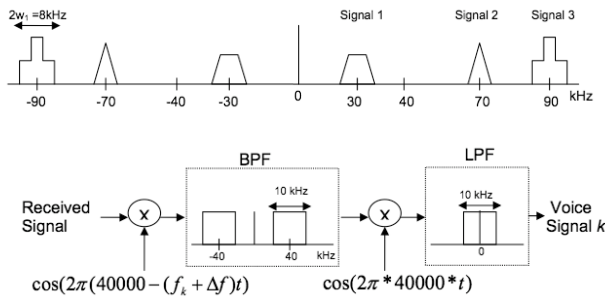


# 6.02: Intro to EECS II

12 units (2-3-7)

Prereqs: Intro to EECS I (6.01), Physics II (8.02),  
Differential Equations (18.03) or Linear Algebra (18.06)

An integrated, hands-on introduction to electrical engineering and computer science. Lectures and laboratory experiments explore modeling transmission systems in the time and frequency domains, analog and digital signaling, detecting and correcting errors, digital logic, hardware/software tradeoffs, and the engineering of packet-switched networks. These explorations are used to illustrate some common EECS themes: the role of abstraction and modularity in engineering design, building reliable systems using imperfect components, selecting appropriate design metrics, understanding the limits imposed by energy and noise, choosing effective representations for information, analyzing the performance and correctness of algorithms, and engineering tradeoffs in complex systems.

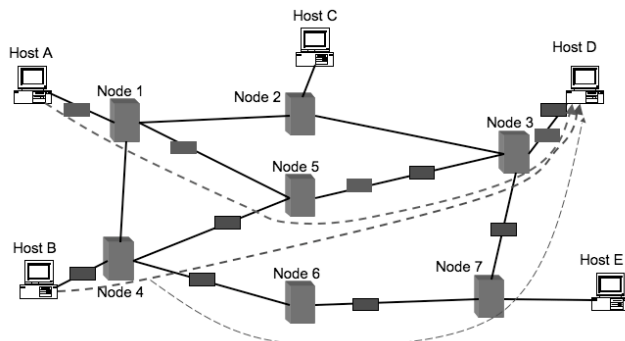
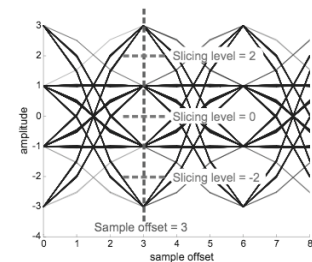
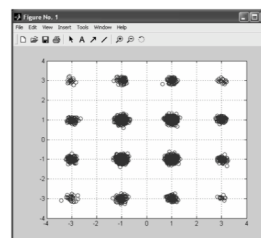


## Part 1: Volt-by-Volt

- Analog waveforms in the time and frequency domains, Fourier Series and Transform
- Modulation and Filtering
- I/Q transmission
- Energy and noise

## Part 2: Bit-by-bit

- Digital modulation, quantized amplitudes
- Channel coding: error detection and correction
- The digital abstraction, building logic devices
- Combinational logic, clocked circuits
- Information entropy, source coding



## Part 3: Packet-by-packet

- Sharing a communication channel, switching principles, multi-hop networks
- Best-effort packet networks: addressing, forwarding, shortest-path routing
- Reliable packet transport
- End-to-end arguments in systems engineering