

# RECORDING ENGINEERING THEORY

## 1. SOUND SOURCES:

### SOUND PATHS

- a. Frequency / Period
- b. Amplitude / Magnitude
- c. Vectors - summation, subtraction
- d. Phase (Polarity)
- e. Speed of Sound
- f. Wave Length
- g. Elastic Media
- h. Wave Interference / Standing Waves

## 2. SOUND PICKUPS:

### MAGNETIC, VIBRATION and AIR-BORNE

- a. Magnetic Pickups & Steel Strings
- b. Piezoelectric and Strain-Gauges
- c. Electroacoustical
- d. Microphones
- e. Microphone Hybrids and Combination Pickups
- f. Pickup Electronics / Mixers / Processors
- g. Pickup Output Signals, Levels, Content

## 3. MIXERS:

### INTERNAL SIGNAL PATH

- a. Trimmer (First stage gain)
- b. Pad
- c. High Pass Filter (Rumble filter)
- d. Phase (Polarity)
- e. Equalizers (Types, Extents)
- f. Buffers and Summing Junctions & Amps
- g. Switching / Routing
- h. Busses

## 4. OUTBOARD GEAR:

- a. Crossovers
- b. Active vs. Passive
- c. Bi-Tri-Quad Amps
- d. Digital Processors
- e. Limiters
- f. Compressors
- g. Equalizers
- h. Gates
- i. Reverbs
- j. Filters

## **5. RECORDING SESSIONS:**

- a. **Individuals**
- b. **Groups**
- c. **Hired-In**
- d. **Film / TV**
- e. **Corporate / Product**
- f. **Rooms**
- g. **Furnishing**
- h. **Supplies**

## **6. SIGNAL MANIPULATION:**

- a. **Signal & Sound Shortfall**
- b. **Normalizing**
- c. **Timing Adjustments**
- d. **Frequency / Pitch Adjustment**
- e. **Amplitude Adjustment**
- f. **Attitude Adjustment**
- g. **Rough Mixes**
- h. **Client Reference Dubs**

## **7. MIXING:**

- a. **Balancing and Frequency Band Considerations**
- b. **Panning / Spatial Sound**
- c. **Track Audibility**
- d. **Band In The Control Room**
- e. **Pushing Everything Up**
- f. **Consensus Mixing**

## **8. MASTERING:**

- a. **Balancing and Frequency Band Considerations**
- b. **Panning / Spatial Sound**
- c. **Mix Content Uniformity**
- d. **Band In The Control Room**
- e. **Processing Because We Can**
- f. **Loudness Wars / Broadcast Practices**