



Electrical and Computer Engineering Department
EE 4142 Digital Systems Design II -Laboratory
Spring 2017

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Office hours –Tuesday & Thursday 12:00PM –1:00PM

Course Description:

Design and verification of digital systems using simulation. Laboratory implementation using standard, integrated circuits and programmable logic devices. **Corequisite: EE4342.**

Overall Design Sequence:

- I. Design Creation (Schematic or HDL)
- II. Synthesis (Create design into a gate-level netlist)
- III. Constraints (Specify timing constraints and I/O assignment)
- IV. Implementation (Compile design into place and route design)
- V. Result Analysis (Run a test bench and look at ISM simulation results to make corrections if necessary)
- VI. Debug (Close ISM, edit, and try again)
- VII. Device Programming (Download design into device)

Laboratory Guidelines:

Each lab is divided into four important tasks:

1. **Pre-lab** – Students will get the corresponding pre-lab handout during the week *before* going to the lab session. Students are responsible for completing the pre-lab and need to turn it in of it for grading (and keep a copy for them to bring to lab session). Group discussion among students is allowed, but each individual must submit their own work. The pre-lab includes important preliminary design of the lab assignment.
2. **Demonstration** – Students need to show up to their lab session with their pre-lab copy in hand. After completing the lab assignment work, students need to demonstrate their results to the instructor *before* the end of their lab session. Students must have pre-lab and working circuit (in software or hardware) ready at time of demonstration. Demonstration will begin well before the session ends to give opportunity to all students to show their work. Demonstration consists of:
 - a. Completed circuit in **schematic** form
 - b. **Simulation** of completed circuit
 - c. Show working circuit on implementation **board**
3. **Quiz** – During demonstration, students should be ready to answer questions pertaining to the lab as part of their grade.

4. **Lab report** – Students must prepare a lab report, and turn it in by the due date. When the lab is performed using the software designing tool, the report **must** contain the screen capture/files of each schematic and waveform output (print-out) of the simulations. The lab report will include 5 things:
- Cover page** - With student's name, lab name, lab session, lab number, and due date
 - Instrumentation used** – Software and/or hardware used
 - Design Implementation** – Print out of **CLEARLY LABELED** schematic(s) and any coded modules (with corresponding comments beside the code)
 - Results** – Print out of simulation (waveforms)
 - Conclusion** – Paragraph about the assignment and lessons learned
- * Points will be deducted for each item that does not follow the format

Grades

Grading will be based on the standard scale

90% > A
 80% - 89% = B,
 70% - 79% = C,
 60% - 69% = D,
 Below 59% = F.

Point distribution for each lab:

Pre-lab.....20%
 Demonstration
 Schematic20%
 Simulation20%
 Board20%
 Quiz10%
 Lab report.5%
 Inst. Assessment5%

Graduate Students:

If you are a graduate student taking this course as part of your degree plan, please note that you are responsible for completing all work required of undergraduates and, in addition you are expected to:

- * Complete a final project (worth 10 % of the final grade) – it will include hardware implementation
- * Successfully complete **each** of the labs
- * Maintain an 80% average (minimum) on each of the Lab assignments

Failure to comply will warrant a failing grade in the course

Course & University Policies

Attendance: Attendance is **mandatory** and is key to your success in the lab. If you miss a lab session, you are responsible for obtaining notes, handouts, and assignments and for meeting the same deadlines as the rest of the class. **No make-up labs will be given.**

Center for Accommodations and Support Services (CASS):

Students requiring unique accommodations must contact the CASS office and provide their instructor with the proper documentation at the beginning of the semester. CASS office may be contacted at 747-5148, cass@utep.edu or go to Room 106 Union East Building

Scholastic Integrity/Academic Honesty:

Any form of academic dishonesty **will not be tolerated**. "Plagiarism" is the unattributed use of someone else's work -- a classmate's, a website's, even a teacher's from another course. In accordance with University regulations, scholastic dishonesty on a given assignment **will** be subject to disciplinary action and **will** be referred to the Dean of Students. Dishonesty/cheating/plagiarizing may result in a zero on the assignment, an "F" in the course, or even suspension from the university. If you need assistance with your assignments, please consult authorized sources of help. For more information on Scholastic Dishonesty and/or Plagiarism, consult the Handbook of Operating Procedures: Student Affairs, which is available in the Office of Student Life.