2nd Term of Computer Networks

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Outline

- Subject Presentation
- Subject Assessment
- Today's Lecture

2nd Term Course Goals

- The aim of the 2nd term of the course is to learn how Network, Link, and Physical layers work and the service that they can provide.

- The main goal is that you understand functions and protocols within a layer, understand how layers fit together and finally understand how the Internet works.

Topics

- **T6: Network Layer**
  - Forwarding versus routing
  - Virtual Circuit and Datagram Networks
  - Internet Protocol
  - Routing Algorithms
- **T7: Link Layer**
  - Error-Detection and -Correction Techniques
  - Multiple Access Protocols
  - Internetworking devices: Hubs, Switches and Routers
  - Local Area Networks (LANs) : Ethernet & WiFi
- **T8: Physical Layer**
  - Data and Signals
  - Digital and Analog Data
  - Encoding
  - Bandwidth Utilization
  - Transmission Media

Lectures Schedule

Lecture	Date	Topic	Lecture Topic /Exercises	Reading before class (Kurose and Ross)
1	29-ene.		Routing vs Forwarding, Services Provided to the Transport Layer	4.1,4.2
2	31-ene.		IPv4 Protocol, Dadtagram Format, IPv4 Addressing	4.4.1,4.4.2
3	07-feb.	T6	Subnets and Supernets	
4	14-feb.	Network Layer	Subnets and Supernets Exercises, Forwarding Tables	
5	21-feb.		Forwarding Tables Exercises, Routing Algorithms.	4.5
6	28-feb.		Routing Algorithms Exercises, Routing Protocols.	
7	07-mar.		IPv6 Protocol. Exam -T6: Subnets, Supernets, Forwarding Tables, Routing Algorithms.	4.5,4.6,4.4.4
8	14-mar.		Services Provided by Link Layer. Error-Detection and Correction Techniques. Multiple Access Protocols	5.1,5.2
9	21-mar.		Interconnection Devices: Hubs, Switches, and Routers	5.3 CSMA i CSMA/CD only
10	28-mar.	T7	Wireless Networks: WI-FI 802.11.	5.5
11	18-abr.	Link Layer	Local Area Networks: Ethernet	5.6
12	25-abr.		Interconnection Devices Exercises. Frame transmission Exercises.	6.1,6.2,6.3
13	02-may.		Exam - T7: Interconnection, Local Area Networks, Frame Transmission	
14	09-may.	T8	Transmission Signal Properties. Filters. Data rate and Bandwidth. Transmission Media	[Stallings04] 5.1, 5.2
15	16-may.	Physical Layer	Transmission Impairments. Signal Modulation and Encoding. Exercises	3.2,3.3

Labs Schedule

Date	Time	Place	Topic	Lab Topic
07-feb.	09:30 - 11:00h	LAB. REDES DE COMPUTADORES (2S-16) (DISCA - Edif: 1G)		Lab#1 - Windows and Linux TCP/IP configuration
14-feb.	08:00 - 09:30h	LAB ARQUITECTURA DE COMPUTADORES (2N-16) (DISCA - Edif: 1G)	T6	Lab#2 - IP Fragmentation
21-feb.	08:00 - 09:30h	LAB ARQUITECTURA DE COMPUTADORES (2N-16) (DISCA - Edif: 1G)	Network Layer	Lab#3 - DHCP
28-feb.	08:00 - 09:30h	LAB ARQUITECTURA DE COMPUTADORES (2N-16) (DISCA - Edif: 1G)		Lab#4 - ICMP Protocol
07-mar.	08:00 - 09:30h	LAB ARQUITECTURA DE COMPUTADORES (2N-16) (DISCA - Edif: 1G)		Resit failed lab exams of Labs# 1 to 4
14-mar.	09:30 - 11:00h	LAB. ESTRUCTURA DE COMPUTADORES (2N-17) (DISCA - Edif: 1G)		Lab#5 - Network Address and Port Translation
21-mar.	08:00 - 09:30h	LAB ARQUITECTURA DE COMPUTADORES (2N-16) (DISCA - Edif: 1G)	T7	Lab#6 - Address Resolution Protocol
28-mar.	08:00 - 09:30h	LAB ARQUITECTURA DE COMPUTADORES (2N-16) (DISCA - Edif: 1G)	Link Layer	Lab#7 - Security with iptables
18-abr.	09:30 - 11:00h	LAB. ESTRUCTURA DE COMPUTADORES (2N-17) (DISCA - Edif: 1G)		Lab#8 - WIFI traffic Analisys
02-may.	09:30 - 11:00h	LAB. ESTRUCTURA DE COMPUTADORES (2N-17) (DISCA - Edif: 1G)		Resit failed lab exams of Labs# 5 to 8

Assessment

- Your grade will be based on your performance in the lecture exams, laboratory sessions exams and 2nd term exam, according to the following distribution:
  - Lecture exams:
    - at the end of units 6 and 7, you will have an exam based on material from the unit lectures
    - lecture exams count for 20% of the final 2nd term grade

Assessment

- Lab session exams:
  - at the end of each lab you will have an exam based on material from that lab session.
  - Lab exams count for 20% of the final 2nd term grade

Assessment

- Final 2nd Term Exam :
  - The final 2nd term exam will be based on material from the lectures and Lab sessions
  - 60% of course grading is based on a written exam (open question exam)
  - No documents allowed
  - No electronic equipment (including calculators) is allowed
  - **You should achieve a minimum grade of 3,5 out of 10** (= 2,1 out of 6)
  - Dates:
    - Tuesday 5th June (16h): Theoretical and Labs contents
    - Monday 18th June (16h): You can resit the 2nd term exam

- Final 2nd term grade= Lectures grade + Labs grade + 2nd Term Final Exam grade

Textbook

Computer Networking: A Top Down Approach
6th edition
Jim Kurose, Keith Ross
Addison-Wesley
March 2012