Internet Protocols
ECSE:6600

http://www.pde.rpi.edu/courses/01s/courses_by_number.shtml

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Overview

- Introductions: course description & calendar
- Answers to frequently asked questions
- Prerequisites
- Informal Quiz

Who’s Who

- Instructor: Shiv Kalyanaraman; kalyas; x8979
- Course secretary: (on-campus)
  - Jeanne Denue-Grady: JEC 6049; x6313
- PDE/RSVP Point-of-contact:
  - Kari Lewick: CII 4011; x2347
- TAs:
  - Adnan El-Nasan [PDE TA]: elnasa@rpi.edu
  - Hua Qin, [PDE TA]: qinh@rpi.edu
  - Karthikeya Chandrayena, chandk@rpi.edu
  - Jye-Young Song, songj@rpi.edu

Course Description Highlights

- Syllabus:
  - Core protocols: Transport (TCP, UDP), IP, Routing, Addressing/Naming ...
  - Advanced topics: Multicasting, Mobile IP, Security, Next-generation IP, Better-than-best-effort Internet, Optical Networking, IP Telephony ...
- Goals:
  - Breadth of topics
  - Insights into design and implementation
  - Preparation for possible research/advanced development in networking

Course Description Highlights (Continued)

- Lectures: problem-solution approach
- Informal quizzes: Every two weeks
- WebCT bulletin board: Post your questions!
- WebCT: Grades, papers, RFCs, Internet drafts...
- 2 Labs: Hands-on TCP and IP (20 pts)
- 3 Homeworks: (15 pts)
- 1 Research Case Study: (15 pts)
- 3 exams: 15 pts, 15 pts, 20 pts: (50 pts)

Prerequisites

- Required (no exceptions):
  - ESCE-4670 Computer Communication Networks or equivalent
  - C programming knowledge
- Desirable:
  - Operating Systems
  - Computer Architecture (ECSE-4730 or equivalent)
- If you do not have the required prerequisites, you must drop the course and take it later (next year).
Prerequisites
- Protocol Layers: ISO/OSI reference model
- Physical Layer: Coding, Manchester
- Transmission Media: UTP, Cat 5
- Data Communication: Asynchronous vs synchronous, Baud, bit, and Hz, Half-Duplex vs Full-duplex, Modulation/Demodulation
- Packet Transmissions: Framing, Bit stuffing, byte stuffing
- Flow Control: On-Off, Window
- Error Detection: Parity, Checksum, Cyclic Redundancy Check

Prerequisites (Continued)
- Error Recovery: Start and Stop, Go back n, Selective Reject
- LANs: Aloha, CSMA/CD, Ethernet, IEEE 802.3, Token Ring/IEEE 802.5, FDDI
- Addressing: Unicast/multicast, Local/Global
- LAN wiring: 10Base5, 10Base2, 10Base-T, 100Base-TX
- E-LANs: Hubs, Bridges, Routers, Switches
- Routing: Distance Vector vs Link State, Spanning tree, source routing
- Network Layer: Connectionless vs connection oriented

Still trying to get into the course?
- Do you have the pre-requisites?
- Please submit course add form to course secretary: Jeanne, JEC 6049 by tomorrow (Tue, Jan 9th), noon time (12 pm).
- Depending upon the number of people who drop the class, space available, TA resources available, we will add more students.
- Decisions to be emailed to you by Jeanne.
- Make sure you mention your email address to her.

Answers to FAQ's
- All homeworks/labs etc due at the beginning of the class indicated on the course calendar
- Up to one late submission: no penalty
- Beyond that 10% penalty: only if submitted before solutions are posted.
- All quizzes are open-book and extremely time limited.
- Quizzes consist of design qns, numerical, multiple-choice (true-false), and short answer questions.

Informal Quiz: Prerequisites
T F (True or False)
- Datalink refers to the 2nd layer in the ISO/OSI reference model
- Category 5 unshielded twisted pair cable is better than category 3 cable.
- Finding path from one node to another in a large network is a transport layer function.
- It is impossible to send 3000 bits/second through a wire which has a bandwidth of 1000 Hz.

Informal Quiz (Continued)
- Bit stuffing is used so that framing characters do not occur in the frame payload.
- For long delay paths, on-off flow control is better than window flow control.
- Ethernet uses a CSMA/CD access method.
- 10Base2 runs at 2 Mbps.
- The packets sent in a connection-oriented network are called datagrams.
- Spanning tree algorithm is used to find a loop free path in a network.
Informal Quiz 0: Solutions

T  F
√  □  Datalink refers to the 2nd layer in the ISO/OSI reference model
√  □  Category 5 unshielded twisted pair cable is better than category 3 cable.
□  √  Finding path from one node to another in a large network is a transport layer function.
□  √  It is impossible to send 3000 bits/second through a wire which has a bandwidth of 1000 Hz.

Informal Quiz 0: Solutions (Continued)

□  √  Bit stuffing is used so that characters used for framing do not occur in the data part of the frame.
□  ✓  For long delay paths, on-off flow control is better than window flow control.
√  □  Ethernet uses a CSMA/CD access method.

Informal Quiz 0: Solutions (Continued)

□  ✓  10Base2 runs at 2 Mbps.
□  ✓  The packets sent in a connection-oriented network are called datagrams.
√  □  Spanning tree algorithm is used to find a loop free path in a network.