

(faculty stamp)

COURSE DESCRIPTION

1. Course title: Real-time Operating Systems			2. Course code: ROS	
3. Validity of course description: 2019/2020				
4. Level of studies: 2nd cycle of higher education				
5. Mode of studies: intramural studies				
6. Field of study: Informatics				
7. Profile of studies: general academic				
8. Specialty: Industrial Informatics Systems				
9. Semester: III				
10. Faculty teaching the course: Institute of Informatics				
11. Course instructor: Rafał Cupek, PhD, DSc				
12. Course classification: common courses				
13. Course status: obligatory				
14. Language of instruction: English				
15. Pre-requisite qualifications: It is assumed, that the student has a basic knowledge of computer networks, operating systems and embedded devices in subjects of 1st cycle of higher education and preceding courses in Informatics.				
16. Course objectives: The aim of the course is to familiarize students with the architecture and functionality of real-time operating systems.				
17. Description of learning outcomes:				
No.	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1	The student knows the principles of modeling and analysis of real-time operating systems and related artifacts.	Test , reports	Lectures, laboratory	K2A_W05,
2	The student has knowledge of algorithms and software used in real-time operating systems.	Test , reports	Lectures, laboratory	K2A_W14

3	The student can analyze the way of functioning and evaluate existing solutions used in real-time operating systems.	Reports	Lectures, laboratory	K2A_U08
4	The student is able to assess the usefulness and the possibility of using new technologies in projects related to the use of real-time operating systems.	Reports	Laboratory	K2A_U01, K2A_U07

18. Teaching modes and hours Lecture: 15 h., Class: -, Laboratory: 15 h.	
19. Syllabus description: Lecture: Presentation of the structure and functions of real-time operating systems, presentation of the use cases of these systems and problems encountered in industrial applications. Detailed presentation of issues: <ul style="list-style-type: none"> - Serialization of periodic and aperiodic tasks - Stochastic analysis of tasks on priorities - Resource management in SOCR - Reliability, availability and redundancy - Communication in distributed real-time operating systems - Model based on components according to IEC 61499 Laboratory: <ul style="list-style-type: none"> - Resource management in real-time operating systems - Scheduling tasks in real-time operating systems - Communication in distributed real-time operating systems - Testing the effectiveness and efficiency of redundant RT-applications 	
20. Examination: no	
21. Primary sources: <ol style="list-style-type: none"> 1. - Halang W.A., Sacha K.M: Real-Time Systems. Implementation of Industrial Computerised Process Automation 2. - Giorgio C Buttazzo: Hard Real-Time Computing Systems: Predictable Scheduling Algorithms and Applications 	

22. Secondary sources:			
1. Richard Zurawski: The Industrial Information Technology Handbook 2. - http://dev.emcelettronica.com/embedded-linux-linux-operatingsystem-microcontrollers			
23. Total workload required to achieve learning outcomes			
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No.	Teaching mode :	Contact hours / Student workload hours	
1	Lecture	15 / 15	
2	Classes	- / -	
3	Laboratory	15 / 15	
4	Project	- / -	
5	BA/ MA Seminar	- / -	
6	Other (exam)	- / -	
	Total number of hours	30 / 30	
24. Total hours: 60			
25. Number of ECTS credits: 2 (sem. III)			
26. Number of ECTS credits allocated for contact hours: 2			
27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects): 1			
28. Comments:			

Approved:

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 (date, Instructor's signature)

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 (date, the Director of the Faculty Unit signature)