ECTS COURSE INFORMATION FORM

Faculty	**Faculty of Engineering**	
	B.Sc. in Computer Engineering	**Elective**
	B.Sc. in Electrical-Electronics Engineering	**Required**
	B.Sc. in Mechanical Engineering	**Elective**

Course Code	EE 308			
Course Title in English	Electrical and Electronics Engineering Design Studio			
Course Title in Turkish	Elektrik-Elektronik Mühendisliği Tasarım Stüdyosu			
Language of Instruction	English			
Type of Course	Flipped Classroom			
Level of Course	Undergraduate			
Course Category (by % of Content)	Basic Science	Basic Engineering	Engineering Design	General Education
	0	30	70	0
Semester Offered	Fall			
Contact Hours per Week	Lecture: 2 hours	Recitation: -	Lab: 2 hours	Other:-
Estimated Student Workload	150 hours per semester.			
Number of Credits	6 ECTS			
Grading Mode	Standard Letter Grade			
Pre-requisites	EE 201 Circuit Analysis I or EE 212 Electrical and Electronic Circuits			
Expected Prior Knowledge	Prior knowledge in different fields of Electrical and Electronics Engineering.			
Co-requisites	-			
Registration Restrictions	Only Undergraduate Students			
Overall Educational Objective	To learn how to design and implement an Electrical and Electronics Engineering project.			
Course Description	This course provides a design experience in an Electrical and Electronics engineering problem. The following topics are covered: sensors actuators and interfaces, simple RF transceivers, microcontrollers, fundamentals of design, design tools, simulation tools, simulations and applications with real data, design experience through a team project with a final report and presentation.			
Course Description in Turkish	Bu derste, bir Elektrik-Elektronik mühendisliği probleminde tasarım tecrübesi kazandırılmaktadır. Aşağıdaki konular kapsanmaktadır: sensör aktüatörleri ve arayüzler, basit RF alıcı-verici, mikro denetleyiciler, tasarımın temelleri, tasarım araçları, benzetim araçları, gerçek veri ile benzetimler ve uygulamalar, bir final raporu ve sunum ile tamamlanan takım projesi ile tasarım deneyimi.			
Course Learning Outcomes and Competences	Upon successful completion of the course, the learner is expected to: 1. identify necessary technical knowledge to design and solve electrical engineering problems; 2. show the ability to develop engineering design skills using computers and laboratory equipment; 3. construct and test a design using necessary hardware and software tools; 4. demonstrate an engineering design with technical reports and presentation; 5. complete an engineering design project as part of a team.			

Relationship of the Course with the Student Outcomes	Level	Learning Outcome(s)	Assessed by
Student Outcomes	N=None S=Supportive H=High		Exam, Project, HW, Experiment, Presentation, etc.
(a) an ability to apply knowledge of mathematics, science, and engineering			
(b) an ability to design and conduct experiments, as well as to analyze and interpret data			
(b)-1. an ability to design/develop an experiment by identifying required assumptions, constraints, data collection methods and models	H	2,3	Design, Project
(b)-2. Implement experimental procedures to conduct an experiment and use engineering judgment to draw conclusions	H	2,3	Lab
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	H	1,2,3	Lab, Design, Project
(d) an ability to function on multidisciplinary teams			
(d)-1. Function effectively on a intradisciplinary team	H	5	Design, Project
(d)-2. Function effectively on a multidisciplinary team			
(e) an ability to identify, formulate, and solve engineering problems	H	1,2,3	Design, Project
(f) an understanding of professional and ethical responsibility			
(g) an ability to communicate effectively			
(g)-1. Communicate effectively with well-organized written documents	H	4	Lab, Design, Project
(g)-2. Communicate effectively verbally with a range of audiences	H	4	Project
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	S	2,3	Project
(i) a recognition of the need for, and an ability to engage in life-long learning			
(j) a knowledge of contemporary issues	S	2,3	Project
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	H	2,3	Lab, Design, Project

Prepared by and Date	Asst. Prof. Dr. A. Serdar Tan / January 2017	
Semester	Spring 2018-2019	
Name of Instructor	Dr. Tuba Ayhan	
Course Contents	Week	Topic
	1.	Sensor actuator & interface
	2.	Sensor actuator & interface
	3.	Sensor actuator & interface
	4.	Microcontrollers and programming
	5.	Microcontrollers and programming
	6.	RF Transceivers
	7.	RF Transceivers
	8.	Project Design Period
	9.	Project Design Period
	10.	Project Design Period

	11.	Project Design Period
	12.	Project Design Period
	13.	Project Design Period
	14.	Project Presentations
	15.	Final Examination Period
	16.	Final Examination Period
Required/Recommended Readings		
Teaching Methods	Lectures/contact hours using "flipped classroom" as an active learning technique	
Homework and Projects	1 Project and Demonstration, 3 Design Reports	
Laboratory Work	7 laboratories on 3 major topics on sensor actuators & interfaces, telecommunications and microcontrollers.	
Computer Use	Students design their projects using computer programming and simulation tools.	
Other Activities	-	
Assessment Methods	Types of assessment / Number / Ratio (%) Laboratory Report / 3 / 30 (each 10%) Design Report / 3 / 30 (each 10%) Project / 1 / 40 Total / / 100	
Course Administration	**Instructor's office**: 5th Floor **office hours:** TBA **email address:** ayhant@mef.edu.tr **Rules for attendance: -** **Missing a midterm**: - **Missing a final**: - **A reminder of proper classroom behavior, code of student conduct**: YÖK Regulations **Statement on plagiarism**: YÖK Regulations http://3fcampus.mef.edu.tr/uploads/cms/webadmin.mef.edu.tr/4833_2.pdf	

ECTS Student Workload Estimation

Activity	No/Weeks	Hours			Calculation	Explanation
	No/Weeks per Semester (A)	Preparing for the Activity (B)	Spent in the Activity Itself (C)	Completing the Activity Requirements (D)		
Lecture/Flipped Classroom	14		2		28	A*(B+C+D)
Laboratory	7		4	4	56	A*(B+C+D)
Design	3		10		30	A*(B+C+D)
Project	1		30		30	A*(B+C+D)
Demonstration	1	5	1		6	A*(B+C+D)
Total Workload					150	
Total Workload/25					6	
ECTS					**6**	