

<b>Study program:</b> Communication Technologies / Modern Computer Technologies			
<b>Course title:</b> Circuits Design			
<b>Professor/assistant:</b> Danijela A. Aleksić			
<b>Type of course:</b> elective			
<b>ECTS credits:</b> 6			
<b>Pre-requisites:</b> Introduction to electronics, Application software			
<b>Aims of the course:</b> The purpose of the course is introducing students to the principals of printed circuit board design intended for electronic devices in serial production. Students will be familiar with application software for printed circuit board design. Students will be trained to understand production steps in modern companies specialized for development of electronic devices.			
<b>Learning outcomes:</b> After the course ends, students will be able to independently develop printed circuits boards using computer software.			
<b>Syllabus</b>			
<i>Theoretical part</i> Electronic devices design. Phase of printed circuits design. Application software for design of printed circuits. Installation. Defining parameters. Defining project. Design of electrical scheme (SCH). SCH libraries. SCH component arrangements and their connections. Testing electrical scheme. Simulation. Time and frequency domain analysis. SCH document hierarchical analysis. PCB Update from SCH document. PCB component placement. Manual and automatic route. Placement points for testing. PCB document verification. PCB reports. Printing PCB reports. Development of electronic devices and printed circuit boards. Single and double sided circuit boards. Filling printed circuit boards. Manual and automatic filling. Component soldering. Apparatus for soldering. Testing and tuning device.			
<i>Practical part</i> Laboratory exercises. Tour to the company for production of printed circuit boards and electronic devices.			
<b>Literature</b> 1. Zoran N. Milivojević: Projektovanje pomoću računara, Punta, Niš, 2003.			
<b>Number of active classes: 60</b>			Other forms of teaching:
Lectures: 30	Practical classes: 30	Research work:	
<b>Teaching methods</b>			
<b>Grading system</b> (maximum 100 points), <b>grading scale</b> from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
<b>Pre-exam obligations</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>
activity during theoretical lectures	10	written exam	
practical training	10+10	oral exam	30
colloquium(s)/seminar papers	20+20		
<b>Sum</b>	<b>70</b>	<b>Sum</b>	<b>30</b>