

SUNY Geneseo, Department of Physics and Astronomy
PHYS 363: Instrumentation and Interfacing
Syllabus, Spring 2020

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

Learning Outcomes:

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

1. ... design, create, and debug graphical programs in G, the graphical “language” of LabVIEW.
2. ... demonstrate familiarity with LabVIEW’s library of instrument drivers.
3. ... interface a computer to external hardware using at least three protocols (analog DAQ, digital DAQ, serial signals).

Times and places:

Lectures: in ISC 226, Tue and Thu 2:30–3:45PM

LabVIEW Fair: Wed, May 13, 3:30–5:00PM

Office hours: Mon 12:30–2:00PM, Tue 12:30–2:00PM, Wed 1:30–2:30PM, 4:00–5:00PM

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:

None. Some reference materials are listed on the course website, and the software can be purchased, but neither of these is required.

Required coursework (with fraction of final course grade):

50% 7 homework projects: Assigned roughly weekly during first half of semester.

10% 5 in-class projects: Completed in teams of two if desired.

10% Final Project Checkpoints: Mostly in the second half of the semester. See calendar later in this syllabus.

30% Final Project. Both successful operation and quality of coding will be considered.

NOTE: Submission of a functional final project is required to pass the course.

Weekly Project Assignment and Submission:

The assignments describing the homework projects will be posted on Canvas.

Completed homework projects must be submitted to the Assignment on Canvas. File names should only contain letters, numbers, and underscores — no spaces! For projects with multiple files, the primary program file must contain the word “main” in its name. Make sure you upload all necessary files for the program to operate.

Feedback will be attached to your submissions on Canvas, either as comments to your program file(s) or separately.

Late submission policy: At the due date & time, and each workday morning at 8AM the late penalty will increase by 10%, to a maximum of 50%. Projects submitted more than 2 weeks late will receive no credit.

Only your last submission will be graded. If your project is incomplete at the due date, submit your incomplete project. It is then your responsibility to decide whether a late submission (with a penalty, but presumably more complete) would be to your benefit.

General Comments:

Although files saved to the ISC226 computers will not be deleted, it is best to keep your files for the course someplace more specific to you. This could be a flash drive or a cloud drive, for instance. 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 directly in your storage location, it is very likely that your program will not successfully run after submission.

Class is expected to meet regularly through Thu, Mar. 26. Classes will be a mixture of lecture/demonstration of programming methods, in-class exercises (not graded), and in-class projects (graded).

After Mar. 26, class will not meet as such, although some in-person checkpoint verifications will be due at class time.

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).
5. As a guideline, each of the input and output should use at least 3 bits of information, and combined they should use at least 8 bits of information.

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.

Information about student support services provided by the college is available at <https://wiki.geneseo.edu/x/2QBoC> .

SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional, and cognitive disabilities. Accommodations will be made for medical conditions related to pregnancy or parenting. Students should contact the Office of Disability Services in Erwin 22 (disabilityservices@geneseo.edu or 585-245-5112) to discuss needed accommodations as early as possible in the semester. Additional information is available at <http://disability.geneseo.edu/> .

Expected Calendar

Homework due dates are shown in white (course grade percentages in parentheses).

Checkpoints for the Final Project are shown in gray.

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

Wk w/ Tues...	Tuesday	Thursday
Jan. 21		
28		Homework 1 due (6%)
Feb. 4	In-class project A	Homework 2 due (7%)
11		Homework 3 due (7%)
18		In-class project B
25	Homework 4 due (8%)	
Mar. 3	Checkpt 1: Project Concept (1%)	Homework 5 due (7%) In-class project C
10		Homework 6 due (8%) In-class project D
17	Spring Break	
24	Checkpt 2: Project Plan (3%)	Homework 7 due (7%) In-class project E
31	Checkpt 3: Equipment Acquired (0%)	Checkpt 4: Proof of Principle (0%)
Apr. 7	(no class)	(no class)
14	Checkpt 5: Communication (2%)	(no class)
21	(no class)	Checkpt 6: Milepost (2%)
28	(no class)	(no class)
May 5	Checkpt 7: Prototype Demo (2%)	
	Wed 13, public demos at LabVIEW Fair	