

## SYLLABUS

### 1. Data about the program of study

1.1	Institution	The Technical University of Cluj-Napoca
1.2	Faculty	Electronics, Telecommunications and Information Technology
1.3	Department	Communications
1.4	Field of study	Electronics and Telecommunications Engineering
1.5	Cycle of study	Bachelor of Science
1.6	Program of study/Qualification	Telecommunications Technologies and Systems
1.7	Form of education	Full time
1.8	Subject code	TST-E52.10

### 2. Data about the subject

2.1	Subject name	Media Processors									
2.2	Subject area	Electronics and Telecommunications Engineering									
2.3	Course responsible/lecturer	Professor Radu ARSINTE, PhD									
2.4	Teachers in charge of applications	Professor Radu ARSINTE, PhD									
2.5	Year of study	IV	2.6	Semester	2	2.7	Assessment	Verifica tion	2.8	Subject category	DID/DOB

### 3. Estimated total time

Year/ Sem.	Subject name	No. of weeks	Course			Applications			Indiv. study	TOTAL	Credits		
			[hours/ week]			[hours/ semester]							
			S	L	P	S	L	P					
IV/2	Media Processors	14	2		1	1	28		14	14	22	78	3

3.1	Number of hours per week	4	3.2	of which, course	2	3.3	applications	2
3.4	Total hours in the curriculum	56	3.5	of which, course	28	3.6	applications	28

Individual study								Hours
Manual, lecture material and notes, bibliography								8
Supplementary study in the library, online and in the field								-
Preparation for seminars/laboratory works, homework, reports, portfolios, essays								8
Tutoring								2
Exams and tests								4
Other activities								-

3.7	Total hours of individual study	22
3.8	Total hours per semester	78
3.9	Number of credit points	3

### 4. Pre-requisites (where appropriate)

4.1	Curriculum	Knowledge of digital signal processing, television, software (C based programming), audio-video analog signal handling (acquisition and conversion), Basic processor architecture
4.2	Competence	Basic use of electronic and computer equipment, use of programming environments

## 5. Requirements (where appropriate)

5.1	For the course	Cluj-Napoca
5.2	For the applications	Cluj-Napoca

## 6. Specific competences

Professional competences	C4. To design, implement and operate data, voice, video and multimedia services, based on the understanding and application of fundamental concepts from the field of communications and information transmission. C5. To select, install, configure and exploit fixed and mobile telecommunications equipment. To equip a site with common telecommunications networks.
Cross competences	N.A.

## 7. Discipline objectives (as results from the key competences gained)

7.1	General objectives	Developing the competences regarding the use, analysis and (re)design of fundamental electronic circuits.
7.2	Specific objectives	<ol style="list-style-type: none"> <li>1. Recognizing and understanding basic concepts specific to fundamental electronic circuits.</li> <li>2. Developing skills and abilities necessary for the use of fundamental electronic circuits.</li> <li>3. Developing skills and abilities for the analysis and (re)design of fundamental electronic circuits.</li> </ol>

## 8. Contents

8.1. Lecture (syllabus)		Teaching methods	Notes
1	Introduction. Media processor and general digital processor.	Presentation, heuristic conversation, exemplification, problem presentation, teaching exercise, case study, formative evaluation	Use of .ppt presentation, projector, blackboard
2	Architectures used in media processor environments		
3	Definition of Media Processor concept. Generic architectures for special applications: streaming media		
4	Introduction in high performance DSP architectures. TMS320C6000 Hardware architecture of C6000. Functional units.		
5	Use of the main blocks in program implementation.		
6	C6xxx instructions		
7	C6xxx memory map and peripherals		
8	Real time operating systems in media and DSP applications. DSP BIOS.		
9	Implementation scenarios for media processors		
10	Software development using media processors. Code Composer Studio.		
11	Media processors based on C64x. TI C64x software platform.		
12	Advanced software support: DaVinci		
13	Open cores in media processing: ARM, MIPS, ST20		
14	Applications of media processors in embedded multimedia applications. Future solutions: FPGA		
8.2. Applications (lab)		Teaching methods	Notes
1	Knowledge of the most important families of TI media processors. Study of the support site	Didactic and experimental proof, didactic exercise, team work	Use of laboratory instrumentation, experimental boards, computers, magnetic board
2	Code Composer Studio for media processors		
3	Evaluation Modules for C64xx DSP.TMS320C6416DSK		
4	Application development under Code Composer Studio and TMS320C6416DSK		
5	Application development under Matlab /Simulink and link with TMS320C6416DSK.		
6	Basic level development tools for media processor systems. JTAG interface.		
7	Laboratory test Projects		
8	Introduction. Projects presentation and allocation		
9	Analysis of the project. Theoretical fundamentals		
10	Implementation of the project under CCS		
11	Program testing		
12	Program testing and report editing		
13	Preliminary verification of the project		
14	Project presentation. Evaluation.		

## Bibliography

References (Textbooks, courses, laboratory manual, exercise book)

In UTC-N library (print)

1. Radu Arsinte – Arhitecturi paralele si procesoare de semnal , Ed. Politehnica, Timisoara, 2000 - reprinted

Electronic media

1. Radu Arsinte – course support CD -2013

2. C6000 Teaching materials, Development with Matlab/Simulink, Texas Instruments, 2010

3. Digital media resource CD, Texas Instruments, 2010

4. Rulph Chassaing, DSP Applications Using C and the TMS320C6x DSK. John Wiley & Sons, 2008

5. David J Katz, Rick Gentile, Embedded Media Processing, Newnes, 2005

Other Libraries (team library)

1. Steven W. Smith, The Scientist and Engineer's Guide to Digital Signal Processing, California Technical Publishing San Diego, California, Edition 2013

On-line references

1. Radu Arsinte – Media Processors - <http://users.utcluj.ro/~arsinte/ProcMedia>

9. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field

Competences acquired will be used in the following COR occupations (Electronics Engineer; Telecommunications Engineer; Electronics Design Engineer; System and Computer Design Engineer; Communications Design Engineer) or in the new occupations proposed to be included in COR (Sale Support Engineer; Multimedia Applications Developer; Network Engineer; Communications Systems Test Engineer; Project Manager; Traffic Engineer; Communications Systems Consultant).

10. Evaluations

Activity type	10.1	Assessment criteria	10.2	Assessment methods	10.3	Weight in the final grade
Course		The level of acquired theoretical knowledge and practical skills		- Summative evaluation written exam (theory and problems)		- T, max 10 pts. 50%
Applications		The level of acquired abilities		- Final laboratory test - Project presentations		- L, max. 10 pts. 25% - P, max.10 pts. 25%
10.4 Minimum standard of performance						
$E \geq 4.5$ and $0.5E+0.25L+0.25P \geq 4.5$						

Date of filling in  
01.10.2018

Course responsible  
Professor  
Radu ARSINTE, PhD

Teachers in charge of applications  
Professor  
Radu ARSINTE, PhD