

Faculty of Mechanical Engineering / /

Course:				
Course ID	Course status	Semester	ECTS credits	Lessons (Lessons+Exercises+Laboratory)
10503	Optional	1	8	4+0+0
Programs				
Prerequisites				
Aims	Acquisition of theoretical and practical knowledge about sensors, signal preparation and acquisition of experimental data, as well as knowledge about methods of experiment design.			
Learning outcomes	After passing the exam from this course, students will be able to: 1. Apply fundamental knowledge about sensors, signal preparation and experimental data acquisition. 2. Apply improved knowledge and skills for planning and conducting experimental research. 3. They implement practical knowledge and experience in processing experimental data, selecting methods, as well as preparing measuring equipment and testing machines. 4. Independently prepare a technical report and a report on the subject examination.			
Lecturer / Teaching assistant	Asst. Prof. Nikola Šibalić, PhD			
Methodology	Lectures, preparation of the test report and consultations.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	1. Introduction. Experimental research on definition and classification.			
I week exercises				
II week lectures	2. Testing sensors.			
II week exercises				
III week lectures	Thermal, mechanical, kinematic, geometric, weather, electrical, chemical and physical sensors.			
III week exercises				
IV week lectures	Preparation and calibration of the sensor.			
IV week exercises				
V week lectures	Defining the research plan.			
V week exercises				
VI week lectures	Preliminary research.			
VI week exercises				
VII week lectures	Planning the experiment.			
VII week exercises				
VIII week lectures	Preparation of the research site and the planned research.			
VIII week exercises				
IX week lectures	Signal preparation and experimental data acquisition.			
IX week exercises				
X week lectures	Setting up data acquisition equipment.			
X week exercises				
XI week lectures	Carrying out the main experimental research.			
XI week exercises				
XII week lectures	Experimental data processing.			
XII week exercises				
XIII week lectures	Methods and software for processing experimental data.			
XIII week exercises				
XIV week lectures	Methods for identifying analog models using discretized experimental data.			

XIV week exercises						
XV week lectures		Examples of analog model identification using discretized experimental data.				
XV week exercises						
Student workload						
Per week		Per semester				
8 credits x 40/30=10 hours and 40 minuts 4 sat(a) theoretical classes 0 sat(a) practical classes 0 excercises 6 hour(s) i 40 minuts of independent work, including consultations		Classes and final exam: 10 hour(s) i 40 minuts x 16 =170 hour(s) i 40 minuts Necessary preparation before the beginning of the semester (administration, registration, certification): 10 hour(s) i 40 minuts x 2 =21 hour(s) i 20 minuts Total workload for the subject: 8 x 30=240 hour(s) Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) 48 hour(s) i 0 minuts Workload structure: 170 hour(s) i 40 minuts (cources), 21 hour(s) i 20 minuts (preparation), 48 hour(s) i 0 minuts (additional work)				
Student obligations		Attendance at lectures. Defended study of the performed examination.				
Consultations						
Literature		[1] Predavanja u elektronskom obliku. [2] J. Park, S. Mackay: Practical Data Acquisition for Instrumentation and Control Systems, Elsevier, 2003. [3] H. L. Wang, Eds, Identification of Continuous-time Models from Sampled Data, Springer, 2008.				
Examination methods		Presentation of the test report 100 points.				
Special remarks						
Comment						
Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points