

Lecture 1  
May 18, 2016

Office hours: M W after class

RTN 410 W 10am-12pm

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What this course is about

Physical Layer: modulation, coding, radio propagation,

multipath fading, Delay/Doppler spread, MIMO, OFDM, CDMA, etc.

Link Layer - Medium Access: randomized access - Aloha, CSMA

scheduled access - TDMA/FDMA

Graph Theory - graph coloring algorithms

Examples of current standards & protocols.

Application layer: mobile browser, public-subscribe middleware

Utility based Network Optimization with Backpressure Scheduling.

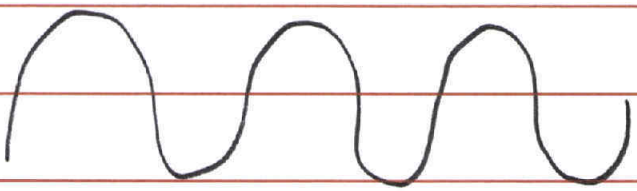
Transport layer: congestion control

Network layer: Routing in multi-hop wireless networks such as wireless sensor networks / low power IoT networks or mesh networks  
routing metric  
mobile ad hoc networks  
intermittently connected mobile networks

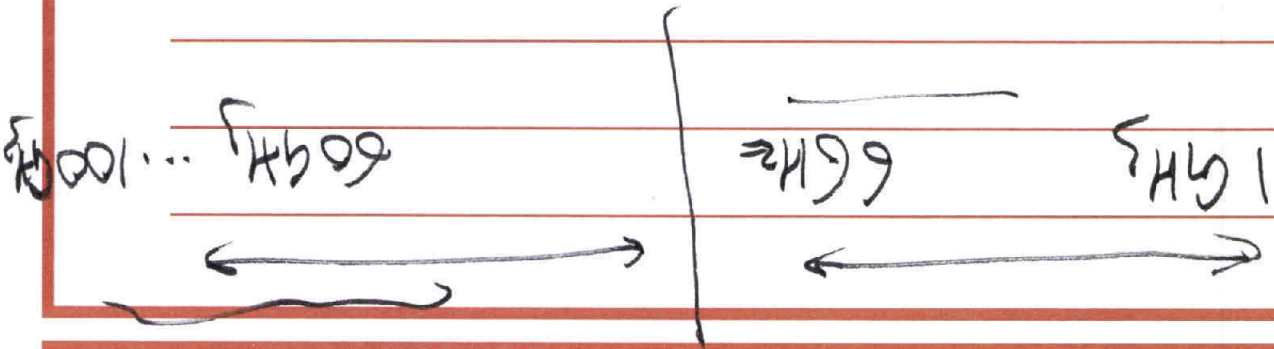
amplitude  $\rightarrow$   
freq  $\rightarrow$   
phase  $\rightarrow$

$$A \sin(2\pi ft + \theta)$$

Carrier Wave.



Sinusoidal signal.



mm Wave

Radio waves  
RF  
Electromagnetic waves

Physical layer.