

# ECE 456: Computer Networks

IN

## Digital Frequency representation

## Frequency Spectrum

## Probability

- Understands concepts in probability, distributions such as uniform and exponential distributions
- Can compute moment generating functions
- Can calculate probability of events

## Computer Programming

- Able to write programs in a computer language such as C, C++, Java, Perl or Python
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## Pre-requisites:

- ECE 251; ECE 303/STAT 303; CS 160 or (CS 155; CS 156; CS 157).

## Concepts:

- Circuit switching and packet switching
  - Sonet/SDH
- Layered Architecture – ISO-OSI, TCP/IP
- Physical layer – Link Technologies, Encoding
- Data link layer
  - Logical link control
  - Framing
  - Error detection and correction
  - Cyclic Redundancy Codes
- Medium Access Control (MAC)
  - Local-Area Networks, IEEE 802.X Standards
- Internet Protocol (IP)
  - Addressing, Service Model
  - Routing
- Transport Protocols
  - TCP and UDP
  - Flow control, Congestion Control
- Network Programming
  - Socket system calls
- Sensor Networking – A brief introduction
- Future trends in networking and computing

## Applications:

- Remote command execution
- Ethernet, WiFi

OUT

## Distributed Systems

- Knows network programming techniques to implement distributed systems

## Internet Protocols

- Understand fundamentals of Internet and basic Internet protocols (TCP/IP stack)

## Network Technologies

- Knows examples of different networking technologies, and how they integrate to provide end-to-end connectivity and services

## Link Techniques

- Understands the different link technologies, encoding techniques, and error correction and recovery techniques
- Understand the techniques for sharing channel(s) by distributed network nodes

As of 03/11/12