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 Taho vs. TCP Reno

모바일이동통신 (Mobile Communications)

① Propagation Mechanisms: reflection, diffraction, scattering

② Free space pathloss affected by distance, frequency

③ Basic concept of pathloss, slow fading, fast fading

④ Coherence Bandwidth

⑤ Relation between coherence bandwidth and delay spread

⑥ Frequency-selective fading vs. frequency-nonselective fading

⑦ Basic concept of channel coding

⑧ code rate

⑨ Basic operation of linear block codes

⑩ Encoding of convolutional codes, state diagram, trellis diagram

⑪ Concept and basic objective of interleaver

⑫ Multiple Access Schemes: FDMA, TDMA, CDMA, OFDMA