

General Information:

Name of Course:

COMPUTER NETWORKS III.

Course Code:

PMTRTNB238HA

Semester:

6th

Number of Credits:

4

Allotment of Hours per Week:

2 Lectures, 2 Labs /Week

Evaluation:

Term mark

Prerequisites:

Computer Networks II.

Instructor:

Gábor GYURÁK, assistant lecturer

Office: H-7624 Pécs, Boszorkány u. 2. Office N° B-144

Office hours: Friday 12:00-13:00

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Introduction, General Course Description:

This course is intended to help students understand the basics of telecommunication networks.

We will focus on an overview from early telephone networks, through CaTV networks to nowadays new generation telecommunication networks. Students who successfully complete this course will have a concept and knowledge about telecom protocols and systems. Students will also have hands on experience in building VoIP networks, analyzing network protocols, building integrated networks through lab sessions.

Course aims:

- To introduce the students to the basics of telecommunication networks.
- To make students to get familiarized with different type of access and core network technologies like ADLS, HFC, FTTx, SDH ...etc.
- To give advanced knowledge in order to build, operate and manage networks.

Learning Objectives:

Students who successfully complete this course will have a comprehensive overview of telecommunication networks as well as more in depth understanding of a number of focus areas that they select throughout the course. Furthermore, students will have hands on experiences in telecommunication networks. At the end of the semester, the students will be able to

- Analyzing network protocols and solving network problems.
- Change conventional telephone systems to IP based VoIP systems.
- Make advanced configurations in LAN and WAN computer networks.
- Build and configure Wireless networks.
- Build and configure virtual local area networks.
- Use centralized computer network management systems.

Methodology:

- **Lectures:** discussion and lectures on telecommunication networks theory.
- **Practical class:** will give an introduction of planning, building, programming, operating and troubleshooting telecommunication networks.

Schedule:

Week	Lecture	Practical class
Week 1	Course introduction, requirements	CMS registration, laboratory guide
Week 2	Natwork Address Translation	Virtual Local Area Networks
Week 3	Building network A/B	Building network C/D
Week 4	Access networks	GNS3
Week 5	VoIP A/B	VoIP C/D
Week 6	Mobile networks (3G, 4G)	Mikrotik wireless networks
Week 7	<i>T1 test</i>	
Week 8	Juniper basics, enterprise networks	Introduction to JUNOS CLI
Week 9	Static and dynamic routing in JUNOS	Static routes, BGP in JUNOS
Week 10	<i>Spring break – no classes</i>	
Week 11	QoS basics, multi-VPN	Analyzing QoS configurations
Week 12	Cisco QoS	Cisco QoS configuration
Week 13	JUNIPER QoS	Juniper QoS configuration
Week 14	Homework presentation	<i>T2 test</i>
Week 15	Homework presentation	<i>RT test</i>

Attendance:

Unexcused absences will adversely affect the grade, and in case of absence from more than 30% of the total number of lesson will be grounds for failing the class. To be in class at the beginning time and stay until the scheduled end of the lesson is required, tardiness of more than 20 minutes will be counted as an absence. In the case of an illness or family emergency, the student must present a valid excuse, such as a doctor's note.

Evaluation + Grading:

The course grade is determined as a combination of study-period performance (attendance, tests, homework).

All exams and tests are closed-book and closed-notes. A student with a proper excuse of being absent from the examination must inform and get a permission from the teacher prior to the time of examination. Any students who do not take the examination at the scheduled time will receive a zero score.

The study period performance is successful and the student get a signature and a term mark if

- both T1 and T2 results are greater than or equals to 50% → $T1 \geq 50\%$ and $T2 \geq 50\%$
 - if the average of the two tests is less than 50% the student can retake the tests with one complex retake-test (RT) scheduled to the last week.
- and the student solved and presented the homework

Course performance evaluation:

- Without retake-test: $Performance = (R1 + R2) / 2$
- With retake-test: $Performance = (RT + ((R1 + R2) / 2)) / 2$

Grade:	5	4	3	2	1
Evaluation in percent:	81%-100%	71%-80%	61%-70%	51%-60%	0-50%

PTE Grading Policy:

Information on PTE's grading policy can be found at the following location:

www.pte.hu

Students with Special Needs:

Students with a disability and needs to request special accommodations, please, notify the Deans Office. Proper documentation of disability will be required. All attempts to provide an equal learning environment for all will be made.

Readings and Reference Materials:

Required:

1. Presentation slides (Moodle CMS)
2. Andrew S. Tanenbaum, David J. Wetherall - Computer Networks (5th Edition), 2010. (ISBN-10: 0132126958)
3. Guy Davis - DAY ONE: Deploying Basic QoS, Juniper Networks, 2011.

More:

1. James F. Kurose, Keith W. Ross - Computer Networking: A Top-Down Approach 6th Edition, 2012. (ISBN-10: 0132856204)
2. Wendell Odom – CCENT/CCNA ICDN1 100-105, 2017.
3. Wendell Odom – CCNA Routing and Switching ICDN2 200-105, 2017.
4. Harry G. Perros, Connection Oriented Networks: SONET/SDH, ATM, MPLS and Optial Networks, 2005, ISBN-10: 0470021632