

Course Description Form	
Course Code and Name	MM 419 Measurement and Data Evaluation
Course Semester	7
Catalog Content	Introduction to Measurement Techniques and Definitions / Metrology and Calibration / Introduce to Turkish Standards Related with Measurement Techniques; Other Foreign Standards, Norms and Rules/Analyzing Experimental Results /Measuring of Macro and Micro Geometry/ Measuring of Dimension, Angle and Area/ Measuring of Pressure / Measuring of Temperature / Measuring of Flow Rate / Measuring of Level / Measuring of Thermo physical Characteristics / Measuring of Force, Moment and Power of Shaft / Sensors and Basic Physical Characteristics of Sensors / Electrical Measurements in Mechanical Engineering / Sampling and Measuring of Air Pollution.
Textbook	Experimental Methods for Engineers, J. P. Holman, 7th Ed., Mc-Graw Hill, 2001
Supplementary Textbooks	Metrology, Edited by Anil AKDOGAN, Published by IntechOpen, ISBN 978-1-78923-595-1, London, 2018.
Credit	5
Prerequisites of the Course (Attendance Requirements)	There is no prerequisite or co-requisite for this course.
Type of the Course	Elective
Instruction Language	Turkish
Course Objectives	Teaching the fundamentals of measurement techniques in engineering basic area.
Course Learning Outcomes	<ol style="list-style-type: none"> 1. He/She knows the importance of experimental work in engineering. 2. He/She can do experimental work, measurement, analysis of experimental data. 3. He/She knows with which devices and how to measure different physical quantities. 4. He/She can design different physical phenomena in the form of an experimental and take the necessary measurements. 5. He/She can process and analyze the collected data.
Instruction Methods	The mode of delivery of this course is face to face.
Weekly Schedule	<ol style="list-style-type: none"> 1. Week: Basic concepts 2. Week: Analysis of experimental data 3. Week: Analysis of experimental data 4. Week: Basic electrical measurements and sensing devices 5. Week: Basic electrical measurements and sensing devices 6. Week: Basic electrical measurements and sensing devices 7. Week: Pressure measurements 8. Week: First Midterm; Flow measurement 9. Week: The measurement of temperature 10. Week: The measurement of temperature 11. Week: Force, Torque and strain measurements 12. Week: Data aquisition and processing / report writing and presentations 13. Week: Second Midterm; Design of experiments 14. Week: Design of experiments 15. Week: Final Exam

<p>Teaching and Learning Methods</p> <p><i>(These are examples. Please fill which activities you use in the course)</i></p>	<p>Weekly theoretical course hours: 3 Weekly applied course hours: 0 Reading Activities: 3 Internet browsing, library work:1 Designing and implementing materials:0 Report preparing:0 Preparing a Presentation: 0 Presentations: 0 Preparation of Midterm and Midterm Exam: 11 Final Exam and Preparation for Final Exam: 13</p>						
<p>Assessment Criteria</p>			<p>Numbers</p>	<p>Total Weighting (%)</p>			
	Midterm Exams		2	60			
	Assignment		-	-			
	Application		-	-			
	Projects		-	-			
	Practice		-	-			
	Quiz		-	-			
	Percent of In-term Studies (%)			60			
	Percentage of Final Exam to Total Score (%)			40			
	Attendance		-	-			
<p>Workload</p>	<p>Activity</p>	<p>Total Number of Weeks</p>	<p>Duration (weekly hour)</p>	<p>Total Period Work Load</p>			
	Weekly Theoretical Course Hours	14	3	42			
	Weekly Tutorial Hours						
	Reading Tasks	14	3	42			
	Studies	6	1	6			
	Material Design and Implementation						
	Report Preparing						
	Preparing a Presentation						
	Presentations						
	Midterm Exam and Preperation for Midterm Exam	2	11	22			
	Final Exam and Preperation for Final Exam	1	13	13			
	Other (should be emphasized)						
	Total Workload			125			
	Total Workload / 25			5.0			
	Course Credit (ECTS)			5.0			
<p>Contribution Level Between Course Learning Outcomes and Program Outcomes</p>	<p>NO</p>	<p>PROGRAM LEARNING OUTCOMES</p>	<p>1</p>	<p>2</p>	<p>3</p>	<p>4</p>	<p>5</p>
	1	Adequate knowledge of subjects specific to mathematics, natural sciences and related engineering disciplines; ability to use theoretical and applied knowledge related to these areas in complex engineering problems.				X	
	2	Ability to identify, define, formulate, and solve complex engineering problems; ability to select and apply				X	

	appropriate analysis and modeling methods to this end.					
3	Ability to design a complex system, process, device or product under realistic constraints and conditions to meet specific requirements; ability to apply modern design methods for this purpose.					X
4	Ability to develop, select and use modern techniques and tools required for the analysis and solution of complex problems encountered in engineering practice; ability to use information technologies effectively.		X			
5	Ability to design and conduct experiments, collect data, analyze and interpret results to investigate complex engineering problems or discipline-specific research topics.			X		
6	Ability to work effectively in disciplinary and multi-disciplinary teams; ability to work individually.					
7	Ability to communicate effectively in Turkish, both orally and in writing; knowledge of at least one foreign language; the ability to write effective reports and understand written reports, to prepare design and production reports, to deliver effective presentations, to give and receive clear and understandable instructions.					
8	Awareness of the necessity of lifelong learning; the ability to access information, to follow developments in science and technology, and to renew oneself constantly.					
9	Acting in accordance with ethical principles, professional and ethical responsibility; information about standards used in engineering applications.					
10	Information about business life practices such as project management, risk management and change management; awareness of entrepreneurship, innovation; information about sustainable development.					
11	Knowledge about the universal and social effects of engineering applications on health, environment and safety and the problems of the age reflected in the engineering field; awareness of the legal consequences of engineering solutions.					
The Course's Lecturer(s) and Contact Informations	<ol style="list-style-type: none"> 1. Name, Surname of the Lecturer(s): Prof. Dr. Hüseyin Topal E-mail address: htopal@gazi.edu.tr 2. Name, Surname of the Lecturer(s): Assoc. Prof. Zeki Yılmazoğlu E-mail address: zekiyilmazoglu@gazi.edu.tr 					