

## 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	53.10

### 2. Data about the subject

2.1	Subject name	Multimedia Technologies
2.2	Subject area	Electronics and Telecommunications Engineering
2.3	Course responsible/lecturer	Assistant Professor Bogdan ORZA, PhD
2.4	Teachers in charge of applications	Lecturer Serban Nicolae MEZA, PhD, Teaching Assistant Aurelia CIUPE
2.5	Year of study	IV
2.6	Semester	2
2.7	Assessment	Exam
2.8	Subject category	DS/DOP

### 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	Multimedia Technologies	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								2
Supplementary study in the library, online and in the field								-
Preparation for seminars/laboratory works, homework, reports, portfolios, essays								14
Tutoring								3
Exams and tests								3
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	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 applications	Location: Lab Classroom, Cluj-Napoca

## 6. Specific competences

Professional competences	Gained theoretical knowledge, (Supposed to know)	<ul style="list-style-type: none"> <li>- Multimedia Systems models</li> <li>- multimedia information and data classes</li> <li>- multimedia compression standards</li> <li>- multimedia applications types and examples</li> </ul>
	Gained skill: (Supposed to operate with)	<ul style="list-style-type: none"> <li>- classes of multimedia applications and their characteristics</li> <li>- main types of multimedia data and their characteristics</li> <li>- main compression standards applied to multimedia data</li> <li>- main technologies used for multimedia applications development</li> <li>- development processes of multimedia applications</li> <li>- cloud development platforms such as Microsoft SharePoint / Office 365</li> </ul>
	Gained abilities: (Supposed to use)	<ul style="list-style-type: none"> <li>- multimedia content acquisition systems</li> <li>- colour calibration equipments used in multimedia systems</li> <li>- professional videoconference systems</li> <li>- mobile devices (including smart devices for multimedia content delivery and applications)</li> <li>- tools and environments dedicated to multimedia applications development</li> </ul>
	In concordanta cu Grila 1 si Grila 2 RNCIS	[se completeaza de coordonatorul programului de studiu]
Cross Competences (Grila1 si Grila2 RNCIS)	[se completeaza de coordonatorul programului de studiu]	

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

7.1	General objectives	Developing professional competencies for the use of multimedia technologies in telecommunications industry
7.2	Specific objectives	<p>1.To gain theoretical and practical knowledge in multimedia information and data types, together with their manipulation in practical contexts of usage</p> <p>2. To gain knowledge in compression standards applied to</p>

		multimedia information and data
		3. To identify the main types of multimedia applications: mobile, desktop-based, web-based, as well as processes involved in multimedia applications development using multimedia tools

## 8. Contents

8.1. Lecture (syllabus)		Teaching methods	Notes
1	Introduction to multimedia systems. Multimedia info types	Presentation, heuristic conversation, exemplification, problem presentation, teaching exercise, case study, formative evaluation	Use of .ppt presentation, projector, blackboard
2	Color in multimedia		
3	Text		
4	Vector graphics		
5	Static and dynamic images. Sound and speech		
6	Multimedia acquisition / Audio – video acquisition techniques		
7	Multimedia data compression		
8	Image compression standards: JPEG, JPEG2000		
9	Video compression standards: MPEG, DivX, H.261, H.263		
10	Introduction to multimedia applications		
11	Desktop multimedia applications: Windows 8, MS Office 365, MS SharePoint		
12	Multimedia applications for smart devices		
13	Server-based multimedia applications (using Adobe Media Server)		
14	Revision. Preparation for the final exam.		
8.2. Applications (lab)		Teaching methods	Notes
1	Multimedia acquisition techniques. Color management.		
2	Content publishing using 2D vector graphics		
3	Creating and editing 3D graphic content		
4	Application development based on MS SharePoint		
5	Cloud based applications using MS Office 365		
6	Platforms for digital content management		
7	Audio-video communication applications: videoconferencing		
Bibliography			
<ol style="list-style-type: none"> <li>1. A.Vlaicu, V. Dobrotă, S. Iacob – Tehnologii multimedia: Sisteme, Rețele și Aplicații – UT Cluj, 1997</li> <li>2. B. Orza – Sisteme de comunicații multimedia – în curs de editare (2007)</li> <li>3. F. Fluckinger – Understanding Networked Multimedia: Applications and Technology, Prentice Hall 1995</li> <li>4. William Horton, Katherine Horton, “E-Learning Tools and Technologies”, Wiley Publishing Inc., 2003,</li> <li>5. B.E. Usevitch, “A tutorial on Modern Lossy Wavelet Image Compression: Foundations of JPEG200”, IEEE Signal Processing Mag., September 2001, Vol.18, No.5</li> <li>6. D. Taubman, M.W. Marcellin, „JPEG 2000: Image Compression Fundamentals, Practice and Standards”, Kluwer Academic Publishers, Dordrecht, 2001</li> <li>7. K. R. Rao, Zoran S. Bojkovic, Dragorad A. Milovanovic, D. A. Milovanovic, „Multimedia Communication Systems: Techniques, Standards, and Networks”, 2002</li> <li>8. R. Steinmetz, K. Nahrstedt, „Multimedia Systems”, 2004, Springer Verlag, Berlin</li> <li>9. N. Chapman, J. Chapman, „Digital Multimedia”, 2004</li> </ol>			

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

The gained competences will provide required background by enterprise employees in multimedia-related fields and industries

## 10. Evaluation

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)		E, max 10 pts. 50%
Applications		The level of acquired abilities		- Evaluation of a project consisting of some multimedia application		L, max. 10 pts. 50%
10.4 Minimum standard of performance						
$L \geq 5$ and $E \geq 4.5$ and $0.5E+0.5L \geq 4.5$						

Date of filling in      Course responsible

09.02.2015

Assistant Professor  
Bogdan ORZA, PhD

Teachers in charge of applications

Lecturer  
Serban Nicolae MEZA, PhD  
Teaching Assistant  
Aurelia CIUPE

Date of approval  
in the department

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Head of Communications

Department  
Professor Virgil DOBROTA, PhD