

<b>Course title:</b> <span style="float: right;"><b>Signals and systems</b></span>
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Course code	Course status	Semester	Number of ECTS credits	Lecture hours
131004991	Mandatory	IV	4.5	2+1+1

<b>Study program:</b> Basic academic studies, ELECTRICAL ENGINEERING, study program: Power systems and Control (studies last for 6 semesters, 180 ECTS credits).	
<b>Prerequisites:</b> No prerequisites required.	
<b>Course aims:</b> Introduction to basic concepts of continuous-time and discrete-time signals and systems. Definition and understanding of transforms (Fourier transform, Laplace transform, Z-transform) in signals and systems analysis.	
<b>Teacher(s) and assistant(s) first and last names:</b> Ph.D. Zdravko Uskoković – teacher Ph.D. Ljubiša Stanković – teacher M.Sc. Slobodan Đukanović – assistant	
<b>Studying method:</b> Lectures, exercises and laboratory exercises, individual work on practical tasks, consultations.	
<b>Course synopsis:</b>	
Preliminary weeks	Preparation and semester enrolment.
I week	Introduction to signals and systems. Signal properties and classification. Basic signal forms.
II week	Systems and system classification. Linear time-invariant systems. Unforced and forced response.
III week	Impulse response. Convolution integral. Transfer function. Stability of a system.
IV week	Fourier series.
V week	Fourier transform.
VI week	Laplace transform.
VII week	<b>Free week</b>
VIII week	<b>First test</b>
IX week	Sampling. Reconstruction of a continuous-time signal from its samples.
X week	Discrete-time systems modelling. Difference equations.
XI week	Determination of a discrete-time system response. Fourier transform of a discrete-time signal.
XII week	Discrete Fourier transform.
XIII week	Z-transform. Implementation of discrete-time systems.
XIV week	<b>Second test</b>
XV week	Modulations and signal transfer systems.
XVI week	<b>Final exam</b>
Final week	Administrative procedures.
XVIII-XXI week	Additional lessons, correction of the final exam and administrative procedures.
<b>STUDENT WORKLOAD</b>	
<p style="text-align: center;"><u>per week</u></p> <p><b>Working hours:</b> 4.5 credits x 40/30 = 6 hours.</p> <p><b>Working hours structure:</b></p> <ul style="list-style-type: none"> <li>2 hours for teaching</li> <li>1 hour for exercises</li> <li>1 hour for laboratory exercises</li> <li>2 hours for individual work, including consultations.</li> </ul>	<p style="text-align: center;"><u>per semester</u></p> <p><b>Teaching and the final exam:</b> (6 hours) x 16 = 96 hours.</p> <p><b>Necessary preparation</b> (before semester): 2 x (6 hours) = 12 hours.</p> <p><b>Total work hours for the course:</b> 4.5 x 30 hours = 135 hours</p> <p><b>Additional hours</b> for preparing correction of the final exam, including the exam taking: up to 27 hours.</p> <p><b>Work hours structure:</b></p> <p>96 hours (lectures) + 12 hours (preparation) + 27 hours (additional work)</p>
Lessons attendance is mandatory for students, as well as doing home and laboratory exercises, both tests and the final exam.	
<b>Literature:</b> Z. Uskoković, Signali i sistemi - handouts. Lj. Stanković, Digitalna obrada signala, Naučna knjiga Beograd, 1990.	
<b>The forms of knowledge testing and grading:</b>	
<ul style="list-style-type: none"> <li>- Home exercises carry 5x1 points.</li> <li>- Laboratory exercises carry 5 points.</li> <li>- Each test carries 20 points (40 points total).</li> <li>- Final exam carries 50 points.</li> </ul> <p>Student gets the passing grade by collecting 50 points at least.</p>	
<b>Special remarks for the course:</b> The teaching is organized for student groups with approximately 40 students and laboratory is organized for groups with 20 students.	
<b>Teacher(s) who provided the information:</b> Ph.D. Zdravko Uskoković	
<b>Remark:</b>	