MECHATRONICS ENGINEERING
COURSE SYLLABUS

Course Details				
Code		**Academic Year**		**Semester**
MEC208		2		Spring
Dersin Adı	**T**	**A**	**L**	**ECTS**
Measuring Techniques	1	1	2	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Mechatronics Engineering					
Forms of Teaching and Learning	Face-to-face lecture, group work, personal study.					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	To understand measurement theory, to recognize sensors, to learn measurement methods of different sizes, to develop group work skills. Field Education: 35% Method Education: 25% Integrated system training: 20% Social Skills Training: 20%					
Content	Introduction to measurement technology Measuring electrical quantities in theory and in practice, Measurement of non-electrical quantities in theory and in practice, Understand the characteristics of transducers Digital measurement technology, Measurement error analysis and statistical evaluation, Static and dynamic behavior of measuring devices					
Prerequisites	None					
Coordinator	Doç. Dr. Tuba Çonka YILDIZ					
Lecturer(s)	Doç. Dr. Tuba Çonka YILDIZ / Prof. Dr. Olfa Kanoun					
Assistant(s)	MSc. Fatih ÇÖGEN, MSc. Mustafa Hakan SANDIK, MSc. Ali KORUCU					
Work Placement	None					

Recommended or Required Reading	
Books / Lecture Notes	Course Books: • Heyne, Georg Elektronische Meßtechnik Eine Einführung für angehende Wissenschaftler, OLDENBOURG Wissenschaftsverlag GmbH, 1999 ISBN 3-486-24976-2 ISBN 978-3-486-24976-7 • F. Puente León: Messtechnik, Springer-Verlag, Berlin Heidelberg, 2016, ISBN 978-3-662-44820-5
Other Sources	For laboratory applications: Measurement technique and sensors training set, oscilloscope, signal generator, power supply, multimeter

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Additional Course Material	
Documents	-
Assignments	-
Exams	-

Course Composition		
Mathematics und Basic Sciences	30	%
Engineering		%
Engineering Design	30	%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge	40	%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	30
Quiz	8	12
Assignments	0	0
Attendance	0	0
Recitations	6	18
Projects	0	0
Final Exam	1	40
	Toplam	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	1	67	67
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	6	6	36
Laboratory	6	6	36
Projects			
Final Exam	1	10	10
		Total Work Load	**168**

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ECTS Points (Total Work Load / 28)	**6**

Learning Outcomes	
1	Understanding the Theory of Measurement
2	Getting to Know the Sensors
3	Learning to Do Group Work in a Laboratory Environment
4	
5	
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11	
12	

Weekly Content	
1	Introduction to Measurement Technique
2	Introduction to laboratory practices and safety rules
3	Metals and Semiconductors
4	Measurement of electrical quantities
5	Measurement of electrical quantities
6	Active and passive sensors
7	Measurement of non-electrical quantities
8	Measurement of non-electrical quantities
9	Sensor characteristics
10	Measuring circuits
11	Midterm
12	Discretization
13	Digital Measurement Techniques
14	Measurement Error and Statistical Evaluations
15	Static and Dynamic Behavior of Measuring Devices

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7

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1	5	5	5				
2	5	5	5				
3	5	5	5				

Contribution Level : 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

Compiled by:	Fatih ÇÖGEN
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