ECTS COURSE INFORMATION FORM

Faculty	**Faculty of Engineering**	
Program	**B.Sc. in Civil Engineering**	**Elective**
	B.Sc. in Computer Engineering	**Required**
	B.Sc. in Electrical-Electronics Engineering	**Required**
	B.Sc. in Industrial Engineering	**Elective**
	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			
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; 6. Use appropriate learning strategies in completing an engineering design project.			

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.
(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	H	1	Lab, Project
(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	H	2	Lab, Project, Demo
(3) an ability to communicate effectively with a range of audiences	H	4	Project, Demo
(4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts			
(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	H	5	Project, Demo
(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	H	3	Lab, Project, Demo
(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies	H	6	Project

Prepared by and Date	Asst. Prof. Dr. Tuba Ayhan / December 2019	
Semester	Spring 2019-2020	
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 Exam/Project/Presentation Period
	16.	Final Exam/Project/Presentation Period
Required/Recommended Readings		
Teaching Methods	Lectures/contact hours using “flipped classroom” as an active learning technique	
Homework and Projects	There will be **3 lab reports** on 3 major topics (see Laboratory Work section). One group project is assigned. Students hand in **3 design reports** at particular phases of the project in order to show that they are working on a proper plan. **Project** is demonstrated and presented to all department members; faculty members and students are also invited.	

Laboratory Work	7 laboratories on 3 major topics on sensor actuators & interfaces, telecommunications and microcontrollers. One mini-project is assigned for each topic. Students are required to give a Laboratory Report explaining how they tackle and solve the given problem using the tools they have practiced in the lab.
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, A570 **office hours:** TBA **email address:** ayhant@mef.edu.tr **Rules for attendance: -** **Missing a midterm**: - **Missing a final**: - **Report submissions**: Late reports are not accepted unless student(s) provide faculty approved excuse. Submission dues are announced on Blackboard. **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 Classroo	14		2		28	A*(B+C+D)
Laboratory	7		4	4	56	A*(B+C+D)
Design Report	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**	