

SYLLABUS

1. Data about the program of study

1.1 Institution	Technical University of Cluj-Napoca
1.2 Faculty	Faculty of Electronics, Telecommunications and information Technology
1.3 Department	Communications
1.4 Field of study	Electronic Engineering, Telecommunications and Information Technologies
1.5 Cycle of study	Bachelor of Science
1.6 Program of study / Qualification	Telecommunications Technologies and Systems/ Engineer Applied Electronics/Engineer
1.7 Form of education	Full time
1.8 Subject code	TST-E44.00/EA-E44.00

2. Data about the subject

2.1 Subject name	Television						
2.2 Subject area	Theoretical area						
	Methodological area						
	Analytic area						
2.3 Course responsible	Assoc. Prof. Șerban Nicolae MEZA, PhD – Serban.Meza@com.utcluj.ro						
2.4 Teacher in charge with seminar / laboratory / project	Assist. Prof. Aurelia CIUPE, PhD – Aurelia.Ciupe@com.utcluj.ro						
2.5 Year of study	IV	2.6 Semester	1	2.7 Assessment	EXAM	2.8 Subject category	DD/DI

3. Estimated total time

3.1 Number of hours per week	4	of which: 3.2 course	2	3.3 seminar / laboratory	2
3.4 To Total hours in the curriculum	56	of which: 3.5 course	28	3.6 seminar / laboratory	28
Distribution of time					hours
Manual, lecture material and notes, bibliography					40
Supplementary study in the library, online specialized platforms and in the field					-
Preparation for seminars / laboratories, homework, reports, portfolios and essays					28
Tutoring					3
Exams and tests					3
Other activities:					-
3.7 Total hours of individual study	74				
3.8 Total hours per semester	130				
3.9 Number of credit points	5				

4. Pre-requisites (where appropriate)

4.1 curriculum	N/A
4.2 competence	N/A

5. Requirements (where appropriate)

5.1. for the course	Location: Amphitheater Classroom, Cluj-Napoca
5.2. for the seminars / laboratories / projects	Location: Lab Classroom, Cluj-Napoca

6. Specific competences

Professional competences	<p>C2.2 Explanation and interpretation of the signal acquisition and processing methods</p> <p>C2.4 Use of specific methods and tools for signal analysis</p> <p>C3.5 Project development using hardware (processors) and software (programming)</p> <p>C4.1 The identification of the fundamental concepts related to the information transmission and analog and digital communications</p> <p>C4.3 Explaining and interpreting the main requirements and approach specific techniques for transmissions of data, voice, video and multimedia</p> <p>C6.5 Elaboration of low / medium complexity projects regarding emission-reception equipment</p>
Cross competences	<p>CT1 - Methodical analysis of the problems encountered in the field, identifying the elements for which there are established solutions, in order to ensure the fulfillment of professional tasks</p> <p>CT3 - Adaptation to new technologies, professional and personal development, through continuous training using printed documentation sources, specialized software and electronic resources in Romanian and, at least, in a foreign language</p>

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

7.1 General objective	Developing professional competencies in the field of television and video systems engineering
7.2 Specific objectives	<p>1. Acquire general theoretical knowledge about the structure of the television signal</p> <p>2. Acquire general understanding of the technologies used in video sensors and video rendering devices</p> <p>3. List main standards that apply to television and video signal</p> <p>4. Gain the ability to use dedicate software and hardware solutions for video editing and processing</p> <p>5. Analyze and understand 3D image and video-based systems</p>

8. Contents

8.1 Lecture (syllabus)	Teaching methods	Notes
C1: Television and Video Systems Fundamentals	Presentation Open discussion, Examples Study cases	Video projector, interactive board, internet access
C2: Video and TV Signal Structure		
C3: Color in Video and TV		
C4: Video and Television standards. Storing and Transmitting Video.		
C5: Digital Television Fundamentals		
C6: Video Sensors and Sources (I). Sensor Technologies		
C7: Video Sensors and Sources (II). Camera Processing		
C8: Video Rendering Devices (I).		
C9: Video Rendering Devices (II).		
C10: 3D Video Acquisition and Processing		

C11: 3D Video and Immersive Rendering		
C12: Dedicated AV Equipment. Interfaces and Inter-connections		
C13: Emerging Video and TV Technologies		
C14: Revision. Preparation for the exam.		
Bibliography 1. A.Vlaicu - Televiziune alb-negru și color, Ed. Compress, 1994 2. A. Vlaicu - Transmisia și recepția semnalelor de televiziune, Ed. Interferente, 1995 3. J. Whitaker – Master Handbook of Video Production – Ed. McGraw-Hill, 2007 4. H. Zettl – Television Production Handbook – Ed. Thomson&Wadsworth, 2006 5. J. Rice, B. McKernan – Creating digital content - Ed. McGraw-Hill, 2002 6. A Guide to Standard and High-Definition Digital Video Measurements – Tektronics		
8.2 Seminar / laboratory / project	Teaching methods	Notes
L1: Introduction. Laboratory and general equipment presentation. Safety regulations.	Applied practical works on dedicated software platforms. Board presentations Explanations Discussions	
L2: The Black and White Analog TV Signal		
L3: The PAL (analog) TV Signal		
L4: The NTSC and SECAM (analog) TV Signal		
L5: Nonlinear Video Editing Tools. Introduction to Adobe Premier		
L6: Advanced Video Editing in Adobe Premier		
L7: Cinematics and Video Editing in Adobe After Effects		
L8: Advanced Motion Tracking and 3D Scenes in Video Editing with Adobe After Effects		
L9: Composition based on Templates in Adobe Affects and Adobe Premiere		
L10: Linear Video Editing and Mixing Tools and Equipment		
L11: Professional Photo and Video Cameras		
L12: Introduction to 3D TV and Stereoscopic Vision Technologies		
L13: Photo – Video Camera Calibration		
L14: Lab Recovery and Evaluations		
Bibliography 1. A.Vlaicu - Televiziune alb-negru și color, Ed. Compress, 1994 2. A. Vlaicu - Transmisia și recepția semnalelor de televiziune, Ed. Interferente, 1995 3. J. Whitaker – Master Handbook of Video Production – Ed. McGraw-Hill, 2007 4. H. Zettl – Television Production Handbook – Ed. Thomson&Wadsworth, 2006 5. J. Rice, B. McKernan – Creating digital content - Ed. McGraw-Hill, 2002 6. A Guide to Standard and High-Definition Digital Video Measurements – Tektronics 7. B. Orza, Ș. Meza – Ingineria sistemelor de televiziune – fascicule de laborator (14 fascicule) – 2012		

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

The gained competences will be used by the following job positions, classified according to the Official Job Positions Registrar of Romania (COR Clasificarea Ocupațiilor din România): Transmission engineer, Electronics, transmission and telecommunications engineer; Image engineer; Sound engineer; Electronics designer engineer; Television engineer; Telecommunications design engineer; System security engineer; Computer systems designer engineer; Sales support engineer; Multimedia applications developer; Network operator engineer; Communications test engineer; Project manager; Data traffic engineer; Communications Systems engineer.

The contents of the subject and the acquired competences answer to the expectations of professional organizations and bodies in the field (e.g. ARIES, Cluj IT) as well as of the companies employing graduate students or interning students (e.g. IT companies, Samsung Romania, Huawei, etc.)

10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	The level of acquired theoretical knowledge and practical skills	summative evaluation written exam (theory and problems, multiple choice questions, open-answer questions, interviews)	E max 10 pct 60%
10.5 Seminar/ Laboratory	The level of acquired knowledge and abilities	-continuous formative evaluation -practical lab test -lab mini project -lab portfolio assessment	L max 10 pct 40%
10.6 Minimum standard of performance			
<p>Quantitative Level: <i>Minimum knowledge about:</i></p> <ul style="list-style-type: none"> ✓ the information structure in the TV signal ✓ the basic components of the TV signal ✓ correspondence between the human visual system and TV technological requirements ✓ the technological approaches to video signal acquisition and examples thereof ✓ the technological approaches to video signal rendering and examples thereof <p><i>Minimum competences:</i></p> <ul style="list-style-type: none"> ✓ recognize the components in a TV signal ✓ basic usage of non-linear video editing tools ✓ basic operation and configuration (minimum setup) of TV equipment (e.g. cameras, rendering devices) ✓ provide explanation on how TV systems and/or components of the it work <p>Qualitative Level:</p> <ul style="list-style-type: none"> ✓ Successful completion of all laboratory works/assignments ✓ Laboratory grade ≥ 5 (from a maximum of 10) ✓ Written examination grade ≥ 4.5 (from a maximum of 10) ✓ The final grade obtained using the formula $40\% \text{ laboratory grade} + 60\% \text{ written examination grade} \geq 4.5$ 			

Date of filling in:	Responsible	Title First name SURNAME	Signature
20.06.2023	Course	Assoc. Professor Șerban Nicolae MEZA, PhD	
	Applications	Assist. Prof. Aurelia CIUPE, PhD	

Date of approval in the Council of the Communications
Department
11.07.2023

Head of Communications Department
Prof. Virgil DOBROTA, Ph.D.

Date of approval in the Council of the Faculty of Electronics,
Telecommunications and Information Technology
12.07.2023

Dean
Prof. Ovidiu POP, Ph.D.