EEL 3701C: DIGITAL LOGIC AND COMPUTER SYSTEMS

https://mil.ufl.edu/3701/ eel3701.slack.com *UF's Canvas*
Simple Syllabus: https://ufl.simplesyllabus.com/doc/???/

INSTRUCTOR Dr. Eric M. Schwartz ems@ufl.edu 352-392-2541 MALA 3110 Office Hours: Wed: 12:50pm, Fri 1:55pm

LECTURES **Mon, Wed, Fri 3rd (9:35-10:25am) in CSE A101**

COURSE OBJECTIVES (ABET Design Content 50%) [Lab fee: $40.00]
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 hardware 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.

UF SYLLABUS AND POLICIES To support consistent and accessible communication of university-wide student resources, academic policies and campus resources are available here: https://go.ufl.edu/syllabuspolicies.

PI OFFICE HOURS
You may go to any PI available (in NEB 248, if no lab; else MAEB 328) for help during their office hours. (See the Faculty/PIs webpage for the posted office hours. Note that some office hours may be remote.) You are encouraged to use our slack's *#help* channel for questions. The slack rules for our course (as well as a link to join) are available here. 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, which will be announced in Slack.

EXAM/PRACTICAL SCHEDULE
All of our exams and practicals are administered during our scheduled class periods and will utilize Canvas and Honorlock with Zoom.

Exam/Practical Schedule

ITEM	Date	Time	Location
Exam 1	**Mon, 26 Oct**	**8:20pm**	Remote
Practical	**Tues, 10 Nov**	**8:20pm**	Remote
Final	Wed, 9 Dec	10:00am	Remote

LECTURE FORMAT

The course lectures and labs will be entirely synchronous and in-person. This means that your lectures and labs will occur at the times specified when you registered. Nothing will be Zoomed this semester, other than our practicals and exams (and some office hours).

REQUIRED HARDWARE

- Below are supplied to students during their first lab, paid for with your lab fees. **You probably cannot buy the kits separately, so please be careful as you design and construct your circuits this semester.** See Parts List (Summer 2026) for more details.
  - *Digilent* Analog Discovery (DAD)
    - Students that borrow a DAD will get a DAD-3.
      - EE and CpE students will return during their last undergraduate semester in their BS degree program.
      - Other students will return before the end of the semester.
  - DE10-lite (*TerasIC*)
    - **All students will return this (in its original packaging) at the end of the semester.**
- ~~You will need to **purchase** or somehow procure (i.e., these are not part of your lab fee) the following:~~
  - ~~The following items (OOTB Complete EEL 3701 Kit); OOTB = Out of the Box (a local company founded by a UF graduate)~~
    - ~~40-pin IDC cable for DE10-lite~~
    - ~~DE10-lite breadboard breakout~~
    - ~~SPDT switch with breadboard breakout~~
    - ~~2 - 8-circuit SPST DIP switches for breadboard use~~
    - ~~2 - 10-circuit bar graph LEDs~~
    - ~~2 - DIP resistor packs 1 kW × 8~~
    - ~~2 - SIP resistor packs 2.2 kW × 8~~
    - ~~2 - 74HC00 (NAND) ICs~~
    - ~~2 - 74HC02 (NOR) ICs~~
    - ~~2 - Axial resistors 1 kW~~
    - ~~IC Remover (useful, but **not** required)~~
    - ~~IC Pin Shaper (useful, but **not** required)~~
    - ~~Large Breadboard~~
    - ~~Small Breadboard (with one full panel)~~
    - ~~Wire kit~~
    - ~~The last three items (in the second column above) are useful in other courses, including 3111. Jameco sells adequate versions of all the above items. You can find Jameco's links to versions of these last three items below.~~
      - ~~Breadboard (with at least two panels, but more than 30 smaller the one from OOTB) (Jameco Part #: 20774)~~
      - ~~Small Breadboard (with one full panel) (Jameco Part #: 2283767)~~
      - ~~Wire kit (Jameco Part #: 19290)~~

Your computer will need the necessary USB ports to connect to the DAD and DE10-lite. If it does not have the proper ports **than you will need to purchase a USB Port Expander or USB Converter cable(s)**.

- The DAD-3 requires a female USB C type port on the PC (with a female USB C type port on the DAD-3).
- The DE10-lite requires a female USB A type port on the PC (with a female USB B type port on the DE10).

- You **MUST** have and use your own laptop computer for this course with a dedicated camera and microphone. (A cell phone can**NOT** be used as the camera.)
- Because our quizzes, practicals, and exams all use Honorlock, you **must have a speaker** or set of speakers for your computer for these assignments. Neither headphones nor earbuds are allowed.

SOFTWARE REQUIREMENTS

Intel 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, laptop sound effects, and other noise making devices (including your microphone) before entering our classroom (or Zoom, for practicals and exams). If a noise-making device goes off during class, I reserve the right to lower your course grade. Do not visit websites, play games, or use other programs or apps during class that might distract nearby students.

GRADING POLICY

Grades will be posted periodically on the class web site. **It is your responsibility to check your grades regularly** (on both Canvas and our course website) since mistakes often happen when dealing with a large number of students and PIs. **All grades are final one week after posting** (on either Canvas or our course website)**.** After curving quizzes and our final exam 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)].

The grading of exams, labs, homework, quizzes, etc. is based not only on solving a problem, but the **way** it is solved. Elegance matters. 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 7-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.

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.

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

~~Laboratory* 30% (Lab values vary, i.e. it could count as 1/4 a lab, a single lab, a double lab, etc.)~~
~~Homework 6% (10-14)~~
~~Exam 1 27%~~
~~Practical 1 3%~~
~~Practical 2 7%~~
~~Final/Exam 2 27%~~
~~Total** 100% (90+ on weighted average of Final/Exam 2 and Practical 2 results in 5% grade bonus, e.g., 86% Þ 91%)~~

* Perform all laboratory experiments. A grade of 65% or better for your lab weighted average is ***required*** to be eligible to obtain a passing grade in the course (i.e., to earn a grade better than E). Your lowest lab (**excluding** Lab 6) will be dropped **if you submit the pre-lab (including the video) late**, as specified in § Laboratory Attendance. U**se 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 is ok; you **cannot** make up the missed lab. (You should do this lab on your own and turn in the pre-lab report as specified. If necessary, you may visit a PI during office hours 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. Schwartzby email** at 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. See § Course Requirements and below for more details.

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

THIS IS FOR A "NORMAL SEMESTER." Info about your attendance quiz requirements was provided in a Slack announcement.

I have found that attendance directly correlates 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 three classes can be missed without penalty. (Since there are 20 classes this semester, missing three classes is 15%! We will have attendance quizzes through Canvas, each with a simple general question (worth 30%), at least for those that have attended and paid attention to our lectures and submitted previously due assignments. There will also be an "are you there" question worth 70%. You can miss **10** (= 10 × 0.3 = 3.0) of the simple general attendance quiz questions with absolutely no penalty if you attend each class **and** answer the "are you there" question positively. There are no excuses for missed classes. Late arrival or early departure (when missing the quiz) will count as an absence. To take the attendance quizzes, you will either need your laptop or a smart phone, running Canvas. Attendance quizzes can happen at any time from the beginning to the end of a lecture, so come to class on time. Leaving class after an attendance quiz but before the end of class is considered cheating unless advanced notice is provided (with a reason given) to Dr. Schwartz and permission is granted.

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. *Adobe Scan* (https://www.adobe.com/acrobat/mobile/scanner-app.html) is available for both Android phones and iPhones. Install this (or another one) and email a scan to yourself to verify that it works. Unless you have a good reason, approved by email by Dr. Schwartz, you **MUST** use *Adobe Scan*. Learn how to get clear scans; black and white scans are usually best and are required for exams. Unclear scans **will not** be accepted. Unless other specified, when scans are requested for a particular assignment, a **single pdf** document should be created and submitted. You also are expected to have access to a cell phone camera for taking pictures of various hardware designs that you may construct during the semester for homework, labs, and exams.

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. You must use the homework template provided on our website. Scans of various parts of the homework are acceptable, but the scans must be incorporated into the single submission document. Missed homework can**not** be made up, but your lowest homework is dropped. Homework solutions are sometimes posted on our class website **before** they are due. It is **not** appropriate to copy the supplied solutions; 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. In addition, the exams will be partly based on the assigned homework. Since graded 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**. If you do resubmit an exam for regrade, the instructor reserves the right to scrutinize and regrade the **entire** exam. 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 graded.

HOMEWORK SOLUTIONS, PRACTICE EXAMS, AND COURSE GRADES

Solutions to homework will be made available on our class web site at https://mil.ufl.edu/3701/, along with periodic postings of your grades and the class grade statistics. Practice exams (a few with solutions and many without solutions) are also posted.

COURSE REQUIREMENTS (IMPORTANT!!!)

1. Perform all laboratory experiments. A weighted lab average of 65% or better 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 **if you submit the pre-lab (including the video) late**, as specified in § Laboratory Attendance. 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 is ok; you **cannot** make up the missed lab. (You should do this lab on your own. If necessary, you may visit a PI during office hours 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 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. i.e., PI's name, Lab X date (day and date) and time, lab class number (5 digits)
     - Lab X dates (class number, day, and date) that you will be **unavailable** for your Lab X.
     - **ALL** other scheduled Lab X dates (day, date, periods, times, class number) that you will be **available** for your Lab X (in order of your preference). Note that I will try to accommodate your preference AFTER I try to find a lab with available space.
     - 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 course name, and 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. Demonstration order will be determined.
   - An average lab grade of **65% or higher** is required to be **eligible** to **pass** the course!
2. Class attendance is mandatory and is documented 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 one point (out of 100) from your overall course total. The 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 THREE free drops.***
   - ***Missed classes cannot be made up.***
   - 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. Lab submissions are due at least **fifteen** minutes before your lab. See the *Lab Rules & Policies* for more details.
5. Take all quizzes, exams, and practicals as scheduled.
   - ***No makeup quizzes, exams, or practicals 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 TYPE X***, where TYPE is the type of assignment (Quiz X, Exam, Practical X) and X is the assignment number. Specify the times of your conflict, the cause of your conflict, and then times immediately before or after the scheduled exam time when you **are available**.
     - If the conflict is an exam in another course, verify that there are no alternate exam times available. If none, then provide Dr. Schwartz with the course number and name, and your teacher's name, email, and phone number. Also provide a link or screen shot of the cause of the conflict.

STUDENTS REQUIRING ACCOMMODATIONS

The University of Florida is committed to providing academic accommodation for students with disabilities. Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://disability.ufl.edu/) 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 your optimal benefit, 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 Undergraduate Program Coordinator
- Donna L Stilwell, Director of Human Resources, 352-294-7977, dstil@eng.ufl.edu
- Malisa Sarntinoranont, Associate Dean of Academic Affairs, 352-392-8404, msarnt@ufl.edu
- Pamela Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu

HEALTH AND WELLNESS (UF COUNSELING SERVICES)

Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- University Counseling & Wellness Center, https://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.

ACADEMIC RESOURCES

- E-learning technical support, https://elearning.ufl.edu/, 392-4357, email: Learning-support@ufl.edu..
- Career Connections Center, https://career.ufl.edu/, 392-1601. Reitz Union. Career development assistance and counseling.
- Library Support, https://uflib.ufl.edu/find/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. Help brainstorming, formatting, and writing papers.
- Ombuds office, https://ombuds.ufl.edu/. Ombuds office exists to assist students, staff, and faculty in resolving problems and conflicts.
- Student Complaints, Campus: https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/, https://care.dso.ufl.edu.
- On-Line Students Complaints, http://www.distance.ufl.edu/student-complaint-process

COURSE EVALUATION
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://my-ufl.bluera.com. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

LECTURES, LABS, QUIZES, PRACTICALS, AND EXAMS (CANVAS, ZOOM, AND HONORLOCK)
During this semester, the course will be entirely synchronous. This means that your lectures and labs will occur at the times specified when you registered. Practicals and the midterm exam will be administered in the evening.

Lectures are face-to-face. Your course assignments will be specified on Canvas, but more information will be available on our website (https://mil.ufl.edu/3701/). All homework and lab submissions will be through Canvas. Quizzes, practicals, and exams will be administered through Honorlock (and Canvas Quizzes) with Zoom. Honorlock is an online proctoring service. Sometime during most classes, there will be a Canvas Quiz; therefore, all students will need computers (or at least a smart phone).

Open Canvas at the beginning of every class; keep it open during class for the inevitable attendance quiz.

For our practicals and exams, utilized so that you can ask questions, you will need to log into Zoom (at https://ufl.zoom.us/) before being admitted to the Zoom. You must connect to Zoom **prior** to connecting to the Honorlock quiz. Use your full name for our Zoom meetings, i.e., no nicknames or other alternatives.

I recommend that you to obtain a good image of your UF ID and store it as a file on your computer. This way, you will not have to scan your ID with your webcam at the start of an Honorlock assignment; instead, you can just upload the image.

Students can take practicals and exams in the course from almost any location, as long as you have a computer and the following required components: webcam, microphone, speaker, and a stable Internet connection. Minimum upload and download bandwidths of 2 Mbps are required for this course. If you do not 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 allowed during Honorlock administered assignments.)

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).

Prior to any Honorlock quiz, the following has been shown to prevent problems that have happened to a few students in the past. I recommend that you do this prior to **EVERY** Honorlock quiz.
- Close **all programs/applications** other than Chrome.
- Close **all Chrome tabs** other than Canvas.
- Turn off any potential pop-ups that could occur during this assignment.

Below has been shown to prevent problems that have happened to a few students in the past. It wouldn't hurt and could save some aggravation.
- Exams and practicals will use Zoom. Verify that you have the Zoom link.
- Verify that your cell phone has scanning software (e.g., *Adobe Scan*).
- Verify that you have your UF ID, passport, or driver's license (for the Honorlock ID scan).
- Clear your cache in Chrome.
  - Reinstall the Chrome Honorlock Extension.
  - Close then reopen Chrome.
- Verify that you have the files that you need (and are allowed, if any) available from your desktop.
- Reboot your computer.
- Be sure that there is enough light to properly illuminate your face during the exam (for Honorlock). If not, find better lit area.

When you are ready to start an Honorlock-monitored assignment (quiz, practical, or exam), connect to the relevant Zoom assignment and then select "Stop Video" in Zoom (to stop Zoom from using your webcam). 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, and show both sides your blank scratch paper (if allowed). If requested by Honorlock staff or course staff, perform a complete scan of your room; an adequate room scan should take approximately one minute. Honorlock will record your exam session by webcam and 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 is on a secondary device. There are many more Honorlock rules; these should be investigated **BEFORE** your relevant Honorlock-monitored assignments.

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.

For emergency situations, learn how to turn your cell phone into a hotspot to use if your internet goes out. If you ever have WiFi or other internet connection problems just before or when your practical, quiz, or exam, use your phone to send **BOTH** a slack message **and** an email to the relevant PI **and** Dr. Schwartz. Describe the issue and continue to **try to get back in**! Use your cell phone as an emergency hotspot.

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 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). Zoom chat Dr. Schwartz or other course staff if this problem occurs during an Honorlock-monitored assignment. **If your internet goes out, connect to Zoom with your cell phone.**

PRACTICALS
Practicals are exams where you design, simulate, build, and demonstrate in a fixed amount of time. You have **no access** to any previous assignments or solutions but may have access to necessary documentation. You must have a single solution, i.e., you cannot modify your solution during the demonstration to show parts of the solution and then modify or use another program to demonstrate a second part of the solution. You only earn points for parts that are demonstrated to function properly. No points are awarded for designs without accompanying demonstration . If you cannot solve the entire problem, it is up to you to determine a procedure that can demonstrate what does work (but still only a single solution is allowed).

IN CLASS RECORDING
Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.
A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does **not include lab sessions**, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (**quizzes, tests, exams**), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without the permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

SOFTWARE USE
All faculty, staff, and students at 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** technological device not directly specified as allowed is strictly prohibited during live assignments (labs, quizzes, practicals, or exams). All use of disallowed electronic devices (or inappropriate use of allowed devices) during a live assignment 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. Laptop computers and tablets are welcome in class as long as they are used for class-related work. Surfing the web, checking email, making posts, etc., is strictly prohibited (**if distracting to others**) and will result in course grade deductions.

During practical exams, no use of the internet (other than Zoom and Honorlock) or other external access is **not** 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.

TWO-STEP AUTHENTICATION BACKUP
You should get a backup for the two-step authentication. See https://it.ufl.edu/2fa/using2fa/. There have been students who had cell phone issues (like a lost phone, a broken phone, or the battery runs out) just before starting a quiz/exam and were unable to participate. To assure that you can always get in, generate some passcodes and always keep them with you (perhaps in your wallet). To do this, go

to account.it.ufl.edu and select *GENERATE PASS CODES*; then login and authenticate as normal and select the *GENERATE PASS CODES* button. Five codes will appear, each of which will work once and do not expire.

STUDENT PRIVACY
There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see https://registrar.ufl.edu/ferpa.html.

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

MULTIMEDIA CLASS/AUDIENCE NOTES
Audience notes are normally posted on 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. 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.

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

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.

HONESTY POLICY
UF students are bound 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. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://sccr.dso.ufl.edu/process/student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class.

Artificial intelligence (AI) language models (LLMs), such as ChatGPT, and online assignment help tools, such as Chegg®, are examples of online learning support platforms: they can**not** be used for course assignments except as explicitly authorized by the instructor. The following actions are prohibited in this course:

- submitting all or any part of an assignment statement to an online learning support platform
- incorporating any part of an AI generated response in an assignment
- using AI to summarize or contextualize source materials
- submitting your own work for this class to an online learning support platform for iteration or improvement

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 (almost always failure for the course) and get reported to UF's 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, 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.

Each lab section has their own lab quiz. Because there are labs on every day of the week, some students will have their lab up to six days before other students. Since all quizzes for a particular lab will each cover the same topics, information about another section's quiz would give a student an unfair advantage over other students. Therefore, while the lab is still ongoing, you should **NOT** 1) communicate with other students in the course (outside of your own lab section) about your lab quiz, 2) give hints about the quiz, or 3) ask any other student for information about their quiz. Sharing lab quiz information in any of these ways is a violation of the honor-code policy and will be treated as such.

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 solution, construct a program, or design in a group constitutes cheating. (Solving homework is 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.**

Failure to do your own work in lab will likely result in failure in these associated quizzes, practicals, and exams.

HANDOUTS
Handouts are supplied on-line and can be downloaded from the class web site: https://mil.ufl.edu/3701/.

LABORATORY RULES & POLICIES
See *Lab Rules & Policies* 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 & 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 **Quartus archive file**. Demonstration videos of up to three minutes must also be submitted prior to your lab.

Grading emphasis will be placed upon 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 it **possible**. Lab designs and/or software that are similar and/or identical to other students' 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.

LABORATORY ATTENDANCE
Laboratory attendance during scheduled times is mandatory. **Documented** personal or family emergency will be accepted as an excuse for absence for a **second** missed lab if documentation for the **first** missed lab is **also provided**. In such cases, consult Dr. Schwartz (**not** your PI) about a make-up lab **as soon as possible**. See ***Course Requirements*** for more details. Students should make serious attempts on **all** labs. **Grades less than 50% may be interpreted as not a serious attempt and may be scaled to 0. Note:** ALL students MUST have everything working BEFORE 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. But you must submit the missed **(and complete)** pre-lab report (including the video) within one week (day **AND** time) of when the pre-lab report was originally due. For Lab 7, our last lab, the submission deadline is 24 hours after your Lab 7 was due. You will **lose the lab drop if you fail to submit a complete pre-lab document (including the video) by the specified deadline**. 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	Probable Topic s
~~0~~	~~Checkout PLD board; install software; intro to software and parts~~
~~1~~	~~Quartus intro; Logic design and implementation (with discrete parts)~~
~~2~~	~~MSI circuit design and implementation (with discrete parts & PLD)~~
~~3~~	~~Counter design and implementation~~
~~4~~	~~Registered Arithmetic Logic Unit (RALU) design & implementation~~
~~5~~	~~State Machine design and implementation~~
~~6~~	~~CPU with ROM based instructions~~
~~7~~	~~G CPU simulation and assembly language programming~~

RECIPE FOR SUCCESS

Recently, a student asked me how to be successful in our course. I thought it would be helpful to share what I told the student.

0) Take care of your health by sleeping well, eating well, and participating in some regular physical activity.
1) Attend all classes and actively participate by trying to follow the material, take notes, and ask questions (or write them down to ask later), if you have any.
2) Work a little bit on the material every day, even if it is only for an hour.
3) Review the notes within 24 hours after a class and read the relevant textbook sections (if any) with 24-48 from that class.
4) Complete all homework.
5) Read a lab as soon as we have gone over the relevant material. Start on it ASAP, at least trying to understand it.
6) Start each lab a week in advance of the due date, generally immediately after your prior lab is done.
7) When you do not understand something, immediately ask a question in class, slack, or go to the next PI, or faculty office hour.
8) If there are help sessions, participate!
9) Before exams, complete several practice exams. Do these **BEFORE** the exam help session(s) and then go to the help sessions to see the PIs solve those exams.

EEL 3701 Schedule: Part 1 of 2

WEEK/DAY		DATE	LAB	LECTURE	Tentative Weekly Topics / Comments
1	M		No lab	No class	UF classes begin (but not ours!)
1	Tu		No lab	1-2	Syllabus, web site; Digital Design, Basic Logic
1	W		No lab		Intro. to Quartus
1	Th		No lab	3	
1	F		No lab		**Drop/Add ends Friday at 11:59pm**
2	M		No lab	No class	
2	Tu		0	4-5	Truth (Logic) Table / Voltage Table
2	W		0		Mixed Logic
2	Th		0	6	ICs, introduction to mixed, positive, and negative logic
2	F		0		
3	M		0		Number Systems, Math;
3	Tu			7-8	Boolean Algebra
3	W				MSOP, MPOS, Simplification
3	Th			9	MSI: MUX, deMUX, decoder
3	F				
4	M				More MSI: encoder, adder, BCD 7-seg decoder
4	Tu			10-11	Introduction to sequential circuits: Flip-flops K-maps; Design with flip-flop, Counter design, Debouncing
4	W				
4	Th		1	12	
4	F		1		
5	M		1		
5	Tu		1	13-14	Even more MSI: tristate buffer, ALU
5	W		1		MSI sequential circuits - Registers, counters; next state truth tables/excitation tables
5	Th		2	15	
5	F		2		
6	M		2		RAM/ROM; ASM, Moore & Mealy Machines
6	Tu		2	16-17	
6	W		2		
6	Th			18	
6	F				
7	M		3		More ASM Design; Registered ALU
7	Tu		3	19-20	RAM/ROM expansion
7	W		3		Help Session
7	Th		3	21	
7	F		3		

EEL 3701 Schedule: Part 2 of 2

WEEK/DAY		DATE	LAB	LECTURE	Tentative Weekly Topics / Comments
8	M				~~Practical 1~~:
8	Tu			22-23	Introduction to VHDL
8	W				ASM implementation, ASM design examples
8	Th			24	ASM with ROMs
8	F				
9	M	12-Oct			~~Exam 1:~~
9	Tu	13-Oct		25-26	Catchup
9	W	14-Oct			
9	Th	15-Oct		27	
9	F	16-Oct			
10	M	19-Oct	4		Parallel vs Serial
10	Tu	20-Oct	4	28-29	
10	W	21-Oct	4		IC Characteristics
10	Th	22-Oct	4	30	PLAs, PALs, CPLDs, FPGAs
10	F	23-Oct	4		
11	M	26-Oct			**Exam 1: Mon, 26 Oct, 8:20pm**
11	Tu	27-Oct		31-32	Introduction into computer architecture
11	W	28-Oct			
11	Th	29-Oct		33	Addressing modes, Data transfer instructions
11	F	30-Oct	**(Lab 5 due Sun)**		
12	M	2-Nov	5		Basic computer operation cycles and timing
12	Tu	3-Nov	5	34-35	Instruction set & assembly programming examples
12	W	4-Nov	5		
12	Th	5-Nov	5	36	
12	F	6-Nov	5		
13	M	9-Nov			
13	Tu	10-Nov		37-38	**Practical: Tues, 10 Nov, 8:20pm**
13	W	11-Nov	No class **(Lab 6 due Wed)**		**Holiday: Veteran's Day**
13	Th	12-Nov	6	39	
13	F	13-Nov	6		
14	M	16-Nov	6		**DROP DEADLINE at 11:59pm**
14	Tu	17-Nov	6	37-38	G-CPU, Memory Maps
14	W	18-Nov	6		~~Practical 2~~:
14	Th	19-Nov		39	
14	F	20-Nov			
15	M	23-Nov	No class		**Holiday: Thanksgiving**
15	Tu	24-Nov	No class	37-38	**Holiday: Thanksgiving**
15	W	25-Nov	No class		**Holiday: Thanksgiving**
15	Th	26-Nov	No class	39	**Holiday: Thanksgiving**
15	F	27-Nov	No class		**Holiday: Thanksgiving**
16	M	30-Nov			Special topics
16	Tu	1-Dec		40-41	
16	W	2-Dec			
16	Th	3-Dec	No lab	No class	Reading Day
16	F	4-Dec	No lab	No class	Reading Day
Wed		9-Dec		Final Exam	**Final Exam: Wed, 9 Dec, 10:00am**