

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) (e.g., Fall 2003)

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 School of Aeronautics-03 SEGS-90
(Please check appropriate box) College of Science and Liberal Arts (science)-20 School of Management-22
 College of Science and Liberal Arts (liberal arts)-21 School of Psychology-05

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

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 Alpha Prefix (e.g., CSE) ECE 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 [Signature] 04/13/2005 Date Chair, Graduate Council Date
 Department Head/Program Chair [Signature] 4/3/05 OR
 Dean or Associate Dean [Signature] 4-12-05 Date Chair, Undergraduate Curriculum Committee Date

CATALOG COORDINATOR [Signature] 4/13/05 Date
 REGISTRAR'S USE ONLY
 SCACRSE _____ SCADETL _____ SCAPREQ _____ SCABASE _____
 SCARRES _____ Operator Init _____ Date _____

Syllabus: ECE 4342, Virtual Instrumentation Laboratory

LECTURE TOPICS
Introduction to Virtual Instrumentation and LabVIEW <ul style="list-style-type: none"> • Soft Front Panel, Block Diagram, and Palettes, Controls and Indicators, Basic Operations, Sub-VIs
Instrument Control <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • General Purpose Interface Bus (GPIB), Instrument Drivers
Data Acquisition Systems <ul style="list-style-type: none"> • 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

Text: Virtual Instrumentation Series “LabVIEW for Everyone” 2nd Edition by Jeffery Travis, Prentice Hall, 2002. ISBN 0-13-065096-X or any other suitable text.

Grades: University Grades

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

Rules: No late labs, reports or exams