DEPARTMENT OFMECHATRONICS ENGINEERING
COURSE INFORMATION

Course Details						
Code				**Academic Year**		**Semester**
MEC492				4		Spring
Title				**T**	**A**	**L**	**ECTS**
Mechatronics Project							12

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Mechatronics Engineering					
Forms of Teaching and Learning	Face to face, group study, individual study					
Course Type	**Compulsory**		**Elective**	**X**		

Objectives	After successfully completing the module, students are able • To independently work on a task from mechatronics using the specialist knowledge learned during the course as well as scientific methods and findings within a specified period, • To classify the results in technical and interdisciplinary contexts, • To present the results in the form of an engineering thesis and to present them to an expert audience.
Content	Analysis of the problem and delimitation of the topic, literature / patent research, formulation of the research approach / procedure, definition of a solution concept or route, planning and development of the solution, analysis of the results, assessment of the importance for practice, time management; Presentation of the work results in the form of an engineering thesis; Presentation of the results to a knowledgeable audience; it is required that the scientific working methods and methodology are used in carrying out the work; systematically, analytically and methodologically correct proceeding, logical and concise arguments, goal-oriented and time-critical work and the work results formally correctly presented and convincingly defended.
Prerequisites	-
Coordinator	Assoc. Prof. Dr. Tuba Çonka YILDIZ, Dr.-Ing Soner Emeç, Asst. Prof. Dr. Ali Can Kaya, Prof. Anatoli Makarov, Asst. Prof. Dr. Abdulkadir Şanlı
Lecturer(s)	Assoc. Prof. Dr. Tuba Çonka YILDIZ, Dr.-Ing Soner Emeç, Asst. Prof. Dr. Ali Can Kaya, Prof. Anatoli Makarov, Asst. Prof. Dr. Abdulkadir Şanlı
Assistant(s)	MSc. Fatih ÇÖGEN, MSc. Mustafa Hakan SANDIK, MSc. Ali KORUCU, MSc. Merve Teke Budaklı, MSc. Onur Akgün, BSc. Osman Taha Kütük, BSc. Oğuzhan Memişoğlu, BSc. Bilge Kağan Dönmez
Work Placement	-

Recommended or Required Reading	
Books / Lecture Notes	- Physik: Lehr- und Übungsbuch, Douglas C. Giancoli, 2019 - Halliday Physik, David Halliday, Robert Resnick, Jearl Walker, 2017
Other Sources	- "Basics of automation" sensors, regulation, control Author: Berthold Heinrich, Petra Linke, Michael Glöckler - "Mechatronics" basics and applications of technical systems Author: Horst Czichos

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	- "PLC programming in instruction list according to IEC 61131-3" A systematic and action-oriented introduction to structured programming Author: Hans-Joachim Adam, Mathias Adam - Paul Alpar, Heinz Lothar Grob, Peter Weimann, Robert Winter: application-oriented business informatics. Strategic planning, development and use of information and communication systems. 5th revised and updated edition. Vieweg + Teubner, Wiesbaden 2008,

Additional Course Material

Documents	„Leitfaden zum Projektmanagement" ISO 21500 „Entwicklungsmethodik für mechatronische Systeme" nach VDI 2206:2004-06
Assignments	-
Exams	-

Course Composition

Mathematics und Basic Sciences	10	%
Engineering	10	%
Engineering Design	15	%
Social Sciences		%
Educational Sciences		%
Natural Sciences	5	%
Health Sciences		%
Expert Knowledge	60	%

Assessment

Activity	Count	Percentage (%)
Midterm Exam		
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam	1	100
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	14	9	126
Assignments	4	6	24
Presentation / Seminar Preparation	4	10	40
Midterm Exam			

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Recitations			
Laboratory			
Projects	1	100	100
Final Exam	1	18	18
	Total Work Load		336
	ECTS Points (Total Work Load / Hour)		12

Learning Outcomes	
1	Design of industrial automation
2	System design, optimization, integration, verification and risk
3	Image and pattern recognition with Python and C / C ++
4	PLC, Arduino and Raspberry PI programming
5	Consolidation of practical knowledge of control engineering
6	Basics of industrial production facilities and equipment
7	PCB design
8	3D printer applications
9	MATLAB applications
10	Robot Operating System (ROS)
11	
12	

Weekly Content	
1	Project topic decision
2	Technical research
3	Research components
4	Research methods
5	Research methods
6	Application
7	Application
8	Application
9	Prototype development
10	Prototype development
11	Modifications
12	Presentations

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13	Presentations
14	Presentations
15	

Contribution of Learning Outcomes to Program Objectives (1-5)												
	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**	**P11**	**P12**
1	5	5	5									
2	5	5	5									
3	5	5	5									
4												
5												
6												
7												
8												
9												
10												
11												
12												
Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High											
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5946												
Compiled by:	Bilge Kağan Dönmez											
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