

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Common		
Type and level of studies		Doctoral studies		
The name of the course		Microsensors		
Lecturer (for lectures)		Vračar M. Ljubomir		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS	10	Course status (obligatory/elective)	Elective	
Prerequisites				
Course objectives	Acquiring a higher-level knowledge for understanding and practical application of microsensors and microsystems.			
Course outcomes	Students obtain a detailed knowledge of the fabrication, operational principles and practical implementation of modern microsensors and microsystems.			
Course outline				
Theoretical teaching	Information-processing systems. Measurement and control systems. Actuators. Sensor definitions and classification. General sensor characteristics and limitations. Parameters definition. Sensor calibration methods. Error corrections. Fabrication technology. Reliability issues. Sensors for radiation, mechanical, thermal, magnetic, chemical and biological signals. Sensors design and operation. Applications. Smart integrated sensors and actuators. Functional blocks. Micro-electro-mechanical sensors (MEMS), technology, components and systems. Integrated sensors and MEMS components.			
Practical teaching (exercises, OFE, study and research)				
Textbooks/references				
1	J.W. Gardner, Microsensors: Principles and Applications, Wiley, UK, 1994			
2	Gardner J., Varadan V., Awadelkarim O.: Microsensors, MEMS and smart devices: technology, applications & devices, Wiley, UK (2001)			
3				
4				
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
3	0	0	0	0
Teaching methods	Auditorial teaching, Laboratory exercise, student tutorials			
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam		Points
Activity during lectures	10	Written exam		
Exercises		Oral exam		60
Colloquia				
Projects	30			