This course is available for student registration only after the approval process has been completed.

Subject: ECE
Course No.: 4342
Credit Hours: 03
Term to be added to the file: Fall 2005
Alpha Prefix (e.g., CSE)
Number Choice (e.g., 1301)

Class Hours: 3
Lecture Hours: 1
Lab Hours: 2
Contact Hours (CEU only)__________________________

Department: Electrical and Computer Engineering
Schedule Type: Lab
(e.g., Computer Sciences) (e.g., lecture, lab or special project)

College/School:
☑ College of Engineering-01
☑ College of Science and Liberal Arts (science)-20
☑ College of Science and Liberal Arts (liberal arts)-21
☑ School of Aeronautics-03
☑ School of Management-22
☑ School of Psychology-05
☑ SEGSS-90

(Please check appropriate box)

Computer Title (restricted to 25 spaces, including blanks): Virtual Instrumentation Lab

Catalog Title: Virtual Instrumentation Laboratory

Catalog Description of Course (limited to 350 characters, including spaces)

Lectures and experiments in programming, data acquisition and analysis of virtual instruments using state of the art and industry standard virtual instrumentation software and hardware tools.

In addition, you may attach a course syllabus and/or more detailed description.

Restrictions:
☐ Prerequisite:
   (course number)
☐ Corequisite:
   (course number)
Grades to be issued:
☑ A, B, C, D, F
☐ S, U
☐ P, F
☐ Other

Additional Restriction:
Senior standing or instructor approval
(e.g., major, class level, department head approval)

If this course replaces a course currently offered in BANNER, please indicate old course information

Subject: ECE
Alpha Prefix (e.g., CSE)
Course No. (e.g., 1301): 4442

APPROVALS

Upon completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval below and forward to Catalog Coordinator.

Originator

04/13/05

Date

Chair, Graduate Council

4/13/05

Date

Chair, Undergraduate Curriculum Committee

4/12/05

Date

Department Chair/Program Chair

College Dean or Associate Dean

Catalog Coordinator

SCARCSE:

SCAREL:

SCAPRED:

SCABASE:

Florida Institute of Technology

Registrar's Use Only

Date

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Date

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RG-301-008
Syllabus: ECE 4342, Virtual Instrumentation Laboratory

LECTURE TOPICS

Introduction to Virtual Instrumentation and LabVIEW
• Soft Front Panel, Block Diagram, and Palettes, Controls and Indicators, Basic Operations, Sub-VIs

Instrument Control
• Introduction to Oscilloscopes, Function Generators, Power Supplies, Digital Multimeters, Serial Communication, Parallel Port Communication

LabVIEW Programming Structures

LabVIEW Graphs, Charts, Arrays, and Clusters

LabVIEW Strings, File I/O, and Property Nodes

Instrument Control
• General Purpose Interface Bus (GPIB), Instrument Drivers

Data Acquisition Systems
• Signals, Transducers, Signal Conditioning, Noise, Op-Amps, Filters,
• Analog-to-Digital Conversion: Sampling rate, Nyquist theorem and aliasing, Resolution and Gain
• Configuring Data Acquisition Hardware: Analog Input, LabVIEW Data Acquisition VIs

LABORATORY EXPERIMENTS

Lab 01: The LabVIEW Programming and NI ELVIS Work Space Environment

Lab 02: Virtual Digital Thermometer using Thermistor

Lab 03: AC Circuit Tools: Data Acquisition and Processing

Lab 04: OP Amp Filters: Data Acquisition and Processing

Lab 05: Digital I/O devices such as Digital Clock, Digital Counter and 8 Bit Logic State Analyzer

Lab 06: Magnetic Field Sensor and Hysteresis Characteristic of Magnetic Field Switches

Lab 07: LED, Characteristic Curves and applications

Lab 08: Characterization of Photo-detector and Optical Source. Free Space Optical Communications Link. Analog Amplitude and Frequency Modulation. Digital NRZ Modulation Scheme

Lab 09: RF Transmitter, Receiver and Generation of Unique Test Signal Using Arbitrary Waveform Analyzer

Lab 10: Topics of General Interest

Lab 11: Student interest specific content. Individual or Group Projects

Projects: Design and Presentation


Grades: University Grades

Mid Term: 20%
Lab Reports: 50%
Final Project/Exam: 30%

Rules: No late labs, reports or exams