Course Title: Analog Communications
Course Code: ETEG 302
Credit Hours: 3

Course Description:
This course provides an understanding of the essentials modern analog communications systems. This course builds on the theory introduced in signal and systems and complements the course Digital Communication.

Course Contents:

Unit 1: Review of Signal Properties, Fourier Transforms and Linear Systems

Unit 2: Communication Channels Overview
Free space, Wire, Cable waveguide and fiber, Telephone and data channels

Unit 3: Linear Modulation
Modulation properties, AM and DSBSC modulation, Demodulators and detectors-square law, Synchronous demodulation, Carrier recovery techniques, SSBSC modulation and demodulation, VSB modulation and applications, Noise in AM broadcast techniques, AM stereo transmitter and receiver topologies

Unit 4: Angle Modulation
Instantaneous frequency and Bessel functions, Frequency modulation and narrowband FM, Modulator configurations, Demodulators, Discriminators, PLL discrete and IC, Pre-emphasis, De-emphasis, Threshold effect, Noise and SNR in FM systems, FM receivers and FM stereo

Unit 5: Noise in Communication Systems
Mathematical representation in the time and frequency domain, I and Q components of noise, Noise in linear and angle modulation systems

Unit 6: Television Systems
TV transmitters and receivers-principles of operation, Television signals and bandwidth requirements, TV cameras, Positive and negative modulation, Essentials of the PAL colour system, Introduction to HDTV

References:
1. H. Taub and D.L. Schilling, *Principles of Communications Systems*, McGraw Hill 1986
2. B.P. Lathi, *Modern Analog and Digital Communication Systems*, 2nd Ed
3. George Kennedy and Bernard Devis, *Electronic Communications System* 3rd Ed., Tata Mc Graw Hill
4. D. Roddy and J. Coolen, *Electronic Communications*, PHI