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 Circuit Design for IoT		
Lecturer (for lectures)	Pronić-Rančić R. Olivera, Maleš-Ilić P. Nataša		
Lecturer/associate (for exercises)	Atanasković S. Aleksandar		
Lecturer/associate (for OFE)	Stošić P. Biljana		
Number of ECTS	6	**Course status (obligatory/elective)**	Obligatory
Prerequisites			
Course objectives	Acquiring theoretical and practical knowledge in the field of analysis and design of passive and active microwave circuits intended for use in IoT services, with emphasis on training in the efficient use of modern CAD tools.		
Course outcomes	Understanding the operational principles and the ability to design passive and active microwave circuits designed for applications in various IoT systems. Students' ability to use specialized software tools for design, analysis and optimization of microwave circuits.		
Course outline			
Theoretical teaching	CAD, analysis and optimization of microwave circuits according to the needs of the Internet of Things (IoT). Planar microwave circuits (matching circuits, impedance transformers, discontinuities, couplers,power combiners and dividers, filters), non-reciprocal microwave devices, microwave control circuits, circuits for efficient use of microwave energy, passive RFID tags. Microwave integrated circuits. RF and microwave amplifiers - two-port power gains, stability. Single stage transistor amplifier design.		
Practical teaching (exercises, OFE, study and research	Auditory exercises. Practical work in the laboratory. Analysis and optimization of microwave circuits using specialized software packages.		
Textbooks/references			
1	B. Milovanović, V. Marković, N. Maleš - Ilić, O. Pronić - Rančić, Microwave technique (in Serbian), Unigraf, 2009.		
2	O. Pronić, V. Marković, N. Maleš – Ilić, B. Milovanović, Microwave electronics (in Serbian), Faculty of electronic engineering, Niš, 2013.		
3	David Pozar, MicrowaveEngineering, third edition, John Wiley and Sons, Inc., 2005.		
4	Les Besser, Practical RF Circuit Design for Modern Wireless Systems Volume I - Passive Circuits and Systems, Artech House, 2003		
5	Rowan Gilmore, Practical RF Circuit Design for Modern Wireless Systems Volume II - Active 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**
3	2	1	0	0
Teaching methods	Lectures, auditory exercises, laboratory work, homework, 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			