SYLLABUS

1. Information about the program

1.1 Higher education institution	UNIVERSITY POLITEHNICA OF TIMISOARA
1.2 Faculty[1]/ Department [2]	ELECTRONICS, TELECOMUNICATON AND INFORMATION TECHNOLOGIES/EA
1.3 Field of study (name/code[3])	ELECTRONIC ENGINEERING, TELECOMUNICATION AND INFORMATION TECHNOLOGIES
1.4 Study cycle	License
1.5 Study program (name/code/qualification)	TST-ENG/20/20/10/100/10/TST-ENG

2. Information about the discipline

2.1 Name of discipline/ formative category[4]			Digital Signals Processors/DS				
2.2 Coordinator (holder) of course activities			Conf.dr.ing. Roland Szabo				
2.3 Coordinator (holder) of applied activities[5]			Conf.dr.ing. Roland Szabo				
2.4 Year of study[6]	4	**2.5** Semester	7	**2.6** Type of evaluation	E	**2.7** Regime of discipline[7]	DO

3. Total estimated time – hours / semester: direct teaching activities (fully assisted or partly assisted) and individual training activities (unassisted) [8]

3.1 Number of fully assisted hours / week	5 of which:	**3.2** course	3	**3.3** seminar / laboratory / project	0/2/0
3.1* Total number of fully assisted hours / semester	70 of which:	**3.2*** course	42	**3.3*** seminar / laboratory / project	0/28/0
3.4 Number of hours partially assisted / week	of which:	**3.5** training		**3.6** hours for diploma project elaboration	
3.4* Total number of hours partially assisted / semester	of which:	**3.5*** training		**3.6*** hours for diploma project elaboration	
3.7 Number of hours of unassisted activities / week	3.93 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			0.83
		hours of individual study after manual, course support, bibliography and notes			1.1
		training seminars / laboratories, homework and papers, portfolios and essays			2
3.7* Number of hours of unassisted activities / semester	55 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			11.62
		hours of individual study after manual, course support, bibliography and notes			15.4
		training seminars / laboratories, homework and papers, portfolios and essays			28
3.8 Total hours / week [9]	8.93				
3.8* Total hours /semester	125				
3.9 Number of credits	5				

4. Prerequisites (where applicable)

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[1] The name of the faculty which manages the educational curriculum to which the discipline belongs
[2] The name of the department entrusted with the discipline, and to which the course coordinator/holder belongs.
[3] The code provided in HG - on the approval of the Nomenclature of fields and specializations / study programs, annually updated.
[4] Discipline falls under the educational curriculum in one of the following formative disciplines: Basic Discipline (DF), Domain Discipline (DD), Specialist Discipline (DS) or Complementary Discipline (DC).
[5] Application activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).
[6] Year of studies in which the discipline is provided in the curriculum.
[7] Discipline may have one of the following regimes: imposed discipline (DI) or compulsory discipline (DOb)-for the other fundamental fields of studies offered by UPT, optional discipline (DO) or optional discipline (Df).
[8] The number of hours in the headings 3.1 *, 3.2 *, ..., 3.8 * is obtained by multiplying by 14 (weeks) the number of hours in headings 3.1, 3.2, ..., 3.8. The information in sections 3.1, 3.4 and 3.7 is the verification keys used by ARACIS as: (3.1) + (3.4) ≥ 28 hours / wk. and (3.8) ≤ 40 hours / wk.
[9] The total number of hours / week is obtained by summing up the number of hours in points 3.1, 3.4 and 3.7.

4.1 Curriculum	• Applied Computer Programming, Electronic Circuits, Digital Integrated Circuits, Electrical and Electronic Measurements, Microprocessors and Microcontrollers, Signal Processing
4.2 Competencies	• Using fundamentals to devices, circuits, systems, instrumentation and electronic technology. • Applying knowledge of basic concepts and methods related to architecture computer systems, microprocessors, microcontrollers, programing languages and techniques.

5. Conditions (where applicable)

5.1 of the course	•
5.2 to conduct practical activities	•

6. Specific competencies acquired through this discipline

Specific competencies	• Applying knowledge of basic concepts and methods related to architecture computer systems, microprocessors, microcontrollers, programming languages and techniques • Adapting to new technologies, professional and personal development through training using printed documentation sources, specialized software and electronic resources in a foreign language
Professional competencies ascribed to the specific competencies	• Application of knowledge, concepts and basic methods related to computer systems architecture, microprocessors, microcontrollers, programming languages and techniques • Solving technological problems in fields of applied electronics
Transversal competencies ascribed to the specific competencies	• Adaptation to new technologies, professional and personal development trough conituous training, using printed documentation sources, specialized software and electronic resources in Romanian and at least on foreign language

7. Objectives of the discipline (based on the grid of specific competencies acquired - pct.6)

7.1 The general objective of the discipline	• Acquiring basic knowledge about Digital Signal Processors (DSP) and implementations of simple applications in the field of signal processing
7.2 Specific objectives	• Understanding the operating principle of a DSP. The use of development environments for programming DSP's in C language.

8. Content [10]

8.1 Course	Number of hours	Teaching methods [11]

[10] It details all the didactic activities foreseen in the curriculum (lectures and seminar themes, the list of laboratory works, the content of the stages of project preparation, the theme of each practice stage). The titles of the laboratory work carried out on the stands shall be accompanied by the notation "(*)".
[11] Presentation of the teaching methods will include the use of new technologies (e-mail, personalized web page, electronic resources etc.).

Microprocessors	4	University lecture, discussion (projector, blackboard, questions
Digital signal processors	4	
Procedures for signal processing	4	
Architectural features of digital signal processors	4	
Unit repetitive multiplication and accumulation (MAC – Multiply and Accumulate)	4	
TMS320 processor family	4	
TMS320C25 processor	4	
Applications and limitations of signal processors	4	
Microcontrollers	4	
Structure of the uC I 80C31/51	4	
Components and characteristics of the uC I8031/51	4	
Interfaces, modes and types of processors	2	

Bibliography [12] 1. Rodnay Zaks, Intoduction to microprocessors, Sybex Inc, Berkley CA USA, 1999, ISBN: 0- 89588-010-5

2. Hosein Sabaghian Bidgoli, 8051 Microcontroller, Kashan University, 2005,

http://ce.kashanu.ac.ir/sabaghian/micro/Micro_Spring2005.htm

3. TMS320C25 Datasheet

4. [13] Liviu Toma, Gabriel Vasiu, Robert Pazsitka – Sisteme de prelucrare numerică cu procesoare, Editura de Vest, Timişoara, 2005

8.2 Applied activities [14]	Number of hours	Teaching methods
Introduction (numeration systems review), Programming in assembly and in C language using a development environment.	4	Debate – discussion of laboratory work studied at home
Working with TMS320C25 DSP and uC I8031/51 microcontroller (acquisition and distribution of data, signal generation, digital filters	24	

Bibliography [15] TMS320C25 Datasheet

Hosein Sabaghian Bidgoli, 8051 Microcontroller, Kashan University, 2005,

http://ce.kashanu.ac.ir/sabaghian/micro/Micro_Spring2005.htm

9. Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program

[12] At least one title must belong to the discipline team and at least one title should refer to a reference work for discipline, national and international circulation, existing in the UPT library.
[13] Cel puţin un titlu trebuie să aparţină colectivului disciplinei iar cel puţin 3 titluri trebuie să se refere la lucrări relevante pentru disciplină, de circulaţie naţională şi internaţională, existente în biblioteca UPT.
[14] Types of application activities are those specified in footnote 5. If the discipline contains several types of applicative activities then they are sequentially in the lines of the table below. The type of activity will be in a distinct line as: "Seminar:", "Laboratory:", "Project:" and / or "Practice/training".
[15] At least one title must belong to the discipline team.

- Microcontrollers and / or signal processors are found today in almost all industrial or household appliances. Most companies in the electronic field have at least one department that deals with the programming of such devices.

10. Evaluation

Type of activity	**10.1** Evaluation criteria [16]	**10.2** Evaluation methods	**10.3** Share of the final grade
10.4 Course	Written examination	Evaluation by written examination	1/2
10.5 Applied activities	**S:**		
	L: At least three written tests in laboratory + oral assessment	Written tests announced + grading students depending on the answers given to the questions posed at the beginning of the laboratory and the results of the practical part of the work.	1/2
	P[17]**:**		
	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified [18])			
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Date of completion	**Course coordinator (signature)**	**Coordinator of applied activities (signature)**
06.07.2023		
Head of Department (signature)	**Date of approval in the Faculty Council** [19]	**Dean (signature)**
	14.09.2023	

[16] Syllabus must contain the procedure for assessing the discipline, specifying the criteria, methods and forms of assessment, as well as specifying the weightings assigned to them in the final grade. The evaluation criteria shall be formulated separately for each activity foreseen in the curriculum (course, seminar, laboratory, project). They will also refer to the forms of verification (homework, papers, etc.)

[17] In the case where the project is not a distinct discipline, this section also specifies how the outcome of the project evaluation makes the admission of the student conditional on the final assessment within the discipline.

[18] It will not explain how the promotion mark is awarded.

[19] The endorsement is preceded by the discussion of the board's view of the study program on the discipline record.