EEL 3701C: DIGITAL LOGIC AND COMPUTER SYSTEMS

http://mil.ufl.edu/3701/   eel3701.slack.com   *UF's Canvas*

INSTRUCTOR
Dr. Eric M. Schwartz   ems@ufl.edu   352-392-2541   MAEC 106   Office Hours: Wed: 12:50pm, Fri 1:55pm

LECTURES
Tues 2nd-3rd (8:30-10:25am) & Thur, 3rd (9:35-10:25am) in Zoom or various classrooms

Tues 8th-9th (3:00-4:55pm) & Thur 9th (4:05-4:55pm) in Zoom or various classrooms

LABS
(Zoom or Zoom+NEBxxx)

*PI = Peer Instructor

(PI=UPI=Undergrad PI)

	Mon			Tues			Wed			Thur			Fri	
Class #	Start	PI*	Class #	Start	PI	Class #	Start	PI	Class #	Start	PI	Class #	Start	PI
	12:50pm			11:45am			9:35am			10:40am			9:35am	
							11:45am			12:50pm			11:45am	
	4:05pm						4:05pm						4:05pm	
	6:15pm			6:15pm			6:15pm			6:15pm				

REQIRED TEXTBOOK (Share, Borrow, Buy, or Rent one of the below. See https://mil.ufl.edu/3701/admin/3701_Textbook.pdf for more info)
- Charles H. Roth Jr., *Fundamentals of Logic Design, Enhanced 7th edition*, Cengage Learning, Stamford, Connecticut, 2021. ISBN:
- Charles H. Roth Jr., *Fundamentals of Logic Design, 7th edition*, Cengage Learning, Stamford, Connecticut, 2014. ISBN: 1133628478
- Charles H. Roth Jr., *Fundamentals of Logic Design, 6th edition*, Cengage Learning, Stamford, Connecticut, 2009. ISBN: 0495471690
- Charles H. Roth Jr., *Fundamentals of Logic Design, 5th edition*, Thomson Brooks/Cole, Belmont, California, 2004. ISBN: 0534378048

RECOMMENDED REFERENCE TEXTBOOK
Reprinted Chapters 1-7 from H. Lam, and J. O'Malley, *Fundamentals of Computer Engineering: Logic Design and Microprocessors, 1st edition*, 1988, John Wiley and Sons, New York, available at https://tinyurl.com/UF-Lam.

COURSE OBJECTIVES (ABET Design Content 50%) [Lab fee: $116.71]
Official: Overview of logic design, algorithms, computer organization and assembly language programming and computer engineering technology. Laboratory.

Actual: To learn to: perform elementary manipulations of Boolean algebraic equations; simplify logic expressions; design combinational and sequential circuits; use a digital design and simulation package, use a l description language (HDL), analyze binary storage device behavior and applications. Also to study the fundamentals of microprocessor architecture, including assembly language programming, and to understand the design of a basic microprocessor.

PI OFFICE HOURS
You may go to any PI available, not just the one teaching your lab class, as necessary, for help during their office hours. You are encouraged to use our slack's *#help* channel for questions. E-mail (not a slack DM) is preferred for individual questions to communicate with the instructors and PIs. PIs will also hold a few help sessions (also shown at the above office hours link).

Name	Dylan Ferris	Omer Amir	Jakub Pepas	Connor Brayman	Clarisse Woodahl	Kevin McGrath	Ian Yu	Max Rosenzweig
e-mail	dylanferris@ufl.edu	omer.amir@ufl.edu	jakubpepas@ufl.edu	cbrayman@ufl.edu	cwoodahl@ufl.edu	kevin.mcgrath@ufl.edu	ian.yu@ufl.edu	rosenzweigm@ufl.edu

Name	Benjamin Hicks	Daniel Shmul	Jake Freedman	Shantanu Gulgule	John Harris	Xuanhao Shi	Caleb Bean	Enemias Itzep
e-mail	benjamin.hicks@ufl.edu	danielshmul@ufl.edu	jake.freedman@ufl.edu	shantanug@ufl.edu	johnharris@ufl.edu	xshi1@ufl.edu	caleb.bean@ufl.edu	eitzep@ufl.edu

Name	Anna Raymaker	Justin Rossiter	William Trigg	John Shoemaker	Corinne Meyers	Santiago Clavijo-gomez
e-mail	annaraymaker@ufl.edu	justin.rossiter@ufl.edu	williamtrigg@ufl.edu	shoemaker.john@ufl.edu	corinnemeyers@ufl.edu	santiago.clavijo@ufl.edu

LECTURE FORMAT
During this special semester, the course will be entirely synchronous. This means that your lectures and labs will occur at the times specified when you registered. We will utilize Zoom for our lectures and labs.

EXAM/PRACTICAL SCHEDULE
Each of our mid-term exams/practicals are administered in the evenings.

Exam/Practical Schedule

ITEM	Date	Time
Practical 1	Tues, 2 Mar	8:20pm
Exam 1	Wed, 3 Mar	8:20pm
Practical 2	Wed, 14 Apr	8:20pm
Final (Exam 2)	Sat, 24 Apr	3:00pm

REQUIRED HARDWARE

The *Digilent Analog Discovery 2* (**DAD**) *board* is required for this course (and many other ECE courses). DADs are presently available from the UF Bookstore for $215, while supplies last; they are also available from DigiKey , Adafruit, and other companies, but for a significantly higher price.

You **MUST** have and use your own laptop computer (or in this special online semester, a desktop computer is fine) for this course. If your computer does not have **three** USB ports (one to power your circuits, one to program your PLD, and one for your DAD), then you will need to buy a USB Port Expander (generally, $7 to $15). (You could use only two, but with only two you will need to continuously switch USB connections as you reprogram and test your designs.)

Because our quizzes, practicals, and final exam will all use Honorlock, you must have a speaker or set of speakers for your computer for these assignments. Neither headphones nor earbuds will not be allowed.

A UF 3701 lab kit will be (snail) mailed to all students signed up for the online course prior to your second lab meeting (Lab 1) or you will pick it up from somewhere (TBD) in or around NEB. All students signed up for face-to-face meeting will receive their lab kit at their Lab 0 meeting. (The kit will first be used during Lab 1.) This kit contains the additional hardware that you will utilize over the course of the semester. The UF 3701 lab kit, including the printed circuit boards (PCBs), was designed by *Out of the Box: Electronics and Robotics* (http://ootbrobotics.com/) to meet my specifications. The 3701 lab kit is now included in your lab fees. Your parts kit comes with two PCBs, a large and a small prototyping breadboard, a wire kit, multiple and various ICs, LEDs, switches, and several types of resistor packages. **You probably cannot buy the kits separately, so please be careful as you design and construct your circuits this semester.**

See the below link for ECE Department's *Computer, Equipment, and Tools Requirements* for undergraduate students: https://www.ece.ufl.edu/academics/undergraduate/advising/computer-equipment-and-tools-requirements/.

SOFTWARE REQUIREMENTS

Quartus Prime (from Altera, now owned by Intel) is available to download, free of charge, from Altera's website and our website. With Quartus, you can design and simulate circuit design using either schematic entry or a hardware description language (e.g., VHDL and Verilog). Quartus will be used regularly, throughout the semester.

CLASS AND EXAM BEHAVIOR

Turn off all cell phones, beepers, laptop sound effects, and other noise making devices before entering our Zoom or in-person classroom. If a noise-making device goes off during class, I reserve the right to lower your course grade. If a noise-making device goes off during an exam, your will lose a significant number of points on this exam. In general, you should mute yourself when entering Zoom.

GRADING POLICY

Grades are periodically posted on the class web site. **It is your responsibility to check your grades regularly** since mistakes often happen when dealing with a large number of students and PI's. **All grades are final __one week__ after posting.** After curving exams as needed, course grades are assigned using the 60 (D), 70 (C), 80 (B), and 90 (A) cuts. [$90 \rightarrow 100$ (A), $86.\overline{6} \rightarrow 89.\overline{9}$ (A-), $83.\overline{3} \rightarrow 86.\overline{6}$ (B+), $80 \rightarrow 83.\overline{3}$ (B), $76.\overline{6} \rightarrow 79.\overline{9}$ (B-), $73.\overline{3} \rightarrow 76.\overline{6}$ (C+), $70 \rightarrow 73.\overline{3}$ (C), $66.\overline{6} \rightarrow 69.\overline{9}$ (C-), $63.\overline{3} \rightarrow 66.\overline{6}$ (D+), $60 \rightarrow 63.\overline{3}$ (D), $56.\overline{6} \rightarrow 59.\overline{9}$ (D-), and $0 < 56.\overline{6}$ (E)].

Part of your grade on exams, labs, homework, quizzes, etc. is based not only on solving the problem you are presented with, but the manner in which you solve it. For example, there is a difference between two designs that meet the given specifications, but one is an elegant, modular 3-element solution, while the other is an obfuscated 5-element design that also meets the specifications but would be difficult to extend later. Just as your future employer would value the latter design less than the first, so will I in grading your assignments.

The UF grading policies for assigning grade points can be found on the following undergraduate catalog web page: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

COURSE GRADE DETERMINATION

I have found that attendance is directly correlated to grades. Therefore, attendance is required, but is **NOT** worth positive points. Each missed class (or a poor attendance quiz result) results in a deduction of one point (out of 100) from your overall course total. There are no excuses for missed classes, but ~~four~~ **five** classes can be missed without penalty. We will have attendance quizzes through Canvas, each with a simple question, at least for those that have attended and paid attention in our lectures (and done previously due homework). You will either need your laptop or a smart phone, running Canvas, in order to take the attendance quizzes, whether on Zoom or in-person.

Laboratory	30%*	(Lab values vary, i.e. it could count as 1/3 a lab, a single lab, a double lab, etc.)
Homework	6%	(8-12)
Exams 1	27%	
Practical 1	3%	
Practical 2	7%	(Lab-like exam, during class time)

All grades are **non**-negotiable **one week** after the grade is posted. Please don't come to me after the final grades have been posted with a hard-luck story.

Final Exam	27%	(Paper exam)
Total	100%**	(90+ on combined Exam 2 and Practical 2 results in 5% grade bonus, e.g., 86% $\Rightarrow$ 91%)

* Perform all laboratory experiments. A grade of 65% or better for your lab weighted average is *required* in order to be eligible to obtain a passing grade in the course (i.e., to earn a grade better than E). Your lowest lab (**not including** Lab 6) will be dropped. But **use this drop wisely**, i.e., do **not** just skip a lab since all labs are important and your next missed lab may be unavoidable. If you need to miss a single lab, it's ok; you **cannot** make up the missed lab. (You should do this lab on your own. If necessary, you may visit a PI during an office hour for help.) **If you have a valid reason for missing this lab, get documentation for your first missed lab and hold on to it.** If you miss a **second** lab, you must show Dr. Schwartz(not a PI) **written documentation for BOTH your first and your second missed labs**. This documentation should be official and from a doctor, judge, etc., so that a make-up can be arranged. You must notify the professor **prior** to your scheduled second missed lab or **as soon as possible after** your second missed lab. **There is** **rarely** **an excuse that will allow you to reschedule your first missed lab other than an** **exam** **in another course or an** **officially sanctioned** **academic event.** You must notify Dr. Schwartzat least **8 days** prior to your exam (or other event) so that an alternate lab time might be arranged.

** Attendance is required, but is **NOT** worth positive points. Each missed class results in a deduction of one point (out of 100) from your overall course total. There are no excuses for missed classes, but four classes can be missed without penalty.

Note: All grading percentages are subject to change at Dr. Schwartz's discretion. Students will be notified of any changes.

EXTRA CREDIT
Extra credit is sometimes offered during class (or on the web, by slack, or by email). The amount of extra credit given is at the discretion of Dr. Schwartz unless specifically stated with the extra credit opportunity.

SCANNING SOFTWARE
Some parts of homework, labs, and exams may require you to scan some of your handwritten work. Both *CamScanner* (http://www.camscanner.com/user/download) and *Fast Scanner* (https://www.coolmobilesolution.com/) are available for Android Phone and iPhone. Install one, & email a scan to yourself to verify that it works. Unclear scans **will not** be accepted. Unless other specified, when scans are request for a particular assignment, a **single pdf** document should be created and submitted. You also are expected to have access to a digital camera or cell phone camera for taking pictures of various hardware designs that you may construct during the semester for homework, labs, and exams. Figure out how to get your scan with your cell phone to your PC automatically, with some cloud storage software such as DropBox, Google Drive, OneDrive, or iCloud. This upload should **not** require ANY action to get the file to your PC (such as opening an email or an app).

HOMEWORK GRADING
Homework is submitted through Canvas by the assigned deadline. Unless other specified (sometimes additional files are requested), a **single pdf** document should be submitted for each homework. Scans are acceptable, but must be compressed and in a single document. Missed homework can**not** be made up, but your lowest homework (or quiz) is dropped.   Homework solutions are sometimes posted on our class web-site **before** they are due. It is **not** appropriate to copy the supplied solutions verbatim; this constitutes cheating. Homework will only be graded in a cursory fashion, i.e., Zen grading is used. The grades will be entered into the grade book as 0 (no significant effort or not submitted), 1 (half-hearted attempt) or 2 (significant attempt). The final course grades will be assigned with strict cuts between grades, but HW **could** push you above a cut. Also, the (pop) quizzes will come from the class material, the labs, **and** the homework. In addition, the exams will be partly based on the assigned homework. Since homework is not returned and is graded only for effort, students should compare their solutions to the posted solutions. **Late homework is not accepted**.

EXAM RE-GRADE POLICY
If you believe an error has been made on an exam score you must make an **email** request (with subject *3701: Exam X Regrade Petition*) to Dr. Schwartz explaining where the misgrading or error occurred. This request must be submitted **immediately at the end of the class in which the exam is returned or at the end of the class break, as specified during that class)**. If you do resubmit an exam, however, the instructor reserves the right to scrutinize and grade the **entire** exam more closely. This definitely places your current score at risk. Consequently, it is not advisable to resubmit an exam for correction unless a blatant error, such as a miscalculation of total points, has been made. You **must** make it clear what writing you added to the exam (by clear indication, e.g., use a different color pen or pencil) after it was returned to you.

HOMEWORK AND EXAM SOLUTIONS
Solutions to homework will be made available on our class web site. Practice exams (some old ones with solutions) are also posted.

COURSE REQUIREMENTS (IMPORTANT!!!)
1. Perform all laboratory experiments. A grade of 65% or better is your lab weighted average is *required* in order to be eligible to obtain a passing grade in the course (i.e., to earn a grade better than E). Your lowest lab (**not including** Lab 6) will be dropped. But **use this drop wisely**, i.e., do **not** just skip a lab since all labs are important and your next missed lab may be unavoidable. If you need to miss a single lab, it's ok; you **cannot** make up the missed lab. (You should do this lab on your own. If necessary, you may visit a PI during an office hour for help.) **If you have a valid reason for missing this lab, get documentation for your first missed lab and hold on to it.** If you miss a **second** lab, you must show Dr. Schwartz (not a PI) **written documentation for BOTH your first and your second missed labs**. This documentation should be official and from a doctor, judge, etc., so that a make-up can be arranged. You must notify the Dr. Schwartz **prior** to your scheduled second missed lab or **as soon as possible after** your second missed lab. **There is** **rarely** **an excuse that will allow you to reschedule your first missed lab other than an** **exam** **in another course or an** **officially sanctioned** **academic event.** You must notify Dr. Schwartz at least **8 days** prior to your exam (or other event) so that an alternate lab time might be arranged.

    - If you believe that you have valid university-related reason for missing a particular lab (e.g., Lab X), send an email to Dr. Schwartz with the following information (with subject: *3701: Conflict with Lab X*, where X is the lab number).
        - State the cause for missing your Lab X and provide associated documentation for this event.
        - Info about your normally scheduled Lab X: PI's name, Lab X date (day and date) and time, lab class number (5 digits)

- o Lab X dates (day and date) that you will be **unavailable** for your Lab X.
- o **ALL** of the Lab X dates, periods, and times (day, date, periods, and times) of the lab you will miss for which you **are** available (in order of your preference). Note that I will try to accommodate your preference AFTER I try to find a lab with available space.
- o If this is for an exam in another course, **first** verify that there are no alternate exam times available. If none, then provide Dr. Schwartz the course number and name, and also your teacher's name, email, and phone number. Also provide a link or screen shot of the cause of the conflict.
- Labs **must** be done at scheduled times (except as described above).
- Students **must** be prepared to demo their lab when they enter. Students will be randomly selected for their demonstration times during their lab period.
- An average lab grade of **65% or higher** is required to be **eligible** to **pass** the course!

2. Class attendance is mandatory. Roll will be taken by means of a short Canvas quiz. (The quiz is normally very simple material from the prior class or presented previously in the class in which the quiz is administered.) Each missed class when roll is taken (or a poor attendance quiz result) will cost 1 points (out of 100) from your overall course total. Roll may be taken more than once in class; if you leave and a second roll is taken, this will be interpreted as an honor code violation.
   - *No excuses accepted, but four free drops.*
   - *Missed classes cannot be made up.*
   - Turn off all cell phones, beepers, laptop sound effects, and other noise making devices **before entering** our classroom. If a noise-making device goes off during class, I reserve the right to **lower your course grade**. If a noise-making device goes off during an exam or practical, your will lose a significant number of points on this exam or practical.
   - If you miss the first two classes and do not notify me, **you will be dropped from the course**.
3. Complete and submit all homework assignments and turn them in **through Canvas before** the time that they are due.
   - *Late homework will **not** be accepted.*
4. Take all exams and practicals as scheduled.
   - *No makeup exams will be given except in cases of a medically documented incapacity or family emergency.*
   - If you believe that you have a valid exam or practical conflict, please send me the info specified above for a lab conflict (again, at least **8 days** in advance), but with the subject: ***3701: Conflict with Exam/Practical X***, where *X* is the exam/practical number. Please specify the times of your conflict and then times immediately before **and** after the scheduled exam/practical time when you **are available**.

STUDENTS REQUIRING ACCOMMODATIONS
The University of Florida is committed to providing academic accommodations for students with disabilities. Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. See https://disability.ufl.edu/students/get-started to start the process to request academic accommodations. Once registered, a student should present his/her accommodation letter to me supporting a request for accommodations. The University encourages students with disabilities to follow these procedures as early as possible within the semester. For optimal consideration, you must see the professor **during the first week of classes**.

COMMITMENT TO A SAFE AND INCLUSIVE LEARNING ENVIRONMENT
The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:
- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

UF COUNSELING SERVICES (HEALTH AND WELLNESS)
Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
- University Counseling & Wellness Center, http://www.counseling.ufl.edu, 3190 Radio Road, (352) 392-1575.
- SHCC mental Health, Student Health Care Center, http://shcc.ufl.edu/, Infirmary Building, 1 Fletcher Drive, 392-1161.
- U Matter, We Care, http://www.umatter.ufl.edu/, umbrella organization for UF's caring culture and provides students in distress with support.

  U Matter, We Care
  - Your well-being is important to the University of Florida. The *U Matter, We Care* initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need.

- If you or a friend is in distress, please contact umatter@ufl.edu so that the *U°Matter, We Care* Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The *U Matter, We Care* Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center.
- Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.
- **Counseling and Wellness Center**: http://www.counseling.ufl.edu/cwc and 392-1575
- **University Police Department**: 392-1111 or 9-1-1 for emergencies.
- **Sexual Discrimination, Harassment, Assault, or Violence**: If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the Office of Title IX Compliance, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu
- **Sexual Assault Recover Services (SARS)**: Student Health Care Center, 392-1161
  - Resources for Sexual Violence, https://umatter.ufl.edu/helping-students/sexual-violence-response/, Immediate Response/Advocacy 392-5648 or 392-1111; Medical Care from Student Health Care Center, 392-1161
- **University Police Department**: 392-1111 or http://www.police.ufl.edu 9-1-1 for emergencies.

- **Career Connections Center**: https://career.ufl.edu/, Reitz Union, 392-1601, career development assistance and counseling.
- **University Police Department**: 392-1111 or http://www.police.ufl.edu 9-1-1 for emergencies.

ACADEMIC RESOURCES
- E-learning technical support, https://lss.at.ufl.edu/help.shtml, 392-4357, Learning-support@ufl.edu..
- Career Connections Center, https://career.ufl.edu/, 392-1601. Reitz Union. Career development assistance and counseling.
- Library Support, http://cms.uflib.ufl.edu/ask.
- Teaching Center, https://teachingcenter.ufl.edu/, 392-2010. Broward Hall. General study skills and tutoring.
- Writing Studio, https://writing.ufl.edu/writing-studio/, 846-1138, 302 Tigert Hall.
- Ombuds office, http://www.ombuds.ufl.edu/. Ombuds office exists to assist students in resolving problems and conflicts
- Student Complaints, Campus: https://care.dso.ufl.edu
- On-Line Students Complaints, http://www.distance.ufl.edu/student-complaint-process

COURSE EVALUATION
Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://ufl.bluera.com/ufl/. Evaluations are typically open during the last two weeks of the semester, but students will be given specific times when they are open. A link to the evaluation will be available on Canvas. Summary results of these assessments are available to students at https://ufl.bluera.com/ufl/.

REMOTE LECTURES AND EXAMS (ZOOM AND HONORLOCK)
During this special semester, the course will be entirely synchronous. This means that your lectures and labs will occur at the times specified when you registered. (Online lab sections will be schedule ASAP.) Some quizzes/exams may also be during class time; but generally, will be in the evening.

We will utilize Zoom for our lectures and labs. Your assignments will be specified on Canvas, but more information will be available on our website (www.mil.ufl.edu/3701/). All homework and lab submissions will be through Canvas. Practicals and Exams will be administered through Honorlock (and Canvas Quizzes) with Zoom. Honorlock is an online proctoring service.

I prefer that students keep their camera on during the class so that I can see you as I would during normal face-to-face classes. Studies show that if we can see each other's faces then we will have more engagement, more student success, and more faculty success. However, this is not a requirement. I understand if on certain days you can't have your camera on due to internet bandwidth limitations, other family members, health issues, or any other reasons. Use your full name for our Zoom meetings, i.e., no nicknames or other alternatives.

Just prior to connecting to Zoom for our lectures, open Canvas. Sometime during most classes, there will be a Canvas Quiz. This quiz will only be available for 1 minute!

Our lectures will be given live, either in-person or through Zoom for interactive communication. (Even in-person students should connect to Zoom so that they can interact with the remote students.) UF students should access Zoom by utilizing the UF login. Both Zoom and Honorlock allow students to participate in the course from almost any location, as long as you have a computer and the following required components: a working webcam, microphone, speaker, and a stable Internet connection. Minimum upload and download bandwidths of 2 Mbps are required for this course. If you don't have the bandwidth or any of this hardware, you must secure these in order to participate in the course. (Note that **neither** headphones **nor** earbuds are not allowed during Honorlock administered assignments.)

Students in live in-person classrooms **must** utilize headphones or earbuds (i.e., no laptop or external speakers) in the classroom. (Note that your cell phone earbuds may work fine with your computer.)

For Honorlock, you do not need to create an account, but will need Google Chrome (available from www.google.com/chrome/). You will also need to download the Honorlock Chrome Extension (from www.honorlock.com/extension/install).

When you are ready to start your practical or exam, connect to relevant Zoom assignment and then turn off your camera. Now log into Canvas, go to our course, and click on the appropriate assignment. Click "Launch Proctoring" to begin the Honorlock authentication process, where you will take a picture of yourself, show your ID, your blank scratch paper (if allowed), and perform a complete a scan of your room. An adequate room scan should take approximately one minute. Honorlock will record your exam session by webcam and also record your screen. Honorlock also has an integrity algorithm that can detect search-engine use, so please do not attempt to search for answers, even if it's on a secondary device. There are many more Honorlock rules; these should be investigated BEFORE your relevant Honorlock-monitored assignments.

Honorlock support is available 24/7/365. If you encounter any issues during a quiz, exam or other assignment, contact Honorlock by live chat, which should be available inside Honorlock. If you are kicked out of an Honorlock, you can go to https://honorlock.com/support/ and select begin live chat. At other times, i.e., not during a monitored assignment, you can send Honorlock an email (support@honorlock.com) or try to reach them by phone (844-243-2500). Zoom chat Dr. Schwartz if this problem occurs during an Honorlock-monitored assignment. If your internet goes out, connect to Zoom with your cell phone.

As part of your Honorlock-monitored assignment, at the end of the timed session, you may be asked to scan some of your exam work. See § *SCANNING SOFTWARE* for more information.

FACE-TO-FACE (IN-PERSON) COURSE POLICY IN RESPONSE TO COVID-19
Some of you will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

- You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.
- This course has been assigned a physical classroom with enough capacity to maintain physical distancing (six feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Follow your instructor's guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.
- If you are experiencing COVID-19 symptoms (click here for guidance from the CDC on symptoms of coronavirus), please use the UF Health screening system and follow the instructions on whether you are able to attend class. Click here for UF Health guidance on what to do if you have been exposed to or are experiencing COVID-19 symptoms.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. Find more information in the university attendance policies.

SOFTWARE USE
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

TECHNOLOGY
The use of cell phones and **every other** technology device not directly specified as allowed is strictly prohibited during live assignments (labs, quizzes, practicals, or exams). All use of an electronic devices during a live assignment exam will be considered a violation of the student honor code (i.e., cheating). See the *Honesty Policy* section below for the minimum penalties that are incurred for all cases of cheating in our course.

During practical exams, no use of the internet (other than Zoom and Honorlock) or other external access is allowed. You may only use files and software on your computer that are explicitly specified by Dr. Schwartz several days prior to the practical exam date.

STUDENT PRIVACY
There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments.

COMMUNICATION

Slack is utilized for course announcements. You are also responsible for getting the slack. You are also responsible for regularly checking announcements and course-related postings on the class website, Canvas, and your UF email.

MULTIMEDIA CLASS/AUDIENCE NOTES

Audience notes are normally available from the class web site every week or so for the subsequent week or more of classes. The notes consist of pdf versions of the class PowerPoint slides with some space for note taking. These notes are not required but are **highly** recommended. Check the class web site for information on exactly when the notes are available. **For optimal performance**, read the notes and examples for a class **before** that class and augment the material with your own notes during class. My notes are removed shortly after they are covered in class.

All grades are **non**-negotiable **one week** after the grade is posted. Please don't come to me after the final grades have been posted with a hard-luck story.

Historically, student that take good notes perform much better in this course then those who do not take notes (or take poor notes). Augmenting my notes with your own is strongly encouraged.

HONESTY POLICY

All students admitted to the University of Florida have signed a statement of academic honesty committing them to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. The following pledge is required for all work submitted for credit by University of Florida students: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." This statement is a reminder to uphold your obligation as a student at the University of Florida and to be honest in all work submitted and exams taken in this class and all others. UF students are bound also by the *Honor Pledge* which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code." Each quiz, practical, and exam should be assumed to contain that specific pledge; opening and starting the assignment commits you to honoring that pledge.

*CHEATING WILL **NOT** BE TOLERATED*. We will actively search for cheaters; we have and will use excellent software to help us in the search. If you are caught, there will be no negotiations. You will earn a course grade penalty (often failure for the course) and get reported to the honor court. There are **no excuses and no exceptions**. You may talk to other students about assignments, but the final work **must** be your own. You must also report others (anonymously, if desired) that you suspect are cheating. If you are caught cheating on **any** assignment (homework, lab, quiz, practical, or exam, etc.), you **will** be prosecuted. A meeting with the UF honor court, along with the instructor, will determine penalties, none of which are desirable or pleasant (*i.e.,* cheating in this course always results in notification to the honor court, often results in a failing grade in the course, and can possibly result in suspension or expulsion from the university). If you know someone is cheating, **it is your responsibility to report it**. For more information about cheating, the UF Honor code, and the consequences of academic dishonesty, please refer to https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/. If you have any questions or concerns, please consult with Dr. Schwartz. The flow chart for an honor code violation is available here. A link to report an academic honesty incident is available here.

WORKING TOGETHER

You are encouraged to work with other students on assignments in a professional manner. Each person in the group should attempt to solve all problems **independently** and **only** then discuss the results with one's partner(s) to correct errors. Copying your partner's work constitutes cheating and should not be permitted. All solutions should reflect your style of problem solving. You may **not** copy and submit old or new posted solutions as if they were your own.

Although you may **consult** with other students, PI's, or instructors for your assignments, you **must** do independent work. Consulting means **"seeking opinions or advice,"** **not** getting working solutions, programs, or designs, understanding them, and then modifying them to make them your own. The latter constitutes cheating (see above section). Working side-by-side to find a solutions, construct a program, or design in a group constitutes cheating. (Solving homework are good practice for solving quizzes and exams, which are also **not** group activities.) **You should note that we have used and will continue to use software that can detect similar submissions.**

INSTITUTIONAL VALUES

1. Always tell the truth.
2. Do not cheat.
3. Attend all classes.
4. Be on time and stay until the end of class.
5. Work hard and consistently.
6. Respect the privilege that goes with being a UF student.
7. Recognize feedback as an opportunity to learn and improve.
8. Do not allow your judgement to become impaired when tired or under pressure.
9. Be thankful for the opportunity that you have that many others wish that they had.

LABORATORY RULES & POLICIES

See www.mil.ufl.edu/3701/admin/Lab_Rules_&_Policies.pdf for important information that you should re-read prior to each lab submission. Prior to the start of your first lab, you must sign and submit this document (as proof that you understand and will follow the rules) or you will not be admitted to the lab.

LABORATORY GRADING

You will not be admitted to the lab without a previously submitted *Pre-Lab Report*, as described in the *Lab Rules and Policies*. The *Pre-Lab Report* and other files also **must** be submitted through Canvas at least fifteen minutes **BEFORE** the start of your lab.

Each circuit diagram, VHDL file, and assembly language program must have your name (computer) printed at the top. **ALL** simulations should be clearly annotated. Quartus files should be sent in a <mark>**Quartus archive file**</mark>. Demonstration videos of up to three minutes must also be submitted prior to your lab.

Grading emphasis will be placed upon your producing well documented, well-structured design circuitry that realizes the functional requirements specified by the lab handout and the lab instructor. The remaining portion of your grade will result from observations by your lab instructor on such matters as your understanding of the lab, your lab techniques, your pre-lab preparation, your lab results and your cooperation and compliance with the rules. Having your design perform properly does **not** guarantee a grade of 100, but makes a 100 grade **possible**. Lab designs and/or software that are similar and/or identical to other student's work constitute cheating (see above) and will be reported to the professor for further discipline (and will result in failing the course, honor court charges, or expulsion). There will be a quiz at the beginning of most labs (worth up to 40% of your total lab score). If you are late for a lab, you will get a zero for the quiz.

REMOTE LABS AND ZOOM

Our labs will be done remotely for most of you, i.e., most of you will not be in the same room as your fellow lab students or PI. To administer the labs, we will use Zoom for all remote students. You must follow rules for all labs:

- You MUST have a working web cam and microphone for your labs.
- During lab, you must keep you web cam on as well as show us your work, i.e., Share Screen | Screen.
- No email, messaging, or chats are allowed during your lab (except with your PI).

You will also utilize Zoom during Practicals and Exams.

LABORATORY ATTENDANCE

Laboratory attendance during scheduled times is mandatory. <mark>**Documented**</mark> personal or family emergency will be accepted as an excuse for absence for a <mark>**second**</mark> missed lab if documentation for a **first** missed lab is **also provided**. In such cases, consult Dr. Schwartz (**not** your PI) about a make-up lab <mark>**as soon as possible**</mark>. See *Course Requirements* for more details. Students should make serious attempts on **all** labs. <mark>**Grades less than 50% may be interpreted as not a serious attempt and may be scaled to 0.**</mark> Note: <mark>**ALL**</mark> students <mark>**MUST**</mark> have everything working <mark>**BEFORE**</mark> coming to lab.

Failure to attend your scheduled lab will result in a lab grade of zero, even if you previously submitted the required lab documents.

You will **not** officially makeup your dropped lab. You should do this missed lab at home (or, if necessary, during a PI office hour) to be sure you understand the required material.

LABORATORY TOPICS

Lab Number	Start Date	Probable Topic s
0	~~Tues, 19 Jan~~ Mon, 25 Jan	*Virtually* build your PLD board; intro to software and parts
1	Mon, 1 Feb	Quartus intro; Logic design and implementation (with discrete parts)
2	~~Mon, 8 Feb~~ Thur, 11 Feb	MSI circuit design and implementation (with discrete parts & PLD)
3	Thur, 18 Feb	Counter design and implementation
4	Wed, 10 Mar	Registered Arithmetic Logic Unit (RALU) design & implementation
5	Wed, 17 Mar	State Machine design and implementation
6	Wed, 31 Mar	CPU with ROM-based instructions
7	Wed, 7 Apr	G-CPU simulation and assembly language programming

EEL 3701 Schedule: Part 1 of 2

WEEK/DAY		DATE	LAB	LECTURE	Tentative Weekly Topics / Comments
1	M	11-Jan	No lab	No class	UF classes begin (but not ours!)
1	Tu	12-Jan		1-2	Syllabus, web site; Digital Design, Basic logic
1	W	13-Jan			Intro. to Quartus
1	Th	14-Jan		3	
1	F	15-Jan			**Drop/Add ends Friday at 11:59pm**
2	M	18-Jan	No lab	No class	**Holiday: Martin Luther King Jr. Day**
2	Tu	19-Jan	0̶	4-5	Truth (Logic) Table / Voltage Table
2	W	20-Jan	0̶		Mixed Logic
2	Th	21-Jan	0̶	6	ICs, introduction to mixed, positive, and negative logic
2	F	22-Jan	0̶		
3	M	25-Jan	0		**ECE Virtual Career Fair: Jan 26-28, 9am-4pm**
3	Tu	26-Jan	0	7-8	Number Systems, Math
3	W	27-Jan	0		Boolean Algebra
3	Th	28-Jan	0	9	MSOP, MPOS, Simplification
3	F	29-Jan	0		
4	M	1-Feb	1		**CISE Virtual Career Fair: Feb 1, 10am-6pm**
4	Tu	2-Feb	1	10-11	MSI: MUX, deMUX, decoder
4	W	3-Feb	1		K Map
4	Th	4-Feb	1	12	
4	F	5-Feb	1		
5	M	8-Feb	2̶		**CCC Career Showcase: Feb 8-11, 9am-4pm**
5	Tu	9-Feb	2̶	13-14	More MSI: encoder, adder, BCD 7-seg decoder
5	W	10-Feb	2̶		Even more MSI: tristate buffer, ALU
5	Th	11-Feb	2	15	Introduction to sequential circuits: Flip-flops
5	F	12-Feb	2		
6	M	15-Feb	2		Flip-flops and next state/excitation tables
6	Tu	16-Feb	2	16-17	Design with flip-flop, Counter design, Debouncing
6	W	17-Feb	2		
6	Th	18-Feb	3	18	
6	F	19-Feb	3		
7	M	22-Feb	3		MSI sequential circuits - Registers, counters
7	Tu	23-Feb	3	19-20	RAM/ROM
7	W	24-Feb	3		
7	Th	25-Feb		21	Class cancelled on Thur, 25 Feb. **Recharge day!**
7	F	26-Feb	No lab		
8	M	1-Mar			State Machines
8	Tu	2-Mar		22-23	**Practical 1: Tues, 2 Mar, 8:20pm**
8	W	3-Mar			**Exam 1: Wed, 3 Mar, 8:20pm**
8	Th	4-Mar		24	
8	F	5-Mar			

EEL 3701 Schedule: Part 2 of 2

WEEK/DAY		DATE	LAB	LECTURE	Tentative Weekly Topics / Comments
9	M	8-Mar			
9	Tu	9-Mar		25-26	Exam 1 Solutions / Regrade petitions submitted
9	W	10-Mar	4		ASM implementation, ASM design examples
9	Th	11-Mar	4	27	ASM desigs, ROM based designs & others
9	F	12-Mar	4		RAM/ROM expansion
10	M	15-Mar	4		ASM design implementations
10	Tu	16-Mar	4	28-29	Introduction to VHDL
10	W	17-Mar	5		RAM, ROM PLAs, PALs
10	Th	18-Mar	5	30	More PLDs (CPLDs and FPGAs)
10	F	19-Mar	5		
11	M	22-Mar	5		Introduction into computer architecture
11	Tu	23-Mar	5	31-32	
11	W	24-Mar			Labs **NOT** cancelled. **Recharge day!**
11	Th	25-Mar		33	
11	F	26-Mar			
12	M	29-Mar			Introduction into computer architecture
12	Tu	30-Mar		34-35	Addressing modes, Data transfer instructions
12	W	31-Mar	6		
12	Th	1-Apr	6	36	
12	F	2-Apr	6		
13	M	5-Apr	6		Basic computer operation cycles and timing
13	Tu	6-Apr	6	37-38	Instruction set & assembly programming examples
13	W	7-Apr	7		
13	Th	8-Apr	7	39	
13	F	9-Apr	7		**Drop Deadline**: Fri, 9 Apr @ 11:59pm
14	M	12-Apr	7		G-CPU, Special topics
14	Tu	13-Apr	7	39-40	G-CPU, Memory Maps
14	W	14-Apr	7		**Practical 2: Wed, 14 Apr, 8:20pm**
14	Th	15-Apr	7	41	
14	F	16-Apr	7		
15	M	19-Apr			
15	Tu	20-Apr		42-43	
15	W	21-Apr			**UF Classes End**
15	Th	22-Apr	No lab	No class	Reading Day
15	F	23-Apr	No lab	No class	Reading Day
				Final	**Final (Exam 2): Sat, 24 Apr, 3pm-5pm**