Course Sequence Goals: Develop understanding of the production testing and validation of mixed-signal ICs and systems. The testing of mixed-signal ICs include both analog and digital circuits and requires an understanding of both and the IC test environment to be successful. This is a two semester sequence in Mixed Signal IC testing with the first semester covering basic test topics and the second semester Advanced Mixed Signal IC Test topics.

This course was jointly developed in the last six months by the UF ECE and Texas Instruments, Tucson, TX. These experiences of this course sequence will make better engineers of all of us (including the TA and the instructor). This course sequence is supported heavily by Texas Instruments and National Instruments and the students who do well will be in great hiring demand by US semiconductor and US test companies. The course sequence is limited to 40 students at this time but will expand next year as the laboratories get established.

Course Topics: Fundamentals of Testing IC Devices and systems: test specifications, parametric testing, measurement accuracy, test hardware, sampling theory, digital signal processing based testing, and calibrations. Circuit analysis and circuit design with analog and mixed-signal systems. Labs on testing passive components, LDOs, Op-amps, DACS/ADCs, Mixed-Signal ICs Labview and the National Instruments Savage Tester.

Prerequisite: EEE 3308C and EEE 3701 or an undergraduate degree in electrical engineering.

Class Period and Location: Monday, Wednesday, and sometimes Friday, 8th periods, 3:00pm to 3:50pm, Larsen 330. Students will go to lab most weeks on Thursday or Friday or perform lab and video work at home.

Lab Period and Location: Labs will be given Thursday and Friday in NEB 289 on a sign up basis. Computer labs will be done at home.

Office Hours: Monday, Wednesday and Friday: 1:45pm to 2:45pm, NEB.

TA: Manuel Moreno, contact information to be announced.


**Course Materials:** I will be using the Syllabus on the Sakai system to index of the daily class materials posted for you to review and to learn from. So, you can find most learning materials by clicking on a link from the Syllabus. I try to post all written materials and video materials used in the lectures to assist in your learning.

There will be folders that contain course materials (Course Notes, Labview notes, In Class Notes, etc) in the Resources section of Sakai (see tabs on the left of the Sakai section).

**Computer and Software Required:**
Workstations with Labview system on campus, off-campus you can use X-Windows or X-terminal on a high-speed internet link to UF Campus Computers.

All students are required to have a Gator link account and use Sakai for course handouts, grade information, course notices, etc, see e-learning and Sakai

**Course Study Requirements:**
Students are responsible to study all in class materials including those written on the board and presented orally, all Class Handouts all assigned readings, all projects and homework. Absence from class can result in missing materials tested on exams.

**Work Requirements:**

Homework: 6-10 Homework Assignments  
Computer Laboratories and projects: Weekly laboratory work  
Exams: 3 Exams during the semester, No final Exam

**Examinations: (No Final Exam)**
Quizzes for reading and video learning topics  
Exam 1: Tentatively, Middle of October  
Exam 2: Tentatively, Week of December 8th.

**Make Up Exam Policy:** Students are expected to attend exams at the scheduled times. Exams can be made up if there is a genuine medical emergency with a doctor's or clinic medical note or a family emergency with some documentation.
Passing Grades and Grade Points Effective Summer A 2009

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Preliminary Grading Policy:
Homework and Projects - 50%
Exams and Quizzes - 50%

Academic Honesty:
All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action.

This statement is a reminder to uphold your obligation as a student at the University of Florida and to be honest in all work submitted and exams taken in this class and all others.

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide documentation to the instructor when requesting accommodation.https://elearning2.courses.ufl.edu/access/content/group/UFL-EEE6328C-19816-12013/In%20Class%20Notes/In%20Class%20Lecture%2023.pdf
EEE 4930/5934 Mixed Signal IC Test I, Fall 2014 Course Outline

Course Outline:

Weekly Date, (No. of Classes) Class topics, Readings, In Class Notes in pdf form.

08/25 (3) Syllabus, Introduction to mixed Signal IC test, Introduction to Mixed Signal Testers, Introduction to Labview Tutorials

LabView Video Course Information

Reading Chapter 1 Overview of Mixed Signal Testing and Chapter 2 Tester Hardware, Roberts, Taenzler and Burns

Lab 1a, Learning or Review of LabView

09/03 (2). Labor Day Holiday, DC measurements on the Tester, TestStand and the STS Tester

Reading Chapter 3.1 to 3.6 DC and Parametric Measurements Roberts, Taenzler and Burns, STS Tester Documentation

Lab 1b, Introduction to NI TestStand, General STS Tester Environment

09/08 (2) Tester Setup for Kelvin Resistance Measurement,

Reading, Kelvin Connection Reference, STS Tester Documentation

Lab 2, Resistance and Kelvin Connection measurements on the NI STS Tester

09/15 (2) Data Analysis, Probability Theory, Histograms, and Capacitance Measurement Techniques

Reading Chapter 4.1 to 4.3, Data Analysis and Probability Theory, Roberts, Taenzler and Burns

Lab 3, Capacitance Measurements on the NI Tester

09/22 (2) LDO Operation and characterization, PSRR, CMRR, Voltage Measurement Techniques

Reading Chapter 3.7 to 3.12, DC and Parametric Measurements, Roberts, Taenzler and Burns

Lab 4, Handouts, LDO Measurements on the NI Tester
09/29 (2) Yield Measurement, Accuracy and Test Time

- Reading Chapter 5 Yield Measurement, Accuracy and Test Time, Roberts, Taenzler and Burns
- Lab 4, LDO Measurements on the NI STS Tester

10/6 (3) Yield Measurement Accuracy and Test Time

- Read Chapter 5, Yield Measurement Accuracy and Test Time, Roberts, Taenzler and Burns
- Make up Lab Time

10/13 (3) Midterm 1, OP Amp Testing and Verification

- Read Handouts op amp testing, Chapter 10 Analog Channel Testing, Roberts, Taenzler and Burns
- Lab 5, Op Amp Measurements on the NI STS Tester

10/20 (2) OP Amp Testing and Verification, Analog Channel Testing

- Read Chapter 10 Analog Channel Testing, Roberts, Taenzler and Burns
- Lab 5, Op Amp Measurements on the NI STS Tester

10/27 (2) Analog Channel Testing

- Read Chapter 10, Analog Channel Testing Roberts, Taenzler and Burns
- Lab 5, Op Amp Measurements on the NI STS Tester

11/3 (2) Analog Temperature Sensors, Tester Interfacing, DIB design

- Read Temperature Sensor Handouts, Chapter 15, Tester Interfacing, DIB design Roberts, Taenzler and Burns
- Lab 6, Mixed Signal and Sensor on the NI STS Tester

11/10 (2) Tester Interfacing DIB Design

- Read Chapter 15 Tester Interfacing DIB Design, Roberts, Taenzler and Burns
- Lab 6, Mixed Signal and Sensor on the NI STS Tester
11/17 (2) Mixed Signal Temperature Sensors, Tester Interfacing DIB Design

   Read Chap. Handouts, Chapter 15 Tester Interfacing DIB Design, Roberts, Taenzler and Burns

   Lab 6, Mixed Signal and Sensor on the NI STS Tester,

11/24 (1) DSP-Based Testing (Thanksgiving Holiday Nov. 26 through Nov. 28, 2014

   Read Chapter 9 DSP Based Testing

   Thanks Giving Week No lab

12/1 (2) DSP Based Testing

   Read Chapter 9 DSP Based Testing

   Lab 6, Mixed Signal and Sensor on the NI STS Tester

12/8 (2) Midterm 2, Mixed Signal IC Test 2

   Read Handout Mixes Signal IC Test 2

   Last week of classes Make up Lab.

There is no final exam.