Week 1 – Thursday

* Link between data rate and the bandwidth of a trans system
* Want to conserve signal so it comes out far side of trans system in tact
* On normal sin wave which carries only a 1 and 0
* Can pass 15 mhz through box
* Can carry two bits per cycle
* So we can pass 30 mbps
* Networks put artificial restrictor on your phone (limits frequency to about 4k)

- human voice usually transmits at 7k

- restricting the frequency allows more ppl on the network at once

* Square wave used to encode data(a digital waveform has an infinite absolute bandwidth)

**Analogue vs Digital**

* Are the only 2 types of data
* Can’t carry digital signal on analogue waveform

-so must use a Modulator to convert digital to analogue before carry

- must use a Demodulator to convert analogue back to digital after carry

- A modem is just made up of a Modulator and Demodulator

* Can’t carry analogue signal on digital waveform
* -so must use a Coder to convert analogue to digital before carry

-- must use a Decoder to convert digital back to analogue after carry

Transmission Impairments

* When a trans signal becomes distorted

-attenuation means a decrease

-quality of an signals becomes degraded

- for dig signals ,bit errors are introduced

- we use amplifiers so analogue signal don’t become degraded(lots of interference)

-digital signal uses a repeater to collect 1’s and 0’s and organise them (less interference)

Noise

* Thermal Noise
* Caused by thermal agitation of electron within conductor
* When electron heat up they release a signal (ie increased thermal noise)
* Thermal noise will be present on entire frequency system (why its know as white noise ..cant get rid of it )
* If I allow attenuation amplitude will decrease