Miami Dade College

Course Description

EET2323C | Analog Communications | 4.00 credits

This course is designed for students majoring in Electronics Engineering Technology, Telecommunications Engineering Technology, and related disciplines. Students will learn the principles of radio wave transmission and reception, including AM and FM transmitters, receivers, single sideband, television and digital data transmission lines, wave propagation antennas and microwaves. Prerequisite: EET 1141C.

Course Competencies

Competency 1: The student will demonstrate an understanding of the concepts of a communication System by:

1. Describing the basic building blocks of a communication system and their functions
2. Explaining the need for modulation/demodulation in a communication system
3. Defining communication terminologies, such as decibel (dB), noise, signal-to-noise ratio (S/N), information, bandwidth, etc.
4. Analyzing the frequency spectra using Fourier analysis

Competency 2: The student will demonstrate an understanding of amplitude modulation (AM) transmission by:

1. Describing how baseband signals operate, including pulse characteristics (measurement of rise and fall times, tilt, pulse width, overshoot, root mean square, power in pulse train, offset)
2. Explaining DC transmission line effects
3. Explaining the basic concepts of carrier modulation of baseband signals
4. Defining common AC terminology such as spectrum, power and bandwidth and their applications.
5. Explaining AC transmission line effects
6. Generating and measuring baseband signals in laboratory environments

Competency 3: The student will demonstrate an understanding of AM reception by:

1. Defining fundamental concepts of a radio receiver, such as sensitivity and selectivity
2. Describing the operation of a diode detector in an AM receiver
3. Sketching block diagrams for tuned radio frequency (TRF) and super heterodyne receivers
4. Analyzing the image frequency, radio frequency (RF) and intermediate frequency (IF) amplifiers in super heterodyne analysis
5. Explaining the need for automatic gain control (AGC)

Competency 4: The student will demonstrate an understanding of single sideband (SSB) communication by:

1. Discussing SSB characteristics and its advantages compared to AM
2. Explaining the SSB generator circuits
3. Describing SSB demodulation techniques
4. Sketching a complete block diagram of an SSB transmitter and receiver

Competency 5: The student will demonstrate an understanding of frequency modulation (FM) Transmission by:

1. Defining angle, frequency, and angle modulation
2. Describing various direct and indirect FM generator circuits
3. Describing the phase-locked-loop (PLL) FM transmitter
4. Analyzing an FM signal with respect to modulation index, sidebands, and power
5. Using phasor and S/N to describe the noise suppression of capability of FM
6. Comparing FM to SSB and/or AM
7. Explaining the multiplexing technique that enables stereo on a standard FM system

Competency 6: The student will demonstrate an understanding of FM reception by:

1. Describing the operation of an FM receiver and comparing it to AM
2. Describing how the PLL FM demodulator functions
3. Discussing and comparing various FM discriminators
4. Sketching the block diagram of a stereo FM receiver

Learning Outcomes:

- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Use computer and emerging technologies effectively