

# ECE 621 Winter 2010

## Radio Frequency IC Design

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| <b>Instructor</b>        | Karti Mayaram  |
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| <b>Office Hours:</b>     | TBA  |
| <b>Course Objective:</b> | Radio frequency (RF) circuits. Principles, analysis, and design of bipolar and MOS RF ICs.   |
| <b>Web page:</b>         | <a href="http://www.eecs.oregonstate.edu/~karti/ece621.html">http://www.eecs.oregonstate.edu/~karti/ece621.html</a>  |
| <b>Grading:</b>          | Homework (5-6 assignments) 30%<br>Test 35% ( <b>March 3, 2010</b> )<br>Final Project 30%<br>Paper Review/Summary 5%  |
| <b>Cheating Policy:</b>  | You may work together on homeworks but not copy someone else's work. <b>Cheating is unacceptable.</b>  |
| <b>TextBook:</b>         | Lee, <i>The Design of CMOS Radio-Frequency Integrated Circuits</i> , Cambridge University Press, 2nd Edition, 2004.  |
| <b>References:</b>       | Razavi, <i>RF Microelectronics</i> , Prentice Hall, 1997.<br>Leung, <i>VLSI for Wireless Communication</i> , Prentice Hall, 2002.<br>Clarke and Hess, <i>Communication Circuits: Analysis and Design</i> , Addison-Wesley Publishing Company, 1971.<br>Gray and Meyer, <i>Analysis and Design of Analog Integrated Circuits</i> , John Wiley & Sons, 2001. |

### Course Outline

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| <b>(3 weeks)</b> | Transistor models, distortion, noise.                                |
| <b>(1 week)</b>  | Passive RLC networks, impedance matching, s-parameters, Smith chart. |
| <b>(2 weeks)</b> | LNAs, Mixers.  |
| <b>(2 weeks)</b> | Oscillators, phase noise, injection locking.                         |
| <b>(1 week)</b>  | Frequency synthesis, phase detectors, phase-locked loops.            |

## 9. COURSE ETHICS

Students are expected to uphold high ethical standards including adherence to Oregon State University [Academic Regulations](#) and [Student Regulations](#). Also see <http://eecs.oregonstate.edu/graduate/cs/dishonesty.html>

You are permitted and to a great extent encouraged to seek the advice of others. However, any help/advice you receive must be fully documented so that you do not falsely represent yourself and your work. This course requires that ALL material submitted for grade contain complete documentation including a "References" section appended to the end of each submission. The following table lists some examples of how to properly document your work.

|  |  |
|--|--|
| Using only the course text book, you complete a homework set.  | References: None   |
| You work with a group to complete a homework set.  | References: I worked concurrently with Joe Smith, Karen Peavy, and John Shu on this homework set as part of a study group. |
| You are stuck on how to draw the free body diagram for one of the problems in a homework set and ask John Smith how he approached the problem. | References: John Smith explained how to set up the free body diagram on problem 1.   |
| You cannot get your computer program to properly simulate a system and you look at Sally Yam's working computer code.                          | References: I looked at Sally Yam's properly working computer code to try to figure out what I was doing wrong.            |

Note that none of the examples listed above would result in a loss of points to the student.

06 December 2004 03:00 PM (GMT -05:00)

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