EE 471: Wireless Communication Theory

Spring 2019
Room: KC136
Days: MWF
Time: 2:00-2:50 P.M.

Instructor: Dr. Tony Richardson
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Course Web Site: csserver.evansville.edu/~richardson

Description: EE 471 Wireless Communication Theory (3) This is a senior level course that provides a systems-level view of modern wireless communication systems. Special emphasis will be placed upon development and understanding of the cellular telephone network. Topics include: wireless propagation, antenna radiation, channel characteristics, interference, cellular concepts including clustering, cell sectoring and splitting, traffic engineering, pulse detection, the matched filter, correlation receivers, digital modulation, spread-spectrum signaling, channel access methods including frequency division (FDMA), time division (TDMA), and code division (CDMA) multiple access. Prerequisites: Electrical Engineering 470. Spring.


Software:
(1) MATLAB/Octave: Numerical Analysis Software Package
(2) LTspice IV: Analog Circuit Simulator

Grading: There will be three midterm exams. There will not be a comprehensive final. Homework assignments will be given on a weekly basis. Quizzes will be given at the beginning of the lecture period. Quizzes will be used as a means to encourage regular and on-time attendance.

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<tr>
<th>Item</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Midterm Exams</td>
<td>70%</td>
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<tr>
<td>Homework</td>
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<tr>
<td>Exercises</td>
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<tr>
<td>Quizzes</td>
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Class Policies: Students are expected to abide by the Academic Honor Code. No aid should be given or requested on any examination. Students may collaborate on homework (in fact, this is encouraged), but each student must submit their own work. Each student is expected to be able to recreate any homework solutions submitted.

Credit Hour Policy: This course meets the federal requirements of 15 in-class hours plus an expected 30 hours of out-of-class work per credit hour.

Disability Policy: It is the policy and practice of the University of Evansville to make reasonable accommodations for students with properly documented disabilities. Students should contact the Office of Counseling and Health Education at 488-2663 to seek services or accommodations for disabilities. Written notification to faculty from the Office of Counseling and Health Education is required for academic accommodations.

Class Communication: To receive notifications (class reminders, assignment hints and corrections, answers to exam questions, etc) from the instructor related to this course do one (or both) of the following: (1) text @ue-ee471 to 81010 (or 812-301-1469) to receive notifications by text, (2) send email (empty subject and body are ok) to ue-ee471@mail.remind.com to receive notifications by email. Alternatively, browse to remind.com/join/ue-ee471 to join OR install the Remind app or your smart phone/ pad (Apple, Android) to join and receive notifications. To receive more general notifications from Dr. Richardson (class cancellations, departmental event reminders, winning lottery numbers, etc) please also text @ue-rich to 81010 (or 812-301-1469) or send email to ue-rich@mail.remind.com. Note that I remove all participants from all of my Remind classes at the end of the every semester, so you will need to rejoin the ue-rich class even if you have previously been a member.

Topics:
1) Historical Overview
2) Propagation Models
3) Modulation Methods
4) Cellular Traffic
5) Fading Mitigation
6) Multiple Access Methods