

Computer Networks

■ Modulation Techniques

- ① Concept of modulation
- ② Digital modulations: ASK, FSK, PSK, QAM
- ③ Analog modulations: AM, FM

■ Computer Networks & the Internet

What's the Internet

Network Edge, Network Core

- ④ Packet switching vs. Circuit switching
- Protocol Layering:
- ⑤ Five-layer Internet Protocol (Need to know each layer)
- ⑥ Seven-layer ISO OSI reference model (Need to know each layer)
- ⑦ Packet switches: Routers & Link-layer switches
- ⑧ Concept of encapsulation
- ⑨ Virus vs. worm / DoS

■ Application Layer

- ⑩ Client-Server Architecture
- ⑪ P2P architecture
- ⑫ Socket, API
- ⑬ persistent HTTP, non-persistent HTTP

■ Transport Layer

- ⑭ TCP & UDP
- TCP vs. UDP
- ⑮ Transport Protocols for applications
- ⑯ 3.5 connection-oriented transport: TCP
 - TCP segment structure,
 - TCP retransmission scenarios
 - TCP fast retransmit
 - TCP flow control (flow control vs. congestion control)
 - Steps to establish a TCP connection (three-way handshake)
- ⑰ 3.7 TCP congestion control
 - AIMD (Additive Increase Multiplicative Decrease)
 - TCP congestion control algorithm
 - TCP Tahoe vs. TCP Reno