



University of Split
Department of Professional Studies

MULTIMEDIA COMMUNICATIONS

COURSE SYLLABUS

COURSE DETAILS		
Type of study programme	Professional study - 180 ECTS	
Study programme	ELECTRONICS	
Course title	Multimedia Communications	
Course code	SEL031	
ECTS (Number of credits allocated)	4	
Course status	Core	
Year of study	Third	
Semester	Sixth (spring)	
Course Web site	http://moodle.oss.unist.hr/	
Total lesson hours per semester	Lectures	30
	Practical (Numeric exercises)	15
	Laboratory exercises and practical demonstration	15
Prerequisite(s)	None	
Lecturer(s)	Winton Afrić, Ph.D., College professor	
Language of instruction	English, Croatian (for incoming ERASAMUS students possible simultaneous instruction in Italian)	

COURSE DESCRIPTION

<i>Course objectives:</i>	<ul style="list-style-type: none"> • understanding the multimedia communications systems, application and basic principles, • analysis of the multimedia streaming, • performing and establishing multimedia communication terminals, • presentation of multimedia communications.
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<i>Learning outcomes</i> <i>On successful completion of this course, student should be able to:</i>	<ol style="list-style-type: none"> 1. describe technical characteristics and performance of multimedia system and terminals, 2. design creative approach in application of multimedia devices, equipment and systems, 3. carry out experiments and measurements on the multimedia systems in laboratory conditions on real components and equipment, 4. interpret and analyze measurement results obtained on the multimedia system and components, 5. describe the development process and applications of the multimedia systems, 6. Test multimedia communication systems and equipment in real conditions.
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<i>Course content</i>	<p>Multimedia content, picture, voice, data. Multimedia service in the real time. Classification of the multimedia services.</p> <p>Picture signal digitalization. Analogue black and white picture signal. Colour picture and RGB signal, Y;Cr,Cb. Resolution of the picture. Structure of the picture signal information, luminescence and chromatic components.</p> <p>Luminescence and colour triangle. NTCS, PAL, SECAM TV standards of video signal transmutations.</p> <p>Luminescence and colour sensitivity of the human eye. Different resolution for luminescence and colour components of the pictures. Inertia of Eye.</p> <p>Picture digital signal compression. Compression principles. Structure of video content, video sequence, picture, partition of picture, macro blocks, block, picture element pixel. Spatial dimension of the picture.</p> <p>Basically principles of the vide compression method. I, P and B pictures in video content. Compression on the block level. Cosines and Wavelet transformation. Quantization and in formations loss.</p>
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	<p>Video compression standards JPEG, JPEG 2000, H261, H263, H264, H265, MPEG2 and MPEG4.</p> <p>Video stream content. Huffman coding. Structure of video frame. Spatial and time error expansion during decompression process.</p> <p>Synchronization of video and audio signal.</p> <p>DVB-T and DVB-C.OFDM and broadcasting of digital signals. Digital television. TV monitor as Multimedia terminal.</p>
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CONSTRUCTIVE ALIGNMENT – Learning outcomes, teaching and assessment methods

Alignment of students activities with learning outcomes		
Activity	Student workload ECTS credits	Learning outcomes
<i>Lectures</i>	30 hours / 1 ECTS	1,2,3,4,5,6
<i>Practicals</i>	15 hours / 0.5 ECTS	2,3,4,5
<i>Laboratory work</i>	15 hours / 0.5 ECTS	2,3,4
<i>Mid-term exam</i>	30 hours / 1 ECTS	1,2,4,5
<i>Self-study</i>	45 hours / 1.5 ECTS	1,2,3,4,5
<i>Office hours and final exam</i>	15 hours / 0.5 ECTS	1,2,3,4,5,6
TOTAL:	150 hours / 5 ECTS	1,2,3,4,5,6

CONTINUOUS ASSESSMENT		
Continuous testing indicators	Performance A_i (%)	Grade ratio k_i
Class attendance and participation	70 – 100	0,05
Laboratory work	10	0,05
Laboratory mid-term exam	50 -100	0,3
First mid-term exam	50 -100	0,3
Second mid-term exam	50 -100	0,3

FINAL ASSESSMENT		
Testing indicators – final exam (first and second exam term)	Performance A_i (%)	Grade ratio k_i (%)
Practical exam (written)	50– 100	40
<i>Theoretical exam (written and/or oral)</i>	50– 100	60
Testing indicators – makeup exam (third and fourth exam term)	Performance A_i (%)	Grade ratio k_i (%)
Practical exam (written)	50– 100	40
<i>Theoretical exam (written and/or oral)</i>	50– 100	60

PERFORMANCE AND GRADE		
Percentage	Criteria	Grade
50% - 61%	<i>basic criteria met</i>	sufficient (2)
62% - 74%	<i>average performance with some errors</i>	good (3)
75% - 89%	<i>above average performance with minor errors</i>	very good (4)
90% - 100%	<i>outstanding performance</i>	outstanding (5)

ADDITIONAL INFORMATION

Teaching materials for students (scripts, examples of solved exercises), teaching record, detailed course syllabus, application of e-learning, current information and all other data are available by MOODLE system to all students (<https://moodle.oss.unist.hr/>).