

# ETec405 Course Specifications

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## Catalog Information

**Course Number and Title:** ETec405 – Communications Circuits

**Credit Hours:** 4

**Course Description:** A study of communications concepts including analog and frequency modulation and detection methods, r.f. amplifier and oscillator circuits and transmitter and receiver principles. Structured laboratory with emphasis on experimental verification of principles, use of specialized equipment, data analysis and formal report preparation.

**Prerequisites:** ETEC 375; pre- or co-req: Math 321, EET major or written permission.

**Prerequisite Outcomes:**

## Schedule Information

**Quarter:** Fall 2006

**Meeting Times and Rooms**

Days	Times	Instructor	Room(s)
MWF	9:00-9:50	F.D. Harris	ET333
R	9:00-10:50	F.D. Harris	ET331

**Lab Fee:** \$10.00

**Enrollment Limit:** 18

## Student Resources

**Student Syllabus:** <http://eet.etec.wvu.edu/etec405/405f06syl.pdf>

**Course Website:** <http://eet.etec.wvu.edu/etec405/index.html>

## Facilities and Materials

**Required Text:** "Modern Electronic Communication", 8th Edition, Gary M. Miller, Jeffrey S. Beasley

**Lab Equipment:** Prototype Board, DMM, VOM, DC Power Supply, Oscilloscope, Function Generator, Spectrum Analyzer(RF), Q-Meter, Impedance bridge.

**Software:** pSpice

## Course Outcomes

1. Have basic technical knowledge of how noise affects communications systems.
2. Have basic technical knowledge of generation and detection of Amplitude Modulation including Double Sideband Full Carrier (DSBFC) systems, Double Sideband Suppressed Carrier (DSBSC) systems, Single Sideband Systems (SSB), and the use of pilots.
3. Have basic technical knowledge of generation and detection of Angle Modulation including Frequency Modulation (FM) and Phase Modulation (PM).
4. Have basic understanding of how channels are allocated in the AM, FM, and Television Broadcast Bands.
5. Gain experience in the use of specialized laboratory instruments such as spectrum analyzers, Q-Meters, Impedance bridges, etc.
6. Be familiar with applicable trade journals and have an appreciation for learning more about the RF field.

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### Courses Contribution to the Program Outcomes

P – Primary to the purpose of the course. Course contains significant instruction and opportunities for practice.

S – Secondary to the purpose of the course. Course contains limited instruction and opportunities for practice.

N – Not a significant part of this course.

Program Outcome	Course Contrib	Applicable Course Outcome(s)
a An appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines.	P	1, 2, 3, 4, 5
b An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology	P	1, 2, 3, 4, 5
c An ability to conduct, analyze and interpret experiments and apply experimental results to improve processes	P	5
d An ability to apply creativity in the design of systems, components or processes appropriate to program objectives	N	
e An ability to function effectively on teams,	N	
f An ability to identify, analyze and solve technical problems	P	1, 2, 3, 4
g An ability to communicate effectively,	N	
h A recognition of the need for, and an ability to engage in lifelong learning	S	6
i An ability to understand professional, ethical and social responsibilities	N	
j A respect for diversity and a knowledge of contemporary professional, societal and global issues,	N	
k A commitment to quality, timeliness, and continuous improvement	N	
A The application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers to the building, testing, operation, and maintenance of electrical/electronic(s) systems	P	1, 2, 3, 4, 5
B The applications of physics or chemistry to electrical/electronic(s) circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry	S	1
C The ability to analyze, design, and implement control systems, instrumentation systems, communications systems, computer systems, or power systems	P	1, 2, 3, 4
D The ability to apply project management techniques to electrical/electronic(s) systems	N	
E The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical/electronic(s) systems	S	1, 2, 3, 4

### Outcome Assessment Tools

1. Laboratories, Tests, and Homework
2. Communications Module Senior Survey