiments and a final exam.
• In order to determine the letter grade, a curve or catalog based method will be followed based on the total average scores of the students.
• In order to pass the course, the final score and the total average score of the student must be at least 35.
• According to Marmara University Undergraduate regulations, the weight of the final exam must be at least 40 out of 100.

Assessment	Midterm	Laboratory	Final	TOTAL
Weight	30	30	40	100

Teaching Method, Student Work Load

Time Applied by the Instructor

No	Method	Explanation	Hours
1	Lectures	Lectures are given in class using the board or via presentations. Example questions are solved to enhance the concepts.	14x2=28
2	Problem Session/ Practice	Problems related to the course topics are solved on the board.	
3	Laboratory	Experiments are done in the laboratory or theoretical concepts covered during the lectures are practiced using computer exercises.	5x2=10
4	Interactive Courses	Questions are asked to students during lectures and they are encouraged to guess the answers (peer learning is also in this category)	
5	Field Work	Students attend activities outside the campus.	
6	Midterm	Midterm exam is given during the midterm week.	2
7	Final	Final exam is given during the final exam week.	2

Estimated Time to be Allocated by a Student

8	Projects	The students carry out research about the problem given in the project, design and implement their solution and prepare a report.	
9	Homeworks	The students solve the problems given as homework.	
10	Pre-class learning of Course Material	The students study and learn the new subjects from course materials.	14
11	Review of Course Material	Students review the course subjects from course materials to prepare for the exams and homeworks.	70
12	Office Hour	Students ask questions to the instructor or the assistant during office hours.	2
TOTAL			128

Academic Honesty

Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.

In case academic dishonesty is observed, the first authority is the instructor of the course. The instructor may decide to give the student zero for the homework(s)/lab(s)/exam(s), give the letter grade FF, or may take disciplinary action.