SYLLABUS[1]

1. Information about the program

1.1 Higher education institution	**Universitatea Politehnica Timişoara**
1.2 Faculty[2] / Department[3]	Electronica si Telecomunicatii/Comunicatii
1.3 Chair	**–**
1.4 Field of study (name/code[4])	Inginerie electronică și telecomunicații/ **100**
1.5 Study cycle	Licență
1.6 Study program (name/code)/Qualification	TEHNOLOGII SI SISTEME DE TELECOMUNICATII**/**020/Tehnologii si sisteme de telecomunicatii

2. Information about the discipline

2.1 Name of discipline			**Computer Networks Architecture**				
2.2 Coordinator (holder) of course activities			Conf. phd.eng. Georgeta Budura				
2.3 Coordinator (holder) of applied activities [5]			Conf. phd.eng. Georgeta Budura, phd. eng. Janos Gal				
2.4 Year of study[6]	II	**2.5** Semester	5	**2.6** Type of evaluation	E	**2.7** Type of discipline	Compulsory

3. Total estimated time (hours / semester of didactic activities)

3.1 No. of hrs. / week	4 , of which:	**3.2** course	2	**3.3** seminar/laboratory/ project/training	2
3.4 Total no. of hrs. in the education curricula	56 , of which:	**3.5** course	28	**3.6** applied activities	28
3.7 Distribution of time for individual activities related to the discipline					hrs.
Study using a manual, course materials, bibliography and lecture notes					14.66
Additional documentation in the library, on specialized electronic platforms and on the field					6
Preparation for seminars / laboratories, homeworks, assignments, portfolios, and essays					10
Tutoring					4
Examinations					
Other activities					
Total hrs. of individual activities					34.66
3.8 Total hrs. / semester[7]	90.66				
3.9 No. of credits	4				

4. Prerequisites (where applicable)

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1 The form corresponds to the Syllabus promoted by OMECTS 5703/18.12.2011 (Annex3).

2 The name of the faculty which manages the educational curriculum to which the discipline belongs.

3 The name of the department entrusted with the discipline, and to which the course coordinator / holder belongs.

4 Fill in the code provided in GD no. 493/17.07.2013.

5 The applied activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).

6 The year of study to which the discipline is provided in the curriculum.

7 It is obtained by summing up the number of hrs. from 3.4 and 3.7.

4.1 Curriculum	• Signal and systems, Signal processing
4.2 Competencies	•

5. Conditions (where applicable)

5.1 of the course	• Sala de curs dotata cu videoproiector
5.2 to conduct practical activities	• In conformitate cu fisa laboratorului

6. Specific competencies acquired

Professional competencies[8]	• Conceperea, implementarea si operarea serviciilor de date, voce, video, multimedia, bazate pe întelegerea si aplicarea notiunilor fundamentale din domeniul comunicatiilor si transmisiunii informatiei. Aplicarea cunostintelor, conceptelor si metodelor de baza privitoare la arhitectura sistemelor de calcul, microprocesoare, microcontrolere, limbaje si tehnici de programare. Analiza metodica a problemelor întâlnite în activitate, identificând elementele pentru care exista solutii consacrate, asigurând astfel îndeplinirea sarcinilor profesionale. Adaptarea la noile tehnologii, dezvoltarea profesionala si personala.
Transversal competencies	•

7. Objectives of the discipline (based on the grid of specific competencies acquired)

7.1 General objective of the discipline	• The course examines the conceptual framework for specifying a computer network - the network architecture, and investigates the set of rules and procedures that mediate the exchange of information between two communicating processes - the network protocols.
7.2 Specific objectives	• Întelegerea si aplicarea notiunilor fundamentale din domeniul comunicatiilor si transmisiunii informatiei în analiza şi modelarea sistemelor elementare ce compun reţeaua de telecomunicaţii şi chiar a unor subreţele de dimensiuni mai reduse, cu accent pe analiza traficului ce se desfasoară în cadrul acestor reţele**.**

8. Content

8.1 Course	No. of hours	Teaching methods
Module 1: Introduction to computer networking: Network hardware, Network software, Reference models.	3	The course is organized as exposure based on Power Point material available for students on Intranet.
Module 2:The physical layer:The theoretical basis for data communication, Guided transmission media, Wireless transmission.	4	Students are involved through questions and

8 The professional competencies and the transversal competencies will be treated according to the Methodology of OMECTS 5703/18.12.2011. The competencies listed in the National Register of Qualifications in Higher Education [Registrul Naţional al Calificărilor din Învăţământul Superior RNCIS] (http://www.rncis.ro/portal/page?_pageid=117,70218&_dad=portal&_schema=PORTAL) will be used for the field of study from 1.4 and the program of study from 1.6 of this form, involving the discipline.

Module 3: The data link layer: Data link layer design issues, Error detection and correction, Elementary data link protocols HDLC, LLC, PPP.	4	Discussions.
Module 4: LAN technology: Protocol architecture.Topologies. Medium Access Control technique. LLC in LAN technologies. Bus/tree LANs, Ring LANs, Star LANs, Wireless LANs, IEEE 802.3 Protocol, CSMA/CD, IEEE 802.5 Protocol	5	
Module 5: Connecting devices: hubs, bridges, routers	3	
Module 6: Internetworking: Connection oriented and Connectionless operation. IP Operation. Design Issues. Internet Protocol. IP Addresses. Routing Protocols.	4	
Module 7: Transport Protocols: Transport Services.TCP.UDP.	5	
Bibliography[9] Andrew S. Tanenbaum, *Computer Networks*, Fourth Edition Prentice Hall, 2003 Behrouz A. Forouzan, *TCP/IP Protocol Suite* Fourth Edition, Mc. Graw Hill, Higher Education, 2010 G. Budura https://intranet.etc.upt.ro/~COMP_NET_ARCH/, 2014		

8.2 Applied activities[10]	No. of hours	Teaching methods
Lab I: Internet services. Telnet (SSH), E-mail, FTP	2	The practical laboratory
Lab II: Monitoring Internet Connections (TCP/IP)	2	work is followed by
Lab III: Configuring Ethernet Networks	2	discussion and results analysis
Lab IV: MAC and IP Addresses	2	
Lab V: IP Subnetting	6	
Lab VI: Capturing and monitoring the network traffic	4	
Lab VII: Transmission Control Protocol / Internet Protocol	2	
Lab VIII: Configuring CISCO routers with the Dynamics GNS3 simulation environment – part I	4	
Lab IX: Configuring CISCO routers with the Dynamics GNS3 simulation	4	

[9] At least one title must belong to the department staff teaching the discipline, and at least 3 titles must refer to national and international works relevant for the discipline, and which can be found in the Politehnica University Library.
[10] The types of applied activities are those specified in footnote 5. If the discipline contains several types of applied activities, then these will be written consecutively in the lines of the table below. The type of activity will be written in a distinct line, as „Seminar:", „Laboratory:", „Project:" and/or „Practice/Training:".

environment – part I		
Bibliography [11] G. Budura https://intranet.etc.upt.ro/~COMP_NET_ARCH/, 2014		

9. Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program

- Course content was determined through discussions with representatives of employers in order to provides theoretical and practical understanding of the subject.

10. Evaluation

Type of activity	**10.1** Evaluation criteria	**10.2** Evaluation methods	**10.3** Share of the final grade
10.4 Course	Evaluate the understanding of fundamental CNA concepts and how to apply them to solve practical applications.	Written exam; date and place planned and announced in advance. The exam consists of 7applications and 3 theoretical subjects covering course topics.	66%
10.5 Applied activities	**S:**		
	L: Evaluate how to understand the theoretical support of laboratory work, how to carry out the experimental results and personal observations.	Written tests, Homeworks	33%
	P:		
	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified)			
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Date of completion

Course coordinator

(signature)

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Coordinator of applied activities

(signature)

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[11] At least one title must belong to the staff teaching the discipline.

Head of Department	Date of approval in the Faculty Council[12]	Dean
(signature)		(signature)
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[12] Avizarea este precedată de discutarea punctului de vedere al board-ului de care aparţine programul de studiu cu privire la fişa disciplinei.