

SUNY Geneseo, Department of Physics and Astronomy  
**PHYS 363: Instrumentation and Interfacing**  
Syllabus, Spring 2008

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Course Websites: <http://www.geneseo.edu/~mclean/IandI/> and in myCourses.geneseo

**Learning Outcomes:**

As a result of taking this course, the student should be able to ...

1. ... create graphical programs in G, the “language” of LabVIEW.
2. ... demonstrate familiarity with LabVIEW’s library of card drivers.
3. ... interface a computer to equipment using at least two protocols.

**Times and places:**

Lectures:            in Bailey 117, Tue. and Thur. 2:00–3:15pm

Office hours:    Mon. & Wed. 1:30–3:00pm, Thu. 12:30–2:00pm

I am also available at other times; see the schedule on my web site. Just stop by my office. Or, if you want to ensure that I’ll be there, contact me by phone or email.

**Required materials:**

A thin 3-ring project notebook will be required for the individual project part of the course.

**Required coursework** (with fraction of final course grade):

60%    7 Weekly Projects: Assigned roughly weekly until Mar. 27

3%    Detailed Final Project Plan

7%    Final Project Check Points: five of them, their nature and weighting may vary by project

30%    Final Project

**Weekly Project Assignment and Submission:**

The assignments describing the weekly projects will be posted on the myCourses.geneseo “Course Web” tab.

Completed weekly projects must be submitted to the appropriate Drop Box in the myCourses.geneseo “Course Materials” tab. In the Drop Box, you will upload the LabVIEW programs as attachments. For projects with multiple files, make sure you upload all necessary files.

**Late submission policy:**

After the due date, each workday morning at 8AM the late penalty will increase by 15%, to a maximum of 50% on the fourth day. Projects submitted more than 2 weeks late will receive no credit.

If your project is incomplete at the due date, submit your incomplete project to get full credit for the parts you have done. Then submit a completed project as soon as possible.

During grading, I will add comments to your program file(s). These commented files will then be attached as feedback to your grade in myCourses.

**General Comments:**

Through roughly the week after spring break, our Tuesday class meeting will generally be a lecture/demonstration of programming methods, while the Thursday class meeting will be a guided in-class project. After that, class will not meet as such, although checkpoint verifications will be due at class time.

You will probably want to store your project programs in your network folder

\\files\Users\abc##\, where “abc##” is your email name. \\files\PhysStu\users\abc##\ is another option, but note that other physics majors can read files stored there.

It is best to copy all files to the local computer while working on them, and then copy them back to your network folder when you are done. If you access files over the network during your work, it is very likely that your program will not successfully run after submission.

**Final Projects:**

Final projects will automate some task by interfacing the computer with external device(s). The key requirements are:

1. The computer must read input from the physical world (includes electrical circuits other than those internal to the computer).
2. The computer must send output that controls something in the physical world.
3. There must be “feedback.” That is, the computer must make a decision based on input, and adjust its behavior. Simple repetitive data acquisition is not sufficient.
4. It must be possible either to generate an output file or to read an input file (containing instructions or default values, for instance).

It is your responsibility to conceive your final project. Projects from the past have sometimes been based on labs done in previous courses, but brand new ideas can be more fun.

Team projects are allowed, but they must meet special criteria. Normally, they must satisfy each of the key requirements twice. Each team member must be responsible for some programming and some interfacing, which must be specified in the Project Plan.

Projects which implement something totally new to the course may be exempted from requirements 1, 2, or 4, at the instructor’s discretion.

There are several Checkpoints along the way to completing the final project. The most substantial of these is the Project Plan, which is a detailed description of what your project will do and how you will complete it. More details on the final project process will be distributed later in the course.

SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional or learning disabilities. Students should consult with the Director in the Office of Disability Services (Tabitha Buggie-Hunt, 105D Erwin, tbuggieh@geneseo.edu) and their individual faculty regarding any needed accommodations as early as possible in the semester. Further information available at <<http://disability.geneseo.edu/>>.

## Expected Schedule of Due Dates

Weekly assignment due dates are shown in white (course grade percentages in parentheses). Milestones to completion of the Final Project are shown in gray (*default* course grade percentages in parentheses).

Dates marked (no class) will probably not have a class meeting, although I will be available for questions and help.

<b>WEEK OF...</b>	<b>Tuesday</b>	<b>Thursday</b>
Jan. 21		
	28 Project 1: Calculation, Rings, & While Loop (7%)	
Feb. 4	Project 2: SubVIs, Timing Loops, Charting, and File Output (8%)	
11	Project 3: User Response, Cases, and Data Acquisition (9%)	
18	Checkpoint 1: Final Project Concept (1%)	Project 4: Dual DAQ, 1D Arrays, Execution Phases, and Graphs (10%)
25		Project 5: 2D Arrays, Clusters, and Aborting (8%)
Mar. 3		Final Project Plan (3%)
10		Project 6: DIO, Popup Dialogs, Input Validation (10%)
17	<b>SPRING BREAK</b>	
24	Checkpoint 2: Equipment Acquired (1%)	Project 7: GPIB, Delayed File Output (8%)
31	(no class)	Checkpoint 3: Proof of Principle (2%)
Apr. 7	(no class)	Checkpoint 4: Communication (2%)
14	(no class)	Checkpoint 5: Interface Design (1%)
21	<b>GREAT Day</b>	(no class)
28	(no class)	Final Project Demonstration
May 5	Final Project Submission	<b>FINALS PERIOD</b>