Specification for the book of courses

Study program	Electrical Engineering and Computer Science		
Module	Communications and Information Technologies - System Engineering and Radio-Communications		
Type and level of studies	Undergraduate Academic Studies		
The name of the course	Microwave Technique		
Lecturer (for lectures)	Maleš-Ilić P. Nataša, Marković V. Vera, Pronić-Rančić R. Olivera		
Lecturer/associate (for exercises)	Joković J. Jugoslav		
Lecturer/associate (for OFE)	Joković J. Jugoslav		
Number of ECTS 6		**Course status (obligatory/elective)**	Obligatory

Prerequisites	
Course objectives	Acquiring basic theoretical and practical knowledge in the field of microwave techniques.
Course outcomes	Acquire knowledge of the theory of EM wave propagation by transmission lines, Ability to use Smith chart in analysis / design of microwave circuits, Acquire knowledge of the wave parameters and ability to use them in the analysis and design of microwave circuits, Understand the most important planar structures for guiding microwaves. Ability to analyse, synthesize, and implement transmission lines in microwave devices.
Course outline	
Theoretical teaching	Introduction. Characteristics and applications of microwaves. Propagation by transmission lines. Smith chart and its application in the analysis of microwave circuits. Techniques for impedance matching of microwave circuits. Planar transmission lines - general characteristics and types. Microstrip lines (construction, basic principles, characteristics, discontinuities, analysis and synthesis, coupling). Wave matrix. Microwave semiconductor components. Introduction to microwave amplifiers.
Practical teaching (exercises, OFE, study and research	Auditory exercises. Practical work in laboratory.
Textbooks/references	
1	B. Milovanović, V. Marković, N. Maleš - Ilić, O. Pronić - Rančić, Microwave techniques - I part (in Serbian), Unigraf, 2009.
2	Bratislav Milovanović et al., Microwave techniques – examples (in Serbian), Faculty of Electronic Engineering,, 2002
3	O.Pronić-Rančić, V. Marković, N.Maleš-Ilić, B.Milovanović, Microwave electronics (in Serbian), University of Nis, Faculty of Electronic Engineering, 2013
4	David Pozar, Microwave Engineering, third edition, John Wiley and Sons, Inc., 2005.
5	Les Besser, Practical RF Circuit Design for Modern Wireless Systems Volume I - Passive Circuits and Systems, Artech House, 2003

Number of classes of active education per week during semester/trimester/year

Lectures	Exercises	OFE	Study and research work	Other classes
2	2	1	0	0

Teaching methods	Lectures. Computational exercises. Laboratory work. Homeworks. Consultations.

Grade (maximum number of points 100)

Pre-exam duties	Points	Final exam	Points
Activity during lectures	5	**Written exam**	20
Exercises	15	**Oral exam**	20
Colloquia	40		
Projects			