Notes recording connection: Audio engineering.

 Week one pages 3-10 coil book

Sound requires a medium. Sound is cause by a vibrating medium. Sound moves air partlices which would have not of move unless a medium was struck. The air particles move and enter the ear stiulate tiny hair which changes to an electrical signal. The sound then moves to the brain for interpidation.

Think of a rock hitting water. Rock contuies to bottom waves move along surface of water losing energy as further from the source they get.

Law inverse square law……energy lost per unit distance doubling distance quarters the sound energy

Sinusoidal curve.

Sine waves are periodic, sound waves in gernal are like this. Period is expressed as T or frequency.

Frequency equals total amount of complete waves cycles in a given period of time, usually in sec

Wavelength is the measurement from the peak of one wave to the peak of another wave

Wave length is symbolzed as lammda or L

Wavelength is lamda equals velocity divide frequency hertz

Wave form is the graphical representation of its amplitude versus time at a given instant

Sound waves are periodical or cyclical.

Phase involes talk about two waves out of phase

 two waves of same charactices cancel eac h other out

at zero sound travels @ 331m per sec

temp affects sound at .60m per sec for every degree Celsius

pitch think violin sound compared to bass drum

the audible range is 20hz to about 20,000 hz

the fundamental hz is the strongest pitch we hear

sounds are the fundamental pitch and a muilitude of overtones or harmonices

an instrument playing at 200 hz will have overtones at 400 600 800 hz and so

octave an octave is 12 semitones play C Csharp D D sharp and so on

octave symbolizes the differenace between any 2 hz where the ratio between them is 2 ta 1

the octave seperates the fundamental from the harmonic

a @ 440 hz is an octave below a @880hz

frequency response and curve

response think microphone and how much hz it will hold and reproduce accordingly.

Curve picture in Mind

The internsity of a wave is determined by the amplitude. And measured in decibals.

I=W divide meters squared

10 neg 12 W meters square to 1 W meters squaed is the human range.

SOUND PRESSURE LEVEL!

0-140 130 BEING THE THRESHOLD FOR PAIN

The human ear is a non linear device. Input and output amplitues don’t have to have the same ratio at all singals levels, this introduces harmonic distoration.

The distortion is an extra bit that is not produced by the original source.

If the sounce of sound is lound enuff the ear will produce addinoal harmonics thus perceiving a change in the timbre of the instrument

Beats tw o tones separated only slightly and having approx. same amp produe beats

Beats are the result of the ear inability to separate closely pitched notes

Combo tones

Two loud tone separated y more than 50 hz will be interpreted by the ear as a comples set of tones and an additional set of tones that are equal to the sum and the differanc eof the 2 original.

Masking

3.5 khz is masked by 4khz but is no big deal to 1khz

Binaural localization is the ears ability to figure out where the sound is coming from left from right or lateral

Pinnae of the ears uses the ridges of the ears to reflect sound in at difference angles

Notes from modern recording techniques

Chapter 1

Music is a business

Music is creative

Integrated curcit mass production and mass marketing

Music is easy to record now than ever before with the project studio

Studios are designed from a personal space and have a professial staff equipment

Studios today usually have one large room and 1 or more iso rooms for recording voice

The control room is isolated from everything else and hopefully there is no sound leakage. It is the best place to observe the waves.

Console is the palette allowing engineer to change the following

Mixing

Spatial postioning

Routing

Switching

DAWS digital audio work station or tape

Project studio should pay for it self and can be portable as well .

1 the artist

2 studio musicians and arrangers

3 producer

4 the enigineer

5 ass engine

6maintenance engineer

7 mastering engineer

8 dj

Women are more accepted now in music than before

There are many laws for music copyright etc

There are many different facets of the music bussniess from band management to acouctics to marketing and web design.

THE RECORDING PROCESS

Preparation

Recording

Overdubbing

Mixdown

Mastering

Song sequence editing

Product manufacturing

Marketing and sales

A transducer os any device that changesone form of energy to another corresponding form.