DEPARTMENT OF MECHATRONIC ENGINEERING
COURSE SYLLABUS

Course Details				
Code		**Academic Year**		**Semester**
MEC036		4		Summer
Title		**T**	**A**	**L**	**ECTS**
Embedded Systems		2		2	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Mechatronic Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	The students can explain the tasks and the functionality of embedded systems. They understand basic system concepts, their implementations and their potential problems. From the methods and tools covered, you can select the most suitable ones for modeling (HW and SW) of an embedded system, evaluate them and use them competently.					
Content	• History and development of embedded systems • Embedded and real-time operating systems • Linux kernel • Peripheral access • Threads and processes • Storage management • Inter-process communication • Real-time scheduling • Interrupt handling • Further topics					
Prerequisites	-					
Coordinator	-					
Lecturer(s)	Prof. Dr. Faruk Bağcı, Prof. Dr. Mesut Güneş					
Assistant(s)	M.Sc. Onur Akgün, M.Sc. Sebahattin Babur, M.Sc. Ferit Tiryaki					
Work Placement	-					

Recommended or Required Reading	
Books / Lecture Notes	• Rob Toulson und Tim Wilmshurst, Fast and Effective Embedded Systems Design, 2nd Edition • Daniela Lacamera, Embedded Systems Architecture • Christopher Hallinan, Embedded Linux Primer: A Practical, Real-World Approach, 2nd Edition
Other Sources	

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Additional Course Material		
Documents		
Assignments		
Exams		

Course Composition		
Mathematics und Basic Sciences		30 %
Engineering		70 %
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	30
Quiz		
Assignments		
Attendance	28	20
Recitations		
Projects		
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	28	2	56
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations			
Laboratory	28	2	56
Projects			
Final Exam	1	2	2
		Total Work Load	**116**

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ECTS Points (Total Work Load / Hour)	

Learning Outcomes	
1	Elementary knowledge of embedded systems
2	Real-time programming
3	
4	

Weekly Content	
1	Organizational matters & introduction
2	Introduction 2
3	Embedded and real-time operating systems
4	Embedded and real-time operating systems 2
5	Linux Kernel
6	Linux Kernel 2
7	Peripheral access
8	Threads and processes 1
9	---- *Midterm exam* ----
10	Threads and processes 2
11	Memory management
12	Inter-process communication
13	Real-time scheduling
14	Interrupt handling and other topics
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	5	5	3	4	4	5	4	5	
2	5	5	5	5	5	3	4	4	5	4	5	
3												
4												

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=196

Compiled by:	M.Sc. Onur Akgün
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