University of Split

Department of Professional Studies

BROADBAND NETWORKS

COURSE SYLLABUS

COURSE DETAILS		
Type of study programme	Professional study - 180 ECTS	
Study programme	ELECTRONICS	
Course title	Broadband Networks	
Course code	SEL025	
ECTS (Number of credits allocated)	6	
Course status	Advanced level course	
Year of study	Third	
Semester	Fifth (fall)	
Course Web site	http://www.oss.unist.hr/	
Total lesson hours per semester	Lectures	45
	Practicals	0
	Laboratory exercises & practical demonstration	30
Prerequisite(s)	None	
Lecturer(s)	Department of Electrical Engineering faculty: Tonko Kovačević, Mr. Sc., senior lecturer.	
Language of instruction	Croatian, English	

COURSE DESCRIPTION	
Course Objectives:	• understanding the architecture, protocols and services that are used in broadband networks, and methods for acquisition of the new future technologies and services to be introduced in the next generation networks, • installing and maintaining the equipment needed to operate the broadband networks.
Learning outcomes *On successful completion of this course, student should be able to:*	1. define services and specify their applications in modern broadband networks, 2. explain communication protocols, 3. analyze and compare the appropriate network architecture, 4. develop, design and create broadband networks, 5. choose an engineering approach to solving problems, starting with the acquired theoretical knowledge.
Course content	Introduction: definition and basic characteristics of ISDN, defining and distributing services, broadband aspects of ISDN. B-ISDN architecture. Signalling: access signalling, toll signalling, SS7 signalling, H323 and SIP. ATM. Intelligent networks (IN). VoIP and IPTV services. Virtual private networks (VPN). VPN basic characteristics; technologies, components and services; VPN based on multiprotocol commutation over labels (MPLS VPN). QoS and packet networks: QoS architecture, mechanisms and protocols. Internet: architecture and protocol stack of the Internet, Internet physical and logical picture, addressing and routing, Internet protocols and services, new generation Internet. Network architecture selection for IP traffic transmission: network architecture evolution, optical network core architecture (IP over WDM, IP over OTN), networks architecture analysis and comparison. Broadband networks economy.

CONSTRUCTIVE ALIGNMENT – Learning outcomes, teaching and assessment methods

Alignment of students activities with learning outcomes		
Activity	**Student workload ECTS credits**	**Learning outcomes**
Lectures	**45 hours / 1.5 ECTS**	**1,2,4,5**
Practicals	**0 hours / 0 ECTS**	
Laboratory work	**30 hours / 1 ECTS**	**3,4,5**
Preparation, laboratory mid-term exam	**18 hours / 0.6 ECTS**	**3,4,5**
Practical demonstration	**2 hours / 0.06 ECTS**	**1,5**
Two mid-term exams (preparation and delivery)	**30 hours / 1 ECTS**	**1,2,3,4,5**
Self-study	**45 hours / 1.5 ECTS**	**1,2,3,4,5**
Office hours and final exam	**10 hours / 0.34 ECTS**	**1,2,3,4,5**
TOTAL:	**180 hours / 6 ECTS**	**1,2,3,4,5**

CONTINUOUS ASSESSMENT		
Continuous testing indicators	**Performance A_i (%)**	**Grade ratio k_i (%)**
Class attendance and participation	**70 - 100**	**10**
Laboratory work	**100**	**10**
Laboratory mid-term exam	**50-100**	**10**
First mid-term exam	**50-100**	**35**
Second mid-term exam	**50-100**	**35**

FINAL ASSESSMENT		
Testing indicators – final exam (first and second exam term)	**Performance A_i (%)**	**Grade ratio k_i (%)**
Practical exam (written)	**50 - 100**	**40**
Theoretical exam (written and/or oral)	**50 - 100**	**50**
Previous activities (include all continuous testing indicators)	**50 - 100**	**10**
Testing indicators – makeup exam (third and fourth exam term)	**Performance A_i (%)**	**Grade ratio k_i (%)**
Practical exam (written)	**50 - 100**	**50**
Theoretical exam (written and/or oral)	**50 - 100**	**50**

PERFORMANCE AND GRADE		
Percentage	**Criteria**	**Grade**
50% - 61%	*basic criteria met*	**sufficient (2)**
62% - 74%	*average performance with some errors*	**good (3)**
75% - 87%	*above average performance with minor errors*	**very good (4)**
88% - 100%	*outstanding performance*	**outstanding (5)**

ADDITIONAL INFORMATION

Teaching materials for students (scripts, exercise collections, 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/).