Specification for the book of courses

Study program	Electronics and Microsystems		
Module	Electronics and Microsystems		
Type and level of studies	Master studies		
The name of the course	Digital Signal Controllers		
Lecturer (for lectures)	Petrović D. Branislav		
Lecturer/associate (for exercises)	Nikolić S. Goran		
Lecturer/associate (for OFE)	Nikolić S. Goran		
Number of ECTS	5	**Course status (obligatory/elective)**	Elective
Prerequisites			
Course objectives	Introducing students with architecture and basic features of digital signal controllers with fixed and mobile commas, assembler programming methods and linking to programming in higher programming languages. Also, the goal is to implement digital signal processing algorithms.		
Course outcomes	Knowledge that enables the design and implementation of algorithms for digital signal processing. Practical application of DSC in systems for the realization of inverters and motions of electric motors of different types.		
Course outline			
Theoretical teaching	Definition of digital signal controller - DSC. Characteristics and differences in relation to the classical microprocessor. Basic architecture of the DSC Texas Instruments family of C2000. Core (data ALU, address generator, program control, patch program logic, PLL generator, JTAG, peripherals). Memory mapping, development tools. Basic types of operations, macro commands and subroutines. Connection to programming in C language. Format Presentation Number. Arithmetic operations, addressing methods. Structures for implementing digital filters. Realization of the FFT algorithm. DSC with moving gates, standard IEEE-754. Application of DSC in digital audio processing. Application of DSC in Invertites for the Initiative of Asynchronous and DC Motors.		
Practical teaching (exercises, OFE, study and research	Getting to know the development system. Audio signal processing programs, benchmark programs, loaders, routine codecs, DMTF routines, encoders, data-driven data in a mobile comma, FFT algorithms, matrix work, sorting, speech synthesis. Inverter for DC motor.		
Textbooks/references			
1	"DSP processors, architecture and programming", manuscript of the teacher(in Serbian).		
2	Selected Articles, Documentation Texas Instruments C2000 Microcontrollers Development Tool.		
3			
4			
5			

Number of classes of active education per week during semester/trimester/year				
Lectures	**Exercises**	**OFE**	**Study and research work**	**Other classes**
2	1	1		
Teaching methods	Auditory instruction using computers and projectors. Lectures. Practical exercises. Laboratory exercises. Homework. Colloquiums. Seminary work. Consultations.			

Grade (maximum number of points 100)			
Pre-exam duties	**Points**	**Final exam**	**Points**
Activity during lectures	10	**Written exam**	20
Exercises	15	**Oral exam**	20
Colloquia	20		
Projects	15		