APPL 413
LabView for Data Acquisition
Summer Session I, 2021

Introduction	This course covers the basics of data acquisition and hardware interfacing using LabVIEW graphical programming. This software is an excellent tool that enable your computer to communicate with the instruments in your lab. LabView can also further process and display the data from these instruments.
Methods	We will meet for two hours each day, both in person and on Zoom. There will be demonstrations and programming activities. During the first hour, I'll introduce new aspects of LabView and go over my solution to any homework assignments. During the second hour, you will be trying these out and I can provide feedback and guidance.
Results	By the end of this course, students should be able to do the following: • Design and layout a useful and attractive front panel in LabView • Write LabView code (block diagrams) that are uncluttered, easy to understand, and flow from left to right • Write LabView code that incorporates the basic programming features of this graphical language, including variables, arrays, loops, decisions, file I/O, mathematical operations, and many more • Write LabView code that incorporates a variety of front panel features, such as waveform charts and graphs, buttons, switches, and other controls and indicators • Write LabView code to implement data acquisition and generation with myDAQ hardware
Discussion	This class will give students a background in how to interface external instruments and components to a computer with LabView programming. It is intended for students who need LabView for their research or want to learn LabView for future job opportunities. LabView has so many features that we cannot possibly cover everything in a single course. I encourage students to continue to explore LabView on their own time as much as possible. You will learn more if you put more time into exploring LabView.
Engineering Student Outcomes	• An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions. • Demonstrate constant curiosity about our changing world. • Persist through and learn from failure.

Class Essentials

➢ CONTACT INFORMATION	
Dr. Richard Goldberg	

🏢 Office Location	
156 Caudill Labs	
✉ Email	
r.goldberg@unc.edu	
📞 Phone	
919-966-5768 (office), 919-260-9873 (mobile)	

➢ LOGISTICS

🕐 Class meeting times	**📖 Optional Texts & Software**
May 25-June 4: TuWThF 1-3pm	• Essick, John, "Hands-On Introduction to LabVIEW for Scientists and Engineers", 4th edition, Oxford University Press, 2018
📍 Class meeting location	• LabView Software
Zoom:	**➤ Pre-requisites**
https://unc.zoom.us/j/91612343652?pwd=cjdLM2pVMmRkOHNVQkt6V3RZWHkxQT09	• None, although previous programming experience is very helpful
📅 Office Hours	
After class every day	

Course content

➢ COURSE TOPICS

- LabView environment, graphical programming, debugging
- Data types
- Arrays and clusters
- Loops and execution structures
- File I/O
- Mathematical and other functions
- Data acquisition and signal processing

➢ COURSE SCHEDULE

Link to schedule

To help you succeed

➢ COURSE EXPECTATIONS AND POLICIES

I expect all students to

- Watch all online videos that are assigned
- Come to every scheduled class and let me know ahead of time if you cannot attend. Of course if you are sick or have an emergency, your highest priority is to take care of yourself. But since we only have 9 days, you will miss a lot of material if you miss a single class.
- Turn in assignments on time. I'd like to go over assignments in class, and late assignments will receive a zero. I drop the lowest homework grade, so you get one free miss. However, you will quickly fall behind if you do not do assignments. If you need an extension, you must ask ahead of time, not at midnight before it is due.

- During class time, do not use your phone or computer for something unrelated to class; research shows that this is distracting to other students in the class. If there is an urgent situation, then you can leave the classroom to use your phone or computer.

➤ STUDENT RESOURCES

SEE, SAY, DO SOMETHING
We're happy you are here and eager to learn. Despite our best intentions to follow a plan, life may throw us a curve ball. If you or someone you know is experiencing some distress or you are concerned about the well-being of a student, please report it here: https://deanofstudents.unc.edu/carereport. It is important to support one another. If you see something, say, and do something.

ACCESSIBILITY RESOURCES
UNC-CH provides accommodations for any students with documented disabilities. If you have a disability and believe you require accommodations, please contact the Department of Accessibility Resources at http://accessibility.unc.edu. Please contact me early in the semester so we can make any necessary arrangements and discuss the learning checks.

Assignments & Evaluation

➤ YOUR COURSE GRADE

75%: Homework and quizzes	Daily homework assignments
25%: Final project	Final project on a topic of your choice is due at end of course
100%: total	

➤ GRADE INTERPRETATION & HONOR CODE

Your final course grade will be determined from a standard scale: P 60 - 100 F <60	**ACADEMIC HONESTY** There will be clear communication if assignments are individual or group. For individual assignments, while I encourage collaboration, it is a violation of the honor code if a student duplicates work or obtains solutions from another student and submits it on their own. Please reference the honor code: http://honor.unc.edu.

I reserve to right to make changes to the syllabus, including project due dates and test dates (excluding the officially scheduled final examination), when unforeseen circumstances occur. These changes will be announced as early as possible so that students can adjust their schedules.