3BA3 – Data Communications

- Lecturer: Andronikos Nedos <nedosa@cs.tcd.ie>
- Two semester course:
  - *Operating Systems (12 weeks) (Kenneth Dawson)*
  - Data Communications/Networking (12 weeks) *(Me)*
- Web Resources
  - http://www.cs.tcd.ie/courses/ba/3ba3/
  - Slides provided online in PDF form
  - Password protected web pages
    - Username: 3BA3
    - Password: oscomms

1

Course Organisation

- Single Text:
  - Computer Networks (4th edition)
    - Andrew S. Tanenbaum
    - 500.17 N691*3   (4*counter reserve, 16*S-LEN)

- Application based

- Coursework
  - 1 Assignments in C++ / Python + 1 Essay ?
  - Multiple Choice Test ?

2

1

Example Applications

- Telephone
  - Voice: _____
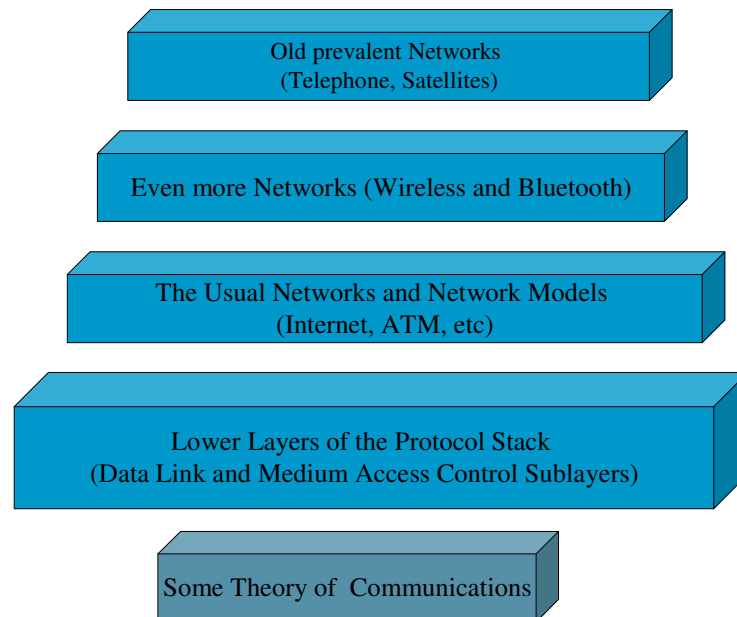 - Text messaging: _____
  - Images: _____
- Television: _____
- Computers: _____
  - Local Networks: _____
  - Peripherals: _____
- Internet: _____

3

Course Coverage

Old prevalent Networks
(Telephone, Satellites)

Even more Networks (Wireless and Bluetooth)

The Usual Networks and Network Models
(Internet, ATM, etc)

Lower Layers of the Protocol Stack
(Data Link and Medium Access Control Sublayers)

Some Theory of Communications

Internet & other examples

- Internet
- Network Software
- Connection Oriented Networks – ATM
- Reference Models
- Ethernet & Wireless LANs
- Theoretical Basis for Communication

5

Ethernet

- Introduction
  - LANs
  - Ethernet
  - Coaxial Cable
- Channel Allocation
- Multiple Access Protocols
- Ethernet

6

Example Data Link Protocols HDLC & PPP

- Data Link Layer Design Issues
- Error Detection & Correction
- Elementary Data Link Protocols
- Sliding Window Protocol
- Protocol Verification
- HDLC & PPP

7

Larger Networks

- Introduction
  - MANs, WANs, Internetworks
  - Fiber Optics
- Switching

8

PSTN

- PSTN
- Cable Television

9

Wireless Networks

- Introduction
- Wireless Transmission
- Wireless LANs
- Broadband Wireless
- Bluetooth

10

General, Topic 1, Course Introduction

Satellites and Mobiles

- Communications Satellites
- Mobile Telephone System

11