EE 484: Communication System Design
Spring 2016

Lecture: Monday 6:30-9:20 p.m. in GFS 111

Instructor: Christopher Wayne Walker, Ph.D.
Jean-Marc Cramer, Ph.D.

Office: PHE 414
Office Hours: Monday 5:10-6:20 p.m. and after class.
Daytime phone: (213) 740-7654 – USC during office hours
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Course web page: http://www.cwwphd.com and/or Blackboard web site

Text: Required: None.

First Lecture: Monday, January 11
Last Lecture: Monday, April 25
No class: Monday, Jan. 18 (Martin Luther King Day), Feb. 15 (President's Day)
Spring recess: March 14-20

Course Grading Policy:

Method	**Date**	**Weight**
Homework	As assigned in class	25%
Midterm (take home)	TBD	25%
Project	Semester end	50%

Contact Information: You are welcome to consult with us during office hours. If our office hours are not convenient for you or else you have a question that needs addressing before you can see us then you are welcome to call or email us. Email is the preferred method of contact if we can answer your question with a text email response, but if we need to have more interaction then you are welcome to call us. If you call and we cannot speak with you immediately then we will set up a time to call you back to discuss any issues or concerns you may have. We want this course to be a positive learning experience for you so please make sure you get all your questions answered.

Homework: Homework will be assigned regularly. You may work with others on the homework assignments but the work you hand in must be your own and not copied from another student.

Midterm: The midterm will be a take home exam given during the middle of the semester. This exam is an individual effort with no consultation with other students or anyone else.

Project: A major project will be assigned during the course. The class will be divided into small groups and each group will work on the project with the work load shared among its members. Each member will be responsible for submitting progress reports detailing the research completed thus far and all group members are expected to present the final project results near the end of the semester. The subject matter for the project and more detailed information regarding the project will be provided in class as the semester proceeds.

EE 484 Outline

Spring 2016

Inst: C.W. Walker and J.M. Cramer

Section	Title
1.0	Linear System Theory
2.0	Fourier Transforms
3.0	Probability Theory and Random Processes
4.0	Spectral Concepts
5.0	Signaling Techniques (Analog and Digital Waveforms)
6.0	Modulation and Demodulation Techniques
7.0	BER Performance
8.0	Channel Coding
9.0	Antenna Concepts
10.0	Communication Link Analysis
10.1	Received Signal Power
10.2	Noise Figure, Noise Temperature and System Temperature
10.3	Coding Gain and Channel Rate Calculations, Eb/N0 Margin
10.4	Atmospheric Models
10.5	Typical Sky and Earth Noise Temperatures
10.6	Link Availabilty
10.7	Interference Effects and Signal Quality Calculations
11.0	Communication Systems Special Topics
11.1	Spread Spectrum
11.2	Multiplexing and Multi-access Techniques and Protocols
11.2.1	TDMA
11.2.2	FDMA
11.2.3	CDMA
11.3	Traffic Modeling

The above outline is tentative and may change if circumstances warrant.