Study program: Electrical and Computing Engineering	

Type and level of studies: Doctoral studies (third level of studies)

Course unit: Sensorics

Teacher in charge : Nebojša Mitrović

Language of instruction: English

ECTS: 15

Prerequisites: -

Semester: Summer

Course unit objective

Preparing for research work in the field of sensors

Learning outcomes of Course unit

Possibilities for measurements characteristics of different types of sensors (impedance, inductivity, capacitivity, Q-factor) up to MHz or GHz and selection of sensors with optimal sensitivity.

Course unit contents

Theoretical classes

Technical specification of sensors and their applications. Characterization and testing of sensors components (impedance, inductivity, capacitivity, Q-factor). Practical measurements on RLC-meter up to very high frequencies where is appearance of specific effects. Development of magnetoimpedance sensor, magnetoresistance sensors. Analysis, explanation and presentation of measuring results.

Analysis of scientific papers pertaining to sensors.

Practical classes

Candidates perform their research work on experiment preparation and perfoming sensors element. Analysis of experimental results and writing scientific paper, as a possible theme for doctoral dissertation.

> **Commented [L1]:** ?

Literature

[1] J. Fraden, *Handbook of Modern Sensors, Physics, Design and Application*, AIP Press 2004.
[2] X. P.V. Maldague, *Theory and Practice of Infrared Tehnology for Nondestructive Testing*, John Wiley & Sons 2001
[3] K. H. J. Buschow, *Handbook of Magnetic Materials,* Vol. 15, Elsevier, B.V. Amsterdam, 2003.
[4] Science journals in the field of sensors: *Sensors and Actuators A: Physical, Sensors and Materials, Sensors.*

Number of active teaching hours

Lectures: 3	Practice: 5	Other forms of classes	Independent work: 2	**Other classes**

Teaching methods Lessons, consultations, study and research work

Examination methods (maximum 100 points)			
Exam prerequisites	**No. of points:**	**Final exam**	**No. of points:**
Student's activity during lectures	**5**	oral examination	**50**
Practical classes/tests	**15**	written examination	
Seminars/homework	**-**	....	
Project	**30**		
Other			

Grading system		
Grade	**No. of points**	**Description**
10	**91-100**	Excellent
9	**81-90**	Exceptionally good
8	**71-80**	Very good
7	**61-70**	Good
6	**51-60**	Passing
5	**less than 50**	Failing