

ECSE-6961

Internet Protocols

Shivkumar Kalyanaraman
Rensselaer Polytechnic Institute
shivkuma@ecse.rpi.edu
<http://www.ecse.rpi.edu/Homepages/shivkuma>



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

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, Applications ...

- **Delivery:**
 - **Interactive lectures, labs, informal quizzes, email discussion list, best-2-out-of-3 exams, web-based resources ...**

Answers to FAQs

- **All homeworks due at the beginning of the class indicated on the course calendar**
- **All quizzes are open-book and extremely time limited.**
- **Quizzes consist of numerical, multiple-choice (true-false), and short answer questions. See course web page for link to previous offering for previous tests etc.**
- **There will be informal quizzes at the beginning of classes once in two weeks to test recently covered material and reading assignments.**

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 (Cont)

- ❑ **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-T4, 100Base-TX, 100Base-FX**
- ❑ **E-LANs: Hubs, Bridges, Routers, Switches**
- ❑ **Routing: Distance Vector vs Link State, Spanning tree, source routing**
- ❑ **Network Layer: Connectionless vs connection oriented**

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.

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.

Informal quiz (contd)

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.**
- √ **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.**

Informal Quiz 0: Solns (contd)

- √ **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.**