

**MIAMI UNIVERSITY  
SCHOOL OF APPLIED SCIENCE  
DEPARTMENT OF ENGINEERING TECHNOLOGY  
(Summer 2008)**

**ENT 311**

**Process Control Interface Design**

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**DESCRIPTION:**

Introduction to data acquisition and control with a graphical user interface (GUI). Topics include parallel, serial, and network access. Data transfer technology such as Object Linking and Embedding and Dynamic Data Exchange also covered.

Periods per week: 2 lectures, 1 laboratory

Prerequisites: ENT 192, a programming language, and completion of an engineering technology associate degree.

**GENERAL OBJECTIVES:**

After completing the course, students will have the ability to apply concepts of mathematics, physics, and electricity/electronics to measurement and control systems. Students should be able to demonstrate understating of:

- The basic principles of data acquisition and control using a computer.
- Sampling theory, basic filtering, and an introduction to spectral analysis.
- How a graphical user interface is used to display data
- How to display data in a spreadsheet through DDE.
- How to program client/server web applications for an instrumentation system.

Students will also have the ability to assemble, interpret, and analyze laboratory experiments. This includes:

- Develop and troubleshoot basic data acquisition systems.
- Develop and troubleshoot networked instrumentation systems.

**TOPICAL OUTLINE:**

<b>WEEK</b>	<b>TOPICS</b>
1	Review of DC/AC Circuit Analysis
2	Digital Fundamentals
3-4	Introduction to Virtual Instruments
5	Sub VIs
6	Structures
7	Arrays
8	Clusters
9	Charts and Graphs
10-11	String manipulation
11-12	File I/O
13-14	Data Acquisition, Serial I/O
15	Client/Server Programming

All areas will be supplemented with handouts. See Blackboard site.

**TEXT and SUPPORTING MATERIAL:**

LabView for Everyone, 3<sup>rd</sup> edition, Prentice Hall, ISBN# 0-13-185672-3

Download and install LabView from MyMiami... Technology... Software Downloads

**METHOD OF PRESENTATION:**

Class lectures, video tapes, laboratory and demonstrations. Some lectures will be done by web. Class time will be used for recitation, labs, and HW.

**METHOD OF EVALUATION:**

Exams, homework, lab reports, computer projects, and term paper/project.

**Approximate Weights:**

Exams	60%
Labs, Programs, and Project	30%
Homework	10%

Grades will be calculated as follows: Start by taking the highest points possible averaged with the highest points earned in the class. This average is then broken into four, grade cut off ranges: A is 90%; B is 80%; C is 70%; and D is 60%

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Miami University is committed to fostering a supportive learning environment for all students irrespective of individual differences in gender, race, national origin, religion, handicapping condition, sexual preference, or age. Students should expect, and help create, a learning environment free from all forms of prejudice.

Disparaging comments, sexist or racist humor, or questioning the academic commitment of students based upon these individual differences are behaviors that undermine our learning community. If such behaviors occur in class, please seek the assistance of your instructor or department chair.