



T.C. ESKİŞEHİR OSMANGAZİ UNIVERSITY
ARCHITECTURE AND ENGINEERING FACULTY
MECHANICAL ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

SEMESTER	Fall
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COURSE CODE	151817476-151837476	COURSE NAME	Mechatronics I
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Laboratory	Credit	ECTS	TYPE	LANGUAGE
7	3	0	0	3	5	COMPULSORY () ELECTIVE (x)	Turkish

COURSE CATAGORY

Basic Science	Basic Engineering	Engineering Subjects [if it contains considerable design, mark with (√)]	Social Science
	√	√	

ASSESSMENT CRITERIA

MID-TERM	Evaluation Type	Quantity	%
	Mid-Term		
	Quiz		
	Homework		
	Project	1	40
	Report		
	Others (Applications)	3 Grup (10+10+2 Applications)	60

FINAL EXAM		
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PREREQUIEITE(S)	
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COURSE DESCRIPTION	The course aims to provide the knowledge and know-how of Mechatronics which is a science of common ground for mechanical/electrical engineering and computer science. It also helps students develop skills in designing electromechanical automated systems. As the Mechatronics components and structural elements are introduced, emphasis is placed on the industrial Mechatronics systems and innovative Mechatronic system design.
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COURSE OBJECTIVES	To provide knowledge and gain R&D skills on electromechanical automated engineering systems.
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ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION	To help student develop skills in designing electromechanical automated systems.
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COURSE OUTCOMES	By the end of this module students should be able to: ✓ appreciate what mechatronics is about. ✓ get an overview of the mechatronic design issues and a general description of the key technologies. ✓ integrate problem solving, oral/written/graphical communication skills, and computer usage in engineering system investigations and also design projects that benefit people and society. ✓ begin to develop the professionalism, leadership, ethical behavior, social awareness, creativity, and critical thinking essential for the practice of engineering. ✓ learn to integrate sensors and actuators. ✓ gain experience designing and constructing basic mechatronic systems ✓ apply the acquired skills and knowledge to solve real world problems
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TEXTBOOK	Lecture Notes; Introduction to Mechatronics and Measurement Systems, Histan M. B., Alciatore D. G., Mcgraw Hill
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OTHER REFERENCES	Application oriented resources (in microprocessors, sensors and actuators, circuit analysis, control, programming etc.)
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TOOLS AND EQUIPMENTS REQUIRED	
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COURSE SYLLABUS	
WEEK	TOPICS
1	Introduction
2	Basic Electronic Circuit Elements
3	Transistor circuits and use of breadboard, Applications: LED, switch, light sensor, timer (transistor)
4	Oscillator Circuits, Applications: 555 monostable and astable modes
5	OP-AMP Circuits, Applications:, timer (op-amp), temperature sensor, inverting and non-inverting op-amp
6	DC Motor Direction Control, Applications: DC-motor control with mechanical and transistor H-bridges
7	DC Motor Speed Control, Applications: Speed Control of DC Motor Using diodes, transistor and 555 Timer Circuit (PWM)
8	Mid-Term Examination
9	Mid-Term Examination
10	Relays and Optocouplers, Applications: LED-motor driver with relays and optocouplers
11	Digital Electronics Applications: logic-gates (and-or-not)
12	Microcontrollers
13	Microcontroller applications
14	Microcontroller applications
15,16	Final Exam (Term Project)

NO	PROGRAM OUTCOMES	3	2	1
1	Sufficient knowledge of engineering subjects related with mathematics, science and Mechanical Engineering; an ability to apply theoretical and practical knowledge on solving and modeling of Mechanical Engineering problems.	[]	[X]	[]
2	Ability to determine, define, formulate and solve complex Mechanical Engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods.	[]	[]	[X]
3	Ability to design a complex system, a component and/or an engineering process under real life constraints or conditions, defined by environmental, economic and political problems; for that purpose an ability to apply modern design methods.	[]	[X]	[]
4	Ability to develop, select and use modern methods and tools required for Mechanical Engineering applications; ability to effective use of information technologies.	[]	[X]	[]
5	In order to investigate Mechanical Engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results.	[X]	[]	[]
6	Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence.	[X]	[]	[]
7	Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language.	[]	[X]	[]
8	Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement.	[]	[X]	[]
9	Understanding of professional and ethical issues and taking responsibility	[]	[]	[X]
10	Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development.	[]	[X]	[]
11	Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions.	[]	[X]	[]
1:None. 2:Partially contribution. 3: Completely contribution.				

Prepared by: Assist. Prof. Dr. Sezcan Yılmaz

Date:13.11.2017

Signature(s):