MARICOPA COMMUNITY COLLEGES

Communication Systems

Course: **ELE261**	Lec + Lab **4** Credit(s) **6** Period(s) **5.4** Load
	Course Type: **Occupational**
First Term: **2004 Fall**	Load Formula: **S**
Final Term: **Current**	

Description: Communication systems. Amplitude modulation (AM), frequency modulation (FM), single-sideband (SSB), radio receivers, pulse systems, radiation, antennas and wave propagation

Requisites: Prerequisites: A grade of C or better in ELE121 and ELE131. Corequisites: ELE222.

MCCCD Official Course Competencies

1. Calculate thermal noise levels for various receiver bandwidths. (I)
2. Develop bandwidth and sideband characteristics of an AM signal. (II)
3. Draw the block diagram of an AM superheterodyne receiver that employs automatic gain control and describe the function or purpose of each block. (III)
4. Analyze a given balanced modulator and state its functional characteristics. (IV)
5. Develop bandwidth and sideband characteristics of an FM signal. (IV)
6. Draw block diagrams for AM, FM and PM transmitters. (II, IV)
7. Analyze an FM discriminator and describe its functional characteristics. (V)
8. Draw a block diagram of a phase-locked loop receiver. (V)
9. Discuss digital transmission techniques. (VI)
10. Describe antennas and transmission line characteristics. (VII)

MCCCD Official Course Outline

I. Introductory Topics
  A. Noise
  B. Noise designation and measurement
  C. Information and bandwidth
II. Amplitude Modulation-Transmission
  A. Amplitude modulation fundamentals
  B. AM analysis
  C. Circuits for AM generation
  D. AM transmitter systems
III. Amplitude Modulation-Reception
  A. Receiver characteristics

B. AM detection
C. Superheterodyne receivers
D. Automatic gain control
E. AM receiver systems

IV. Frequency Modulation-Transmission
A. Angle modulation
B. FM Analysis
C. Noise suppression
D. Direct and indirect FM
E. Phase-locked-loop FM transmitter
F. Stereo FM
G. FM transmissions

V. Frequency Modulation-Reception
A. Block diagram
B. RF amplifiers
C. Limiters
D. Discriminators
E. Phase-locked loop receivers
F. Stereo demodulation
G. FM receivers

VI. Digital Communications
A. Coding
B. Pulse modulation
C. Pulse-code modulation
D. Radio telemetry

VII. Transmission Lines
A. Types of transmission lines
B. Propagation of voltage down a line
C. Non-resonant and resonant lines
D. Standing wave ratio
E. Applications

Last MCCCD Governing Board Approval Date: **4/27/2004**