

ETec455 Course Specifications

Catalog Information

Course Number and Title: ETec455 – Communications Systems

Credit Hours: 4

Course Description: Upper-division study of modern communications concepts from a systems point of view. Fourier transforms, spectral analysis, analog modulation and detection methods, transmission line theory, radiation and propagation, antennas, and microwave concepts. Structured laboratory with emphasis on measurement theory and applications, test equipment, data analysis and formal report preparation.

Prerequisites: ETEC 405; pre- or co-req: ETEC 378, EET major or written permission.

Prerequisite Outcomes:

Schedule Information

Quarter: Winter 2007

Meeting Times and Rooms

Days	Times	Instructor	Room(s)
MWF	11:00-11:50	F.D. Harris	ET333
T	11:00-12:50	F.D. Harris	ET338

Lab Fee: \$10.00

Enrollment Limit: 18

Student Resources

Student Syllabus: <http://eet.etec.wvu.edu/etec455/455w07syl.pdf>

Course Website: <http://eet.etec.wvu.edu/etec455/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, TDR, FIM.

Software: pSpice

Course Outcomes

1. Have basic technical knowledge of radio wave propagation, transmission line theory, and antenna theory.
2. Gain experience in the use of specialized equipment such as TDR, FIM, etc.
3. Have basic technical knowledge of information theory including Shannon's Sampling Theorem.
4. Have basic technical knowledge of analog pulse modulation schemes such as PWM, PPM, PAM, etc.
5. Have elementary technical knowledge of psycho-acoustic research and developments in the context of bit reduction schemes.
6. Have elementary technical knowledge of pulse code modulation (PCM).

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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, 6
b	An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology	P	1, 3, 4, 5, 6
c	An ability to conduct, analyze and interpret experiments and apply experimental results to improve processes	S	2
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, 3, 4, 5, 6
g	An ability to communicate effectively,	N	
h	A recognition of the need for, and an ability to engage in lifelong learning	N	
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, 6
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	P	1, 3, 4, 5, 6
C	The ability to analyze, design, and implement control systems, instrumentation systems, communications systems, computer systems, or power systems	P	1, 2, 3, 4, 5, 6
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, 3

Outcome Assessment Tools

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