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# MIDDLESEX COUNTY COLLEGE

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## COURSE SYLLABUS

<b>Department:</b>	Engineering Technology
<b>Program:</b>	Electrical Engineering Technology
<b>Course Number:</b>	ELT 224
<b>Title of Course:</b>	Communication Electronics
<b>Curriculum Coordinator:</b>	James Finne
<b>Designation:</b>	Required Course

### **Course Description:**

A study of Electronic Communication Systems. An introduction to signal processing methods, analog and digital modulation techniques, radio receivers, transmitters and microwave principles and antennas.

### **Prerequisite:**

ELT 210 Electronic Circuits and Systems

### **Co-requisite:**

None

### **Textbooks and /or other required material:**

Principles of Electronic Communication Systems by Frenzel, McGraw Hill, 4<sup>th</sup> Ed

### **Course Learning Outcomes and their relationships to Student Outcomes:**

1. Draw block diagrams of various communications receivers and explain the function of each block therein. **(SO j)**
2. Perform S/N and related calculations in dB.
3. Describe the properties, advantages and disadvantages of various modulation techniques. **(SO a)**
4. Explain the nature of wave properties on signals in various kinds of communication channels. **(SO k)**
5. Calculate the bit rates of various digital multiplexing methods.
6. Analyze the capacity of a communications channel using the theorems of Hartley and Shannon. **(SO e)**
7. Participate on a Lab team and employ relevant Lab equipment to make pertinent measurements and prepare coherent technical reports.
8. Employ simulation software to study communications circuits.

**Topics Covered:**

- Introduction to Communications
- Noise Analysis
- Amplitude Modulation
- Frequency Modulation
- Single-Sideband Techniques
- Digital Communication Techniques
- Radiation and Propagation Waves
- Transmission Lines
- Antennas
- Communication Satellite Systems
- Fiber Optics

**Lab Topics Covered:**

- The Spectrum Analyzer
- Rise-time and Tilt
- Fourier Synthesis
- High-Q Filter
- AM Modulation
- AM Demodulation
- FM Bandwidth
- FM Discriminator
- Transmission Line Simulation

**Class/laboratory schedule, i.e., number of sessions each week and duration of each session:**

2 lecture hours per week for 14 weeks

3 laboratory hours per week for 14 weeks

**Criterion 5 Contribution:**

Technical Content

<b>Prepared By:</b>	Steve Foster	<b>Date:</b>	3-26-08
<b>Rev 1:</b>	T. Sabol	<b>Date:</b>	4-12-2010
<b>Rev 2:</b>	T. Sabol Update mapping of course outcomes to ABET 2014-2015 student outcomes	<b>Date:</b>	3-25-14
<b>Rev 3:</b>	General Update	<b>Date:</b>	3/15/21