[Michael Chillemi](mailto:chillemm@go.stockton.edu)

Hw 2

Chapter 5:

* 5.3 (What are the conceptual pieces of a data communications system?)
  + A data communications system is transmitting multiple sources of information on a shared physical medium. Some of the pieces are encoding information, encrypting information,error detection and correction,multiplexing/demultiplexing.
* 5.4 (Which piece of a data communications system handles analog input?)
  + The piece of the system that handles analog input is “Modulator and Demodulator”.
* 5.5 (Which piece of a data communications system prevents transmission errors from corrupting data?)
  + The “Channel Encoder and Decoder” is the piece of the communication system that prevents transmission errors from corrupted data.

Chapter 6:

* 6.3 (Why are sine waves fundamental to data communications?)
  + Sine waves are fundamental to data communications because natural phenomena produce sine waves.
* 6.4 (State and describe the four fundamental characteristics of a sine wave.)
  + The four fundamental characteristics of a sine wave are frequency, amplitude, phase, and wavelength. Frequency is the number of oscillations per unit time. Amplitude is the difference between the max and min of the signal's height. Phase is the distance of the start of the sine wave from a reference time. Wavelength is the length of a cycle as a signal moves across the medium.
* 6.7 (What does Fourier analysis of a composite wave produce?)
  + Using Fourier analysis it can be determined that is it possible to decompose a composite signal into its constituent components. A set of sine functions with each has its own frequency, amplitude, and phase.
* 6.14 (What is the bandwidth of a digital signal? Explain.)
  + The bandwidth of a digital signal is infinite bandwidth. Using the Fourier analysis on a digital signal it produces an infinite amount of sine waves with frequencies that reach to infinity.

Chapter 7:

* 7.1(What is the difference between guided and unguided transmission?)
  + The main difference between guided and unguided transmission is guided transmission signal travels through a physical medium as opposed to unguided transmission is a signal traveling through the air.
* 7.4(What three types of wiring are used to reduce interference from noise?)
  + The three types of wiring that are used to reduce interference from noise are unshielded twisted pair(UTP), coaxial cable, and shielded twisted pair(STP).
* 7.22(If two signal levels are used, what is the data rate that can be sent over a coaxial cable that has an analog bandwidth of 6.2 MHz?)
  + The data rate 12.4 Mbps
  + D = 2 B log2k
  + D = 2 \* 6.2 \* log22
  + = 2 \* 6.2 \* 1
  + = 12.4 Mbps