

		Course title: <i>Microwave technique</i>		
Course code	Course status	Semester	Number of ECTS credits	Lecture hours
PA3203	Mandatory	I	6	3P+1V+0.5L

Study program: Graduate academic studies, ELECTRICAL ENGINEERING, study program: Electronics, Telecommunications and Computer engineering (studies last for 4 semesters, 120 ECTS credits).	
Prerequisites: No prerequisites required.	
Course aims: Students will be introduced with basic concepts of active microwave components, and the main characteristics components functionality on microwave frequencies. The joined method for analysis and design of microwave amplifiers, oscillators and mixers will be presented.	
Teacher(s) first and last names: <i>Prof. dr Dragan FILIPOVIĆ</i>	
Studying method: Lectures, exercises, individual work on practical tasks, consultations.	
Course synopsis:	
Preliminary week	Preparation and semester enrolment.
I week	<p>Basic properties and applications of microwaves. Microwave waveguide. Waveguides with TE, TM i EH (HE) waves. Representing an arbitrary waveguide by equivalent TEM waveguide.;</p> <p>Smith diagram. Adaptation of waveguides using paralel branch lines; Adaptation of waveguides using quarter-wave transformer. Broadband adaptation; Scattering matrix and its basic properties;</p> <p>I colloquium Free week</p> <p>Volumetric resonators. Quasistationary resonators. Band resonator; Reactive, transmissional and absorption resonator. Microwave filters; Short-circuit. Cristal detector. Attenuator. Phase shifter. T and Y junctions; Bridge. Directive filter;</p> <p>Non reciprocal components. Isolator, circulator, YIG resonator YIG filter; II colloquium Klistron, magnetron, pipe with traveling wave; Parametric amplifiers. Oscilators and amplifiers. Final exam</p>
II week	
III week	
IV week	
V week	
VI week	
VII week	
VIII week	
IX week	
X week	
XI week	
XII week	
XIII week	
XIV week	
XV week	
XVI week	
Final week	Administrative procedures.
XVIII-XXI week	Additional lessons, correction of the final exam and administrative procedures.
STUDENT WORKLOAD	
<u>per week</u>	<u>per semester</u>
Working hours: 6 credits x 40/30 = 8 hours.	Teaching and the final exam: (8hours) x 16 = 128hours.
Working hours structure: 3 hours for teaching 1 hour for exercises 4 hours for individual work, including consultations.	Necessary preparation (before semester): 2 x (8hours) = 16hours.
	Total work hours for the course: 176hours
	Additional hours for preparing correction of the final exam, including the exam taking: up to 36hours.
	Work hours structure: 128hours (lectures) + 16hours (preparation) + 36hours (additional work)
Lessons attendance is mandatory for students, as well as doing homeworks and seminar works, etc.	
Literature: <i>A. Đorđević, D. Tošić.: Microwave technique, Akademska misao, Beograd, 2006.</i>	
The forms of knowledge testing and grading: - Home exercises carry 5 points. - Activities during the lectures and exercises 5 points, - Each colloquium carries 20 points (40 points in total) - Final exam 50 points. Student gets the passing grade by collecting 51 points at least.	
Special remarks for the course :	
Teacher(s) who provided the information: <i>Prof. dr Dragan FILIPOVIĆ</i>	
Note:	