

The Name of Institution:

*School of Electrical Engineering,
University of Belgrade*

<i>Description of an Individual Course Unit</i>							
Course Code:	OT4M PK	Level of Course:	Undergraduate	ECTS	6	Semester:	7
Course Title:	Passive Microwave Circuits			Year of Study:		4	
Prerequisites:				Type of course:	Mandatory		
Lecturer(s):	Dr. Vladimir Petrović						
Course Staff:							
Objective of the course:	<ul style="list-style-type: none"> • Introduction to basics and engineering concepts of passive microwave devices and subsystems. • Train the students to design simple microwave passive components and subsystems. • Provide the students with the ability to analyze and design microwave components and subsystems by the use of s-parameters. 						
Course Contents:	Review of transmission lines and waveguides. Multiconductor transmission lines. Solving microwave circuits (s-parameters, ideal elements, basic equations, examples, software tools). Passive lumped RF components (resistors, capacitors, inductors, transformers, switches, MEMS components) and technologies (SMD, printed, integrated, LTCC). Basic microwave components: loads, short circuits, stubs, attenuators, phase shifters, directional couplers (hybrid junction, magic T, hybrid ring), ferrite components, resonators (LC, transmission line, waveguide, dielectric, Fabri-Pero, open), power dividers, sliding elements. Matching networks. Microwave filters. Computer simulation and optimization of microwave circuits. Circuit and full 3D EM modelling. Microwave software tools: LINPAR, MATPAR, WIPL-D Microwave, Microwave Office, PSpice. Symbolic solving of microwave circuits (<i>Mathematica</i>).						
Teaching Methods:	45 hours of lectures + 15 hours of supervised problem classes and midterm tests, and 15 hours of lab work. 75 hours of personal study (homework) and exercise (3 hours per week during semester, and approximately 30 hours of preparation during exam term).						
Literature:	<i>Microwave Engineering</i> , D. M. Pozar; 3rd Ed., John Wiley & Sons, 2005. <i>Foundations for Microwave Engineering</i> , R.E. Collin; 2nd Ed., McGraw-Hill, 1992. <i>Passive Microwave Circuits</i> , V. V. Petrović, D. V. Tošić, A. R. Đorđević (CD book in preparation).						
Assessment methods:	Class activity and homeworks – 10 points. Midterm test – Solve a problem using open book and CAD tool (30 points). Project – Design and optimization of microwave device with prototype manufacturing and measurement (30 points). Exam – Solve a problem using open book and CAD tool (30 points). To pass the course, a mark of at least 55 points must be achieved.						
Language of instruction:	Serbian	Date:	30.10.2008.	Signature:			