Faculty of Electrical Engineering / APPLIED COMPUTER ENGINEERING / MICROPROCESSOR INSTRUMENTATION

Course:	MICROPROCESSOR INSTRUMENTATION			
Course ID	**Course status**	**Semester**	**ECTS credits**	**Lessons** (Lessons+Exercises+Laboratory)
5153	Mandatory	1	6	3+0+1
Programs	APPLIED COMPUTER ENGINEERING			
Prerequisites	There are no conditions for registration and course attending.			
Aims	Students are introduced with basic electronic components as constitutive parts of the microprocessor based instrumentation, with an emphasis on digital-to-analog converters and analog-to-digital converters.			
Learning outcomes	Once a student passes the exam, he will be able: 1. To explain the operation principles of microprocessor based instrumentation of general type. 2. To explain the purpose of some signal conditioning circuits. 3. To recognize the basic building blocks of digital-to-analog converters and analog-to-digital converters. 4. To explain the operation principle and to analyze the resistive network digital-to-analog converters. 5. To explain the operation principle and to analyze the main types of analog-to-digital converters. 6. To estimate the most appropriate type of the analog-to-digital converter for a specific application. 7. To explain the operation principle and to analyze the resistance-to-frequency converters and the capacitance-to-frequency converters.			
Lecturer / Teaching assistant	Prof. dr Nikša Tadić - professor, dr Milena Erceg –teaching assistant			
Methodology	Lectures and laboratory exercises. Learning and homework. Consultations.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Microprocessor based instrumentation of general type			
I week exercises	Microprocessor based instrumentation of general type			
II week lectures	Signal conditioning circuits			
II week exercises	Signal conditioning circuits			
III week lectures	Basic building blocks of digital-to-analog converters and analog-to-digital convereters			
III week exercises	Basic building blocks of digital-to-analog converters and analog-to-digital convereters			
IV week lectures	General considerations of digital-to-analog converters			
IV week exercises	General considerations of digital-to-analog converters			
V week lectures	Digital-to-analog converters with resistive networks			
V week exercises	Digital-to-analog converters with resistive networks			
VI week lectures	Midterm			
VI week exercises	Midterm			
VII week lectures	General considerations of analog-to-digital converters			
VII week exercises	General considerations of analog-to-digital converters			
VIII week lectures	Dual-slope analog-to-digital converters			
VIII week exercises	Dual-slope analog-to-digital converters			
IX week lectures	Successive approximation analog-to-digital converters			
IX week exercises	Successive approximation analog-to-digital converters			
X week lectures	Pipeline analog-to-digital converters			
X week exercises	Pipeline analog-to-digital converters			
XI week lectures	Tracking analog-to-digital converters			
XI week exercises	Tracking analog-to-digital converters			
XII week lectures	Flash analog-to-digital converters			
XII week exercises	Flash analog-to-digital converters			

XIII week lectures	Analog-to digital-converters based on voltage(current) to frequency conversion
XIII week exercises	Analog-to digital-converters based on voltage(current) to frequency conversion
XIV week lectures	Resistance-to-frequency converters
XIV week exercises	Resistance-to-frequency converters
XV week lectures	Capacitance-to-frequency converters
XV week exercises	Capacitance-to-frequency converters
Student workload	Per week: 3L+0E+1L + 4 hours of independent work, including consultations.

Per week	**Per semester**
6 credits x 40/30=8 hours and 0 minuts 3 sat(a) theoretical classes 1 sat(a) practical classes 0 excercises **4 hour(s) i 0 minuts** of independent work, including consultations	Classes and final exam: **8 hour(s) i 0 minuts x 16 =128 hour(s) i 0 minuts** Necessary preparation before the beginning of the semester (administration, registration, certification): **8 hour(s) i 0 minuts x 2 =16 hour(s) i 0 minuts** Total workload for the subject: **6 x 30=180 hour(s)** Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) **36 hour(s) i 0 minuts** Workload structure: **128 hour(s) i 0 minuts (cources), 16 hour(s) i 0 minuts (preparation), 36 hour(s) i 0 minuts (additional work)**
Student obligations	Students are obligated to attend lectures and exercises.
Consultations	Consultations with Professor and Teaching Assistants, during the first 15 weeks of the semester.
Literature	N. Tadić, Mikroprocesorski mjerni instrumenti, script
Examination methods	Midterm up to 50 points, and final exam up to 50 points.
Special remarks	
Comment	

Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points