



THE CITADEL

ELECTRICAL & COMPUTER ENGINEERING

ELEC 416-01, Communications Engineering

Course Syllabus for Spring 2017

MWF 10:00am – 10:50am, Room: Grimsley 322

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- Instructor:** Jason S. Skinner, Ph.D., P.E.
Office: Grimsley 310
Phone: 843-953-3352
Email: jason.skinner@citadel.edu
Schedule: <http://ece.citadel.edu/skinner/spring-2017-schedule>
- Office Hours:** MW 3pm–4pm, TR 1pm–4pm, and by appointment
- Textbook:** *Modern Digital and Analog Communication Systems*, 4th Edition, B. P. Lathi, Zhi Ding
- Websites:** Professor - <http://ece.citadel.edu/skinner>
Course - <http://citlearn.blackboard.com>
The CitLearn course website will be used to post course information (such as this syllabus), lecture slides and notes, homework/project assignments, corrections and answers to questions about assignments, and individual grades.
- Prerequisites:** ELEC 309 - Signals and Systems
ELEC 311 - Digital Logic and Circuits
ELEC 318 - Electromagnetic Fields
- Corequisite:** ELEC 306 - Electronics I
- Objective:** To apply the principles of signal and system representation to the engineering problems associated with the design of communication systems. Emphasis is also placed upon the student gaining an appreciation and understanding of the role of optimization and trade-offs in the solution of engineering problems. This is accomplished through the detailed consideration of bandwidth requirements, signal-to-noise ratio limitations, complexity, and costs of analog and digital communication systems.
- Description:** Principles of amplitude, frequency, and pulse modulation; processing in communication systems; and analog and digital communication systems.

Important Dates:

Monday, January 16 MLK Day (No Classes)
Tuesday, January 17 SCCC Drop/Add ends
Monday, February 27 (tentative) Test 1
Wednesday, March 15 Last Day to Withdraw with grade of “W” for SCCC
Friday, March 24 Spring Break begins
Sunday, April 2 Spring Break ends
Monday, April 10 (tentative) Test 2
Tuesday, April 25 SCCC Classes end
Friday, April 28 @ 1300 Final Exam

Course Outline:

Reading	Topics	Time Frame (approx)
Chapter 1	Course Overview, Introduction	75 minutes
Chapters 2,3	Fourier Analysis Applied to Communications Signal concepts, Fourier transforms, energy and power, periodic signals, correlation, and spectral densities	225 minutes
Chapters 4	Amplitude Modulation Amplitude modulation with/without carriers	300 minutes
Test 1	Chapters 1 – 4	February 27
Chapters 5,6	Angle, and Pulse Modulation FM, PM, PAM, PWM, PPM	300 minutes
Chapters 6,7	Baseband Data and Digital Bandpass Modulation Sampling and quantization, pulse code modulation, delta modulation, differential PCM, line codes, ISI, Nyquist channel, pulse shaping, eye patterns, equalization, signal space concepts, ASK, PSK, QPSK, M-ary signaling.	300 minutes
Test 2	Chapters 5 – 7	April 10
Chapter 8	Random Signals and Noise Probability and random variables, random processes, correlation, spectral densities	300 minutes
Chapters 9 – 11	Noise Analysis of Communication Systems Noise in AM and FM, FM pre-emphasis, coherent baseband detection, coherent bandpass detection, noise figure and temperature, link calculations.	300 minutes
Final Exam	Chapters 1 – 11	April 28

Homework:

Homework will be assigned on each Friday and will be collected at the **BEGINNING** of the class period on the following Friday. Exact due dates will be provided on the courses website, by email, and in class when the homework is assigned. **Late homework will be assessed a 20% penalty. Homework will not be accepted after solutions are handed out and will be given a zero grade.** If you will be absent on the day of an assignment, arrange to have a classmate turn in your work for you. Homework will be graded for effort, completeness, and neatness (legibility). You may obtain assistance when doing your homework. Copying of homework is not the same as assistance. Your homework is a graded assignment and must be your own work.

Tests:

There will be two in-class tests and one final exam. **Collaboration is not allowed on tests or final exams.** The final exam will be cumulative. Assigned tests are required. Unless authorized to the contrary by Dr. Skinner, such tests take precedence over all other duties or activities. If you know you will miss an exam, you must let Dr. Skinner know as soon as possible so a make-up exam time can be arranged. Make-up exams will only be given for those students that have made a reasonable attempt to contact Dr. Skinner.

Grading: Students will be graded on everything that is required to be turned in. All exams are scheduled well in advance. Due to the potential unfairness of make-up exams, they will only be given in extreme circumstances. Your final grade in the course will be determined as follows:

Homework	30%
2 In-Class Tests	each 20%
Final Exam	30%

The grading scale used in this course is:
A = 90 – 100, B = 80 – 89, C = 70 – 79, D = 60 – 69, F = 59 or below.

Attendance: Attendance is mandatory. Unless circumstances preclude it, it is your responsibility to notify Dr. Skinner of any schedule conflicts or excused absences that will result in your missing class. It is college policy that a grade of F may be awarded to a student if that student misses more than 20% of the course meetings (excused or unexcused). For this course, 9 classes constitute 20% of the class meetings.

Classroom Decorum: No food or drink is permitted in the classrooms of this building. Proper attire is encouraged, and ECE department policy prohibits hats, cutoffs, shorts, tank tops, and feet without socks in class.

Special Needs Students currently documented or anticipate being documented as Learning Disabled (LD), as having Attention Deficit Disorder (ADD), or with another condition for which you might need special accommodation during the semester must provide written documentation of the condition and of the accommodation needed to me within two weeks of the semester start. You may then choose, by notifying Dr. Skinner before the start of each exam or assignment, whether you will need any accommodation. Notification after the start of an exam or last minute notification on an assignment will not be accepted. Please Note: To request academic accommodations (for example, a note taker), students must also register with Academic Support/Special Services, 953-1820, located in Thompson Hall. It is the campus office responsible for reviewing documentation provided by students requesting academic accommodations, and for accommodations planning in cooperation with students and instructors, as needed and consistent with course requirements.

Cheating and Collaborative Work According to The Citadel’s policies for the preparation of work performed outside the classroom:

All papers, reports, senior essays, theses, or other written work performed outside the classroom for which a grade is received will be the individual’s work and is subject to the limitations imposed by the definition of plagiarism.

According to Webster’s New International Dictionary, 3rd Edition: to plagiarize is defined as ”to steal and pass off as one’s own the ideas or words of another” or to ”present as new and original an idea or product derived from an existing source.”

CHEATING IN ANY FORM WILL BE FULLY PROSECUTED.