AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Instrumentation and Control								
Course Code	MME513		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	195 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	The aim of this course is to teach the Fundamentals of Instrumentation and Control and implement these into practice.								
Course Content	Process concepts, modeler, detectors, measurement methods, analysis of measurement, PID systems, precision, design								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Demonstration, Discussion, Project Based Study, Individual Study, Problem Solving								
Name of Lecturer(s)	Prof. İsmail BÖĞREKCİ								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	15
Final Examination	1	60
Quiz	4	15
Assignment	5	5
Term Assignment	1	5

Recommended or Required Reading	
1	NJATC, “Fundamentals of Instrumentation” Delmar Cengage Learning; 2nd edition (March 19, 2008), ISBN-10: 1418073512 ISBN-13: 978-1418073510.
2	Terry L.M. Bartelt, “Instrumentation and Process Control” Delmar Cengage Learning; 1 edition (November 28, 2006) ISBN-10: 1418041718 ISBN-13: 978-1418041717.
3	William Dunn, “Fundamentals of Industrial Instrumentation and Process Control” McGraw-Hill Professional; 1 edition (March 31, 2005) ISBN-10: 0071457356 ISBN-13: 978-0071457354.

Week	Weekly Detailed Course Contents	
1	Theoretical	Measurement Concept
2	Theoretical	Electrical and electronic measurement (Electrical measuring instruments, power and energy measurement, magnetic measurements)
3	Theoretical	Electrical and electronic measurement (Process measurements: Level, Flow, pressure, temperature etc. Measurement)
4	Theoretical	Electrical and electronic measurement (Process measurements: Dimension, viscosity, pH, Force, Torque, speed etc. Measurement)
5	Theoretical	Automatic control systems (Process control, Transfer functions)
6	Theoretical	Automatic control systems (Automatic controllers and applications)
7	Theoretical	Automatic control systems (Automatic controllers and applications)
8	Intermediate Exam	Midterm Exam
9	Theoretical	Computer aided control (Sensors and transducers)
10	Theoretical	Computer aided control (Transmitters, Telemetry systems and recorders)
11	Theoretical	Computer aided control (Computer aided measurement and control systems)
12	Theoretical	Instrument selection and commissioning (Programmable logic controllers)
13	Theoretical	Instrument selection and commissioning (Distributed control systems)
14	Theoretical	Instrumentation and control project
15	Theoretical	Instrumentation and control project
16	Final Exam	Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	16	2	4	96

Assignment	5	0	3	15
Term Project	1	15	10	25
Quiz	4	4	1	20
Midterm Examination	1	15	2	17
Final Examination	1	20	2	22
			Total Workload (Hours)	195
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	To be able to understand Measurement principles
2	To be able to analyze automatic control systems.
3	To be able to learn the process measurement principles.
4	To be able to read scientific graphs and data.
5	To understood the control systems

Programme Outcomes *(Mechanical Engineering Master's Without Thesis)*	
1	To be able to access wide and deep information with scientific researches in the field of Engineering, evaluate, interpret and implement the knowledge gained in his/her field of study
2	To be able to complete and implement “limited or incomplete data” by using the scientific methods
3	To be able to consolidate engineering problems, develop proper method(s) to solve and apply the innovative solutions to them
4	To be able to develop new and original ideas and method(s), to develop new innovative solutions at design of system, component or process
5	To be able to gain comprehensive information on modern techniques, methods and their borders which are being applied to engineering
6	To be able to design and apply analytical, modeling and experimental based research, analyze and interpret the faced complex issues during the design and apply process
7	To be able to gain high level ability to define the required information and data
8	To be able to work in multi-disciplinary teams and to take responsibility to define approaches for complex situations
9	To be able to transfer of the process and results of studies at national and international environments systematic and clear verbal or written
10	To be able to become aware of social, scientific and ethical values guarding adequacy at all professional activities and at the stage of data collection, interpretation, and announcement
11	To be able to become aware of new and developing application of profession and ability to analyze and study on those applications
12	To be able to gain ability to interpret engineering application’s social and environmental dimensions and it’s compliance with the social environment

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	4	4	5	5	5
P2	4	4	4	4	4
P3	5	5	5	5	5
P4	4	3	3	4	4
P5	3	3	3	5	3
P6	3	4	4	4	4
P7	5	5	5	5	4
P8	4	4	4	4	5
P9	3	3	3	3	4
P10	4	4	4	4	3
P11	5	5	5	5	5
P12	5	5	5	5	4