

STUDY MATERIALS AND REFERENCE BOOKS:

Lectures posted on Moodle

<https://moodle.cs.utcluj.ro/> -> *Rețele de calculatoare / Computer Networks, Sem. 2, 2019/2020*

and books

Vasile Teodor Dadarlat, Emil Cebuc: *Rețele Locale de Calculatoare - de la cablare la interconectare*, Editura Albastra (MicroInformatica), 2005

W. Stallings – *Data and Computer Communications*, Prentice Hall (10th edition 2013)

A. Tanenbaum – *Computer Networks*, Prentice Hall, 2005 (Tradusa in limba romana: A. Tanenbaum – *Rețele de Calculatoare*, editia a 4a, Byblos, 2004)

TOPICS:

1)	ISO/OSI Reference Model TCP/IP Reference Model
2)	Network Topologies
3)	Hypertext Transfer Protocol (HTTP)
4)	Electronic mail, Simple Mail Transfer Protocol (SMTP), Multi-purpose Internet Mail Extension (MIME)
5)	Domain Name System (DNS)
6)	Transmission Control Protocol (TCP) User Datagram Protocol (UDP)
7)	IPv4, ICMP
8)	IPv6
9)	Flow Control Techniques: Stop and Wait Sliding Window
10)	HDLC (High-level Data Link Control) protocol and frame structure;
11)	CSMA/CD FDDI
12)	FastEthernet, GigabitEthernet, 10 GigabitEthernet and 100 GigabitEthernet
13)	Wireless LAN, CSMA/CA access
14)	Spanning-Tree protocol
15)	Routing strategies
16)	Nyquist theorem and Shannon's theorem Time Division Multiplexing TDM Frequency Division Multiplexing FDM Wavelength division multiplexing WDM Synchronous transmission vs Asynchronous transmission Switching techniques: packet switching
17)	Transmission Media: twisted pair cables (TP) and fiber optics Media for Wireless transmissions ; spread spectrum
18)	ADSL (Asymmetric Digital Subscriber Line)

Terms and concepts (short definitions):

Claude Shannon's model of communication

Symmetric vs asymmetric communication

Data Encapsulation, Data Segmentation (fragmentation), Data Reassembly

LAN, MAN, WAN

Symmetric vs asymmetric communication

Analog vs Digital data

Role and examples of Data encoding

Hub, Switch, Router

Structured Cabling – necessity and elements

Bit stuffing role and necessity (example on HDLC protocol)

Transmissions of data and control information; piggybacking method