Fundamentals of Telecommunication Networks (ECP 602)

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Outline

Fundamentals of Telecommunication Networks

This course covers the fundamental networking concepts, technologies and standards ranging from the basic data transmission technologies up to the different protocols used in the layers of the main telecommunication network architectures and standards. The conceptual and implementation aspects of the network application layer. The services offered by different transport protocols used in Telecom networks (TCP and UDP). Routing and network layer architecture. Data link layer and medium access control in both wired and wireless networks. The course includes extensive laboratory sessions and project assignments for network design and analysis of case studies, e.g., WLANs, Cellular, and the Internet.

How is the ECP 602 organized?

ECP 602

The course is divided into two main parts:

1. Theoretical Concepts
2. Practical Experimentations

Introduction: Course Contents

1. Introduction (1.5 Lectures)
2. Application Layer Overview (0.5 Lectures)

3. Transport Layer Protocols (1.5 Lectures)
4. Core Routing and Architecture (3.5 Lectures)

5. Data Link Layer (4 Lectures)

6. Seminars (1 Lecture)
   1. Network security
   2. Advanced topics and mobile networks
   3. · · ·

📄 Jim Kurose and Keith Ross (2012)
Computer Networking: A Top Down Approach, 6th Edition.
Addison-Wesley.

📄 Jeff Dolye
CCIE Professional Development: Routing TCP/IP

By the end of this course, the student should be able to:

- Break down the conceptual and implementation aspects of network application protocols for both client-server and peer-to-peer models.
- Differentiate the TCP and UDP transport-layer service models.
- Explain the structures and protocols used in the IEEE 802.3 Ethernet and IEEE 802.11 wireless LAN and justify their designs in the context of local area networks.

Introduction: ILOs of ECP 602?

By the end of this course, the student should be able to:

- Analyze and critique the performance of different network devices, architectures, service models and access technologies and be able to identify the best choice for a given set of requirements.

- Develop an attitude to propose solutions for problems related to telecommunications networks through the investigation of different protocols and wired/wireless standards learnt throughout the course.

Introduction: ILOs of ECP 602?

By the end of this course, the student should be able to:

- Design, calculate, and apply the appropriate masking and addressing to fulfill given requirements in IPv4 and IPv6 networks.
- Build a simple Ethernet network using routers and switches.
- Utilize common network utilities to verify small network operations and analyze data traffic.

Introduction: Grading System

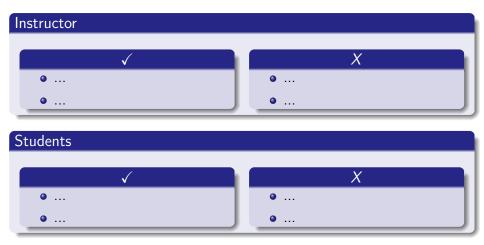| Item	Grade
Final Examination	40%
Midterm	10%
Labs/Assignments	20%
Seminar Report	10%
Project	10%
Attendance/Class Participation	10%
Total	100%

Table: Grading System - ECP 602

Instructors

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Code of Conduct

Instructor

✓	X
● ...	● ...
● ...	● ...

Students

✓	X
● ...	● ...
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Thank You

Questions ?

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