

EE548 ADVANCED TOPICS IN COMMUNICATIONS SYSTEMS

Spring, 2006 3 credit seminar
Instructor: Richard Wolff
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PREREQUISITE: EE 543 recommended

- Reading, discussion and projects using original source material on advanced communications systems topics including digital communications systems, packet networks, IP networking, wireless systems, optical systems and ad hoc networks. Particular topics will be selected based on student interest.

- Syllabus (sample topics)
 - Free Space optical communications
 - Ultra-wideband radio
 - WiMAX
 - Software-defined radio systems
 - Transparent, all-optical networks

Course reading: The course will use current articles from the technical literature. Library on-line e-publications will be the primary resource.

Course requirements

1. Each student will be expected to read journal articles and lead in class discussions of the articles, addressing the background for the work, assumptions, limitations, key results and implications.
2. Each student will be required to conduct a literature search in a topic to be selected in collaboration with the instructor and to provide a 5-10 page paper describing the state of the art in the field, the key research issues, identify the major researchers and institutions where the work is being conducted, and the likely progress in the field over the next few years. The student will make an in class presentation of the findings and lead a discussion.
3. Each student will be expected to engage in active discussion of topics presented by other students, including reading assigned journal articles.
4. Each student will examine a particular aspect of their selected research topic and using analysis, modeling and simulation explore a system-related aspect of the topic. Students will be encouraged to use computer-based tools including Matlab, Simulink, Opnet and Optsim.

Outcomes

1. Students will become familiar with current literature in emerging communications areas
2. Students will learn to read and analyze journal articles
3. Students will learn to summarize ideas and prepare oral and written presentations on research topics
4. Students will learn to frame a research problem and conduct a research

- project.
5. Students will learn to use computer-based research tools.

Grading:

Students will be graded on their written and oral work including analytic thinking, ability to synthesize ideas, and ability to communicate effectively.

Enrollment procedure: Register for EE548, after discussion with instructor.