

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		RF and Microwave Amplifiers		
Lecturer (for lectures)		Maleš-Ilić P. Nataša		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS		10	Course status (obligatory/elective)	Elective
Prerequisites				
Course Acquiring theoretical and practical knowledge in the field of RF and microwave amplifiers.				
Course outcomes Acquire knowledge of linear and non-linear transistor models as well as transistor noise models. Introduce the structure of RF and microwave amplifiers for low-noise and high power applications. Ability to design and fabricate amplifiers.				
Course outline				
Theoretical teaching		Models of microwave transistors (MOSFET, MESFET, HEMT, BJT, HBT)-models for small signals, nonlinear models, noise modeling. Procedure of low-noise amplifier design. Power amplifiers in class-A, AB, B, C. High-efficient power amplifiers (Class-F, inverse F, D, E, J. ..). Linearization techniques. Techniques for increasing efficiency of microwave amplifiers.		
Practical teaching (exercises, OFE, study and research)		Solving selected problems in the form of seminar. Analysis and optimization of RF and microwave amplifiers by using specialized software packages. Practical work in laboratory.		
Textbooks/references				
1	Steve Cripps, RF Power Amplifiers for Wireless Communications, Artech House 2006			
2	Andrei Grebennikov, RF and Microwave Power Amplifier Design, second edition, McGraw Hill, 2015			
3	Steve Cripps, Advanced Techniques in RF Power Amplifier Design, Artech House, 2002			
4	A. Grebennikov, Nathan O. Sokal, Switchmode RF Power Amplifiers, Elsevier Inc., 2012			
5	Guillermo Gonzalez, Microwave Transistor Amplifier: Analysis and Design, 2nd edition, Prentice Hall, 1997			
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		Lectures. Auditory exercises. Practical work in laboratory. Homework. Consultations.		
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures			Written exam	
Exercises		30	Oral exam	50
Colloquia				
Projects		20		