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-E53.10

2. Data about the subject

2.1	Subject name					Multimedia Technologies					
2.2	Subject area					Electronics and Telecommunications Engineering					
2.3	Course responsible/lecturer					Associate 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 [hours/ week]	Applications [hours/ week]			Course [hours/ semester]	Applications [hours/ semester]			Indiv. study	TOTAL	Credits
				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)	– Multimedia Systems models – multimedia information and data classes – multimedia compression standards – multimedia applications types and examples
	Gained skill: (Supposed to operare with)	– classes of multimedia applications and their characteristics – main types of multimedia data and their characteristics – main compression standards applied to multimedia data – main technologies used for multimedia applications development – development processes of multimedia applications – cloud development platforms such as Microsoft SharePoint / Office 365
	Gained abilities: (Supposed to use)	– multimedia content aquisition systems – colour calibration equipments used in multimedia systems – professional videoconference systems – mobile devices (including smart devices for multimedia content delivery and applications) – tools and environments dedicated to multimedia applications development
	In concordanta cu Grila 1 si Grila 2 RNCIS	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 (Grila1 si Grila2 RNCIS)		N.A.

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

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

		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

1. A.Vlaicu, V. Dobrotă, S. Iacob – Tehnologii multimedia: Sisteme, Reţele şi Aplicaţii – UT Cluj, 1997
2. B. Orza – Sisteme de comunicaţii multimedia – în curs de editare (2007)
3. F. Fluckinger – Understanding Networked Multimedia: Applications and Technology, Prentice Hall 1995
4. William Horton, Katherine Horton, "E-Learning Tools and Technologies", Wiley Publishing Inc., 2003,
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
6. D. Taubman, M.W. Marcellin, „JPEG 2000: Image Compression Fundamentals, Practice and Standards", Kluwer Academic Publishers, Dordrecht, 2001
7. K. R. Rao, Zoran S. Bojkovic, Dragorad A. Milovanovic, D. A. Milovanovic, „Multimedia Communication Systems: Techniques, Standards, and Networks", 2002
8. R. Steinmetz, K. Nahrstedt, „Multimedia Systems", 2004, Springer Verlag, Berlin
9. N. Chapman, J. Chapman, „Digital Multimedia", 2004

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. 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
09.02.2015

Course responsible
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
09.02.2015

Head of Communications
Department
Professor Virgil DOBROTA, PhD