**[EE2441:](https://wiki.uta.edu/display/EE/EE2441+Digital+Circuits+and+Microprocessors+I+Spring+2015)** [Digital Circuits and Microprocessors I](https://wiki.uta.edu/display/EE/EE2441+Digital+Circuits+and+Microprocessors+I+Spring+2015)

[Spring 2015](https://wiki.uta.edu/display/EE/EE2441+Digital+Circuits+and+Microprocessors+I+Spring+2015)

**Instructor:** Greg Turner – Senior Lecturer

**Office Number:** NH 252C

**Office Telephone Number:** TBD

**Email Address:** [gkturner@uta.edu](mailto:gkturner@uta.edu)

**Faculty Profile:** <https://www.uta.edu/profiles/gregory-turner>

**Office Hours: MW 1:30pm - 3:30pm. (or by appointment)**

**Section Information:** EE2441-001 (25843), EE2441-101, 102, 103 (25844), (25845), (25846)

**Time and Place of Class Meetings:** T-Th 8am – 9:20pm – Nedderman Hall (NH) 110

Labs: section 101 – Tu 7 – 9:50pm NH 148A

section 102 – Th 5 – 4:50pm NH148A

section 103 – F 1pm – 3:50pm NH 148A

**Description of Course Content:** Theory and design of digital logic circuits. Number systems and binary arithmetic. Boolean function theorems and minimization by algebraic and mapping methods, logic gates, arithmetic logic units, multiplexers/ de-multiplexers, analysis and synthesis of combinatorial logic circuits, read-only memory (ROM) memories, programmable logic arrays (PLAs), introduction of synchronous and asynchronous state machines, hazards and races in pulse mode and fundamental mode state machines. Introduction to embedded computer systems. Laboratory consists of "proof of concept" experiments using digital components. Prerequisite: CSE 1311 with grade of C or better.

**Student Learning Outcomes:** Students should be able to perform numerical calculations in binary and hexadecimal format. Students should understand the function of logic gates, how they connect and operate together as a system. Students should be able to design and optimize a system using digital logic. Students should receive an introductory exposure to systems design in the form of state machines and Microcontrollers.

**Required Textbooks and Other Course Materials:**

* Fundamentals of Logic Design, 7th edition, Roth & Kinney.
* Multisim (Digital Circuit Simulation Software) - <http://www.ni.com/multisim/>
* General computer skills are expected (email, word processing)
* Breadboard, wire cutters, pliers, breadboard wire, 9V battery.

**Descriptions of major assignments, examinations, grading:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Point Values for Activities** | |  | **Percentages for Grades** | |
| Midterm Exam | 25% |  | 90% --100% | A |
| Quizzes (3 or 4) | 10% |  | 80% -- 89% | B |
| Homework | 10% |  | 70% -- 79% | C |
| Labs | 30% |  | 60% -- 69% | D |
| Final Exam | 25% |  | 0% -- 59% | F |

**Homework:** Homework is due at the beginning of class. **No late submissions will be accepted.** Some homework will include the submission of simulation files created in Mulitsim. Any file that is flagged as infected with malware or viruses will be receive a grade of zero. I use Norton Internet Security, please use something at least as good.

**Attendance:** At The University of Texas at Arlington, taking attendance is not required. Rather, each faculty member is free to develop his or her own methods of evaluating students’ academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I will not take attendance and students may attend lecture periods at their own discretion. However, homework, exams and labs will be heavily based on material presented during the lecture. All quizzes and exams must be taken during class time. I do request that students come on time and stay for the entire lecture. You don’t even have to listen to the lecture but please silence your phone and refrain from talking.

**Drop Policy:** Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aao/fao/>).

**Americans with Disabilities Act:** The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability) or by calling the Office for Students with Disabilities at (817) 272-3364.

**Title IX:** The University of Texas at Arlington is committed to upholding U.S. Federal Law “Title IX” such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX).

**Academic Integrity:** Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

*I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

*I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents’ Rule* 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University.

**Lab Safety Training: Students registered for this course must complete all required lab safety training prior to entering the lab and undertaking any activities.** Once completed, Lab Safety Training is valid for the remainder of the same academic year (i.e., through the following August) and must be completed anew in subsequent years. There are no exceptions to this University policy. Failure to complete the required training will preclude participation in any lab activities, including those for which a grade is assigned.

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory” shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

**Final Review Week:** A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

**Student Support Services**:UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to [resources@uta.edu](mailto:resources@uta.edu), or view the information at [www.uta.edu/resources](http://www.uta.edu/resources).

**Writing Center.** **:** The Writing Center, 411 Central Library, offers individual 40 minute sessions to review assignments, *Quick Hits* (5-10 minute quick answers to questions), and workshops on grammar and specific writing projects. Visit [https://uta.mywconline.com/](https://owa.uta.edu/owa/luket@exchange.uta.edu/redir.aspx?C=jqplelmmw0KcvkWv1pRv_rHS8ofUUtFIXl_CWZTLffEmCPyZf3x4ncUbBmD9p3gSPROCbhSJj7U.&URL=https%3a%2f%2futa.mywconline.com%2f) to register and make appointments. For hours, information about the writing workshops we offer, scheduling a classroom visit, and descriptions of the services we offer undergraduates, graduate students, and faculty members, please visit our website at [www.uta.edu/owl/](http://www.uta.edu/owl/).

**Librarian to Contact:** <http://www.uta.edu/library/help/subject-librarians.php>

**Schedule (see Wiki page)**

I do reserve the right to adjust the schedule in order to serve the needs of the class and any changes will be communicated in a timely manner.

**Lab Assignments**

There will be up to 9 Lab Assignments distributed over the semester, including a Design Project at the end. Students will work individually. Lab assignments will be 20% of your grade. Final Lab project will be another 10% of total 30% lab grades.

Prelabs must be completed prior to coming to lab. Students will be turned away from the Lab if the Prelab is not complete.

Lab circuits must be built during Lab on an empty breadboard. They may not be built prior to the Lab period. You need to have your own Breadboard and wires and tools. At the end of each lab, you will be asked to demonstrate your functioning circuit to the GTA.

Formal Lab Reports should follow the same approach used in the lab, which is a Hypothesis/Test sequence. In Prelab, you will be asked to design a circuit to perform a specific function. During the lab time you built the circuit and collected test data to show how the circuit performed. The report, then, should be constructed as follows:

1. Introduction

2. Problem Statement

3. Explanation of the derived solution

4. Schematics developed that demonstrate the solution

5. Tests used to prove the solution worked. One of the tests should be a MultiSim simulation

of your work. Include in your report a copy of the MultiSim schematic.

6. A schematic drawing of the solution you built in lab.

7. Tables showing the data acquired

8. Observations made while performing the-lab

9. An explanation of your results

10. Summary

11. Learning Statement

A Formal Lab Report should enable someone else to duplicate your work and obtain the same results without reference to any other documents. This does not mean that you should append data sheets to your report but that the schematics and parts layout should be clear and accurate.

Submit the files containing the circuit simulation, a schematic, and data which explain the lab results you obtained. Graphics must be created using a graphics program. Acceptable programs are MultiSim, Visio, PowerPoint, or similar graphics programs. Graphics in your lab reports may **not** be hand-drawn.

Lab Reports are due as hardcopy and by email before lab time one week after the lab was performed. 10% per day will be deducted from the final lab grade for each 24 hours or portion thereof that a lab is late. Labs are to be submitted to BOTH the Instructor and the Lab GTA. Please use proper email subject for the lab reports.

We recommend that you purchase (if you do not own them already) the following tools and supplies: Needle-nosed pliers, wire cutters (also called diagonal cutters), wire strippers, a breadboard (you should already have one, but if not, you can purchase one from [Frys](http://www.frys.com/product/4612328?site=sr:SEARCH:MAIN_RSLT_PG) ) and wire (also available from [Frys](http://www.frys.com/product/4612408)). Each student must possess a breadboard with the student’s name conspicuously written on the breadboard.

**Emergency Phone Numbers**: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911.

**Sign and Submit Statement on Ethics, Professionalism:**

The following is an excerpt from the College of Engineering's statement on Ethics, Professionalism, and Conduct of Engineering Students.  Read the statement carefully.

If you did not fill out and sign a similar statement on the first class day, use the form below. Complete it and return it to your instructor as soon as possible.   Retain a copy of this for your records.

**STATEMENT ON ETHICS, PROFESSIONALISM, AND CONDUCT OF ENGINEERING STUDENTS**

**COLLEGE OF ENGINEERING**

**THE UNIVERSITY OF TEXAS AT ARLINGTON**

**(FALL 2014 – EE2441)**

The College cannot and will not tolerate any form of academic dishonesty by its students.  This includes, but is not limited to 1) cheating on examination, 2) plagiarism, or 3) collusion.

Definitions:

A.  Cheating on an examination includes:

1.   Copying from another's paper, any means of communication with another during examination, giving aid to or receiving aid from another during examination;

2.   Using any material during examination that is unauthorized by the proctor;

3.   Taking or attempting to take an examination for another student or allowing another student to take or attempt to take an examination for oneself.

4.   Using, obtaining, or attempting to obtain by any means the whole or any part of an un-administered examination.

B.   Plagiarism is the unacknowledged incorporation of another's work into work which the student offers for credit.

C.  Collusion is the unauthorized collaboration of another in preparing work that a student offers for credit.

I have read and I understand the above statement.

            Student's signature:                   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_

            Student's name, printed:            \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

            Students' ID number:    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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