

**EE 2169 – “Lab for EE 2369”**  
**Digital Systems Design I Lab- Updated for Online mode**

**Updated for Online Mode:**

The following text in green was added to the syllabus. The modifications to our previous syllabus (starting at bottom of Page#3) are denoted by **yellow highlighted text**. Please also refer to the companion document titled “Adjustments to EE2169 for Online Mode” (A.K.A ‘To-Do’ list)

Due to the extraordinary crisis situation we are all going through; we will have to complete the semester in 100% online mode. We will need mutual collaboration, flexibility and understanding of the great challenges this situation has caused on both students/instructors.

**Please keep in mind the following:**

- Some assignments are no longer possible
- Some expectations are no longer reasonable
- The implementation of some policies is no longer feasible, hence they will no longer be available

**In order to continue your academic progress related to this class we will have:**

- Accessible **asynchronous** content to accommodate diverse access, time zones, and contexts. Please be proactive and continue your academic activities by diligently keeping track of your own progress and by **working at your own time** (to allow flexibility for everyone’s schedule). Make sure to **accesses all the additional resources posted on Blackboard (recorded-mini-lectures, ‘how to..’ instructions, reference materials)** and **meet the posted deadlines (explicit calendar** has been made available to help you keep track of what you need to do). You will be able to submit your prelab and report by an electronic submission using the upload links
- Incorporate **online tools** for content delivery, assessment submission (hence **you will need a device that provides you access to these tools** in order to complete your preparation and to participate in all assessment activities. Complete the “To-Do List” contained in the document titled “Adjustments to EE2169 for Online Mode”
- **Synchronous demonstration sessions** will take place during your regularly scheduled sessions (same day, same time). During this live-session you will have the opportunity to demonstrate your work to the TA by sharing your screen in the Blackboard Collaborate Ultra environment. If you need **help** with your project, please use these **collaborate sessions as well at the Virtual Office hours** of TAs and Tutors for live one-on-one communication opportunities.

**Prepare for Online mode:** Read the companion document called “Adjustments to EE2169 for Online Mode” and complete the included “To-do” list in order to be ready to participate in the online version of our class.

**EE 2169 – “Lab for EE 2369”**  
**Digital Systems Design I Lab- Updated for Online mode**

**Temporary Satisfactory/Unsatisfactory (S/U) Policy for Spring 2020 Courses:**

Our course is eligible and **we have opted-in** on this grading policy option to provide individual students to make the choice of grading mode. A passing grade will appear on student transcripts as an “S” (satisfactory), and a failing grade will appear as a “U” (unsatisfactory). Neither an “S” nor a “U” will calculate into the student GPA. A grade of “S” will meet prerequisite requirements and count toward major/minor requirements.

Therefore, **each individual student will have two grading modalities to choose from:**

- Any student can decide to **remain in the traditional letter-grading mode** (*no need for further action*) **or**
- Any student can decide to **take the S/U option**. Please note **the criteria in this course for getting an S will be a grade of “C” or better**. The student **must declare their wish to take this course as S/U** by submitting their declaration form **by the deadline of May 7<sup>th</sup>2020**. Also, please note that **once you make your declaration it is irreversible**.

Scale for Letter Grade mode:	Satisfactory /Unsatisfactory (S/U) Grading:
90% – 100% → A	A student who declared a change in grading mode to S/U modality will get: S -- if they meet the criteria to receive an A or a B or a C in the lab.  U – if they had the criteria to receive a D or F in the lab
80% – 89% → B	
70% – 79% → C	
60% – 69% → D	
0% – 59% → F	

Before making any decision, please discuss your options with your **advisor** to determine which grading mode would be appropriate for you. Before electing the S/U grading option, students should inquire if the S/U grade will, (1) negatively influence your transcript when applying to graduate or professional schools, or (2) be appropriate if you need to increase your GPA. To learn more about the implications of this S/U policy, click [here](#) for frequently asked questions regarding the S/U option. If you should determine that the S/U option is appropriate for you, please fill out [this form](#) and return it to [records@utep.edu](mailto:records@utep.edu) before the deadline of May 7<sup>th</sup>. An annotation will go into every student’s official transcript indicating that the S/U grading mode was utilized due to the national health crisis.

**Temporary Course Drop Policy for Spring 2020 Courses**

The deadline to drop a course has been extended to May 7, 2020. Courses dropped in the Spring 2020 semester will receive a grade of “W” (withdrawal) and will not count toward students’ six-course drop limit. Students who elect to drop a Spring 2020 course do not need written approval from advisors or instructors. To drop a course, students should simply email [records@utep.edu](mailto:records@utep.edu) from their Miners email account and include:

**EE 2169 – “Lab for EE 2369”**  
**Digital Systems Design I Lab- Updated for Online mode**

(1) their name, (2) student ID, (3) course name (e.g. EE 2169), and (4) the course CRN (e.g. 27036). The temporary change applies to students who will remain enrolled in at least one class at the institution for the Spring 2020 semester. Dropping *all* courses is considered a complete withdrawal and follows a [separate policy](#).

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**Lab Description:** Implementation and testing of combinational and sequential digital systems.

**Text:** none

**Required Materials:**

- 1) Internet connection that allows one-on-one video conferencing via Blackboard Collaborate Ultra
- 2) Device capable of running Xilinx ISE 14.7 {installed on your device or accessed via MyApps or via VPN to a local work station in any of the two Laboratories} – instructions have been posted . If you need help please look at the discussion boards and if needed post your question or reach out via email

**Prerequisite:** EE 1305 and EE 1105, each with a grade of “C” or better; or CS 1301 and CS 1101, each with a grade of “C” or better; or CS 1401 with a grade of “C” or better.

**Co-requisite:** EE 2369 (Digital Systems Design I). There are hardware projects and software simulation projects, performed in this lab, that are associated with this class. The student is responsible for completing the labs, and meeting with the Teaching Assistant at the formally scheduled time assigned to the section in which the student registered. Please note that the lab is 1 credit hour, and the grade for that lab is calculated separately from the grade in this class.

**Course Outcomes:**

At the end of this course students will be able to:

- Utilize the standard design sequence outlined below to create Digital Logic Systems;
- Use the Xilinx ISE development environment to implement designs;
- Implement Digital Logic Systems in various forms;
- Use the Xilinx Spartan 3 (or similar) FPGA Chipset as target hardware for implementation; and
- Design via Verilog (HDL) or schematic capture modules found in the development platform.

**Design Sequence:**

- 1) Design Creation (schematic capture or HDL)
- 2) Synthesis (create design into a gate-level netlist)
- 3) Constraints (specify timing constraints and I/O assignment)
- 4) Implementation (compile design into place and route design)
- 5) Result Analysis (run a test bench and look at ISM simulation results to make corrections if necessary)
- 6) Debug (close ISM, edit, and try again)
- 7) Device Programming (download design into device)

**EE 2169 – “Lab for EE 2369”**  
**Digital Systems Design I Lab- Updated for Online mode**

**Course Policies:**

- You are required to attend the section of Lab in which you are registered, and to be on time.
- Pre-Lab Assignments are work assignments to be completed in preparation for your lab attendance.
- Pre Lab work should be submitted on BlackBoard, by the deadline indicated.
- Pre-Lab work is typically done by hand, so it can be scanned and uploaded to BlackBoard. DO NOT submit pictures of your Pre-Lab work, make sure your submission is a PDF file.
- Lab assignments should be completed during the lab session. Each student must present a working demonstration of the lab assignment to the instructor **before the end** of the lab session in order to earn full credit. Getting assistance or assisting other students is allowed, as long as one student does not perform the other’s lab procedure.
- Lab Reports are due by the date indicated on BlackBoard, and must always be written by each student individually and uniquely in his/her own style. NOTE: there is a handout on PROFESSIONAL ENGINEERING WRITING STYLE in the “Getting Started” folder on BlackBoard.
- A Lab Report TEMPLATE, as well as Lab Assignments are provided on BlackBoard. This will allow you to use MSWord and create your individual Lab Report (complete with screenshots of your circuit, simulation and/or implementation). Once completed, you can save as a PDF document and upload to BlackBoard.
- Late assignments will NOT be accepted without **written** medical, legal, military, or work justification. Special circumstances will be considered if reported in time. Makeup labs are by appointment only.
- Samples of student work will be collected for quality assurance purposes. Please notify the professor, in writing, if there is any confidentiality requirement about any work that is submitted.
- All work must have good presentation for full credit.

**Lab Guidelines**

Each lab is divided into three important tasks: *Pre-lab, Demonstration, and Lab Report*. Students can access the instructions for the PRELAB on the LAB HANDOUT, available on BlackBoard. Students are responsible for working on the PRELAB, which is hand written and typically includes a preliminary design for the lab assignment. Note that this work is to be completed prior to lab, and uploaded to Black Board by the deadline indicated on BlackBoard. The PRELAB will be graded.

The Laboratory (Procedure) will be carried out during the formal assigned lab period.

Group discussion is strongly recommended, but each individual must submit their own work.

Apart from the assigned TA for your lab there are other TAs, administering different lab sections, to help with questions. However, completed labs can only be checked by the assigned TA. If a student fails to demonstrate work during the lab “checkout” time, arrangements must be made to demonstrate the circuit during another designated time and points will (potentially) be deducted. At the start of the lab session students should have their PRELAB on hand. Before calling the TA for demonstration of your circuit operation (“checkout”), make sure everything is ready (graded/corrected PRELAB, circuit to be tested in software or physically wired on the bread-board). Also, students should be prepared to answer questions pertaining to the lab. If the circuit doesn’t work at checkout time, the lab will be graded for partial points. Extra time will be allotted, but points will be deducted, as deemed necessary.

**EE 2169 – “Lab for EE 2369”**  
**Digital Systems Design I Lab- Updated for Online mode**

You must submit a formal lab report with neatly drawn figures, diagrams, or embedded screenshots, as necessary. The lab report will include a cover page showing your name, lab name, lab number, due date. The graded PRELAB will be the first page(s). The written report format should contain the following sections:

- Objective
- Equipment Required
- Procedure and Testing/Verification/Results
- Conclusion (questions are typically provided to guide the student)

An MSWord Template will be provided for the Lab Report. If the lab included generation of an HDL program, please make sure that a listing of the program is included (either embedded in the report, or attached as an Appendix to the Report), and ensure that it has the required comments and documentation.

**Course Grading:**

**Scale for Letter Grade mode:**

90% – 100% → **A**  
80% – 89% → **B**  
70% – 79% → **C**  
60% – 69% → **D**  
0% – 59% → **F**

**Satisfactory /Unsatisfactory (S/U) Grading:**

A student who declared a change in grading mode to S/U modality will get:

**S -- if they meet the criteria to receive an A or a B or a C in the lab.**

**U – if they had the criteria to receive a D or F in the lab**

**Lab Grading Rubric:**

Pre-Lab/Quiz ..... 30 pts → **Uploaded\*** via Blackboard “assignment” link  
Lab Demonstration ..... 30 pts → **Demo** via Blackboard Collaborate Ultra session during corresponding Lab session (keep **same meeting day & time** as given on Goldmine enrollment)  
Formal Lab Report ..... 20 pts → **Uploaded\*\*** via Blackboard “assignment” link  
Conclusions ..... 20 pts → (Included in the Lab report)

**\*Uploaded Prelab** work may be handwritten but afterwards **MUST be transformed into a single legible PDF file**. If you do not have access to a scanner, you may use other tools/programs in your computer or a smartphone application that creates a **single-PDF-file** from multiple captures made from your phone’s camera. Such applications allow you to edit/add/remove pages/images and create a final PDF document. Such file must be organized in corresponding order and the name of the file must follow this format: **“Lastname\_Prelab#X”**

**\*\*Uploaded reports MUST be submitted as a SINGLE PDF document**. File must be legible, items must be organized in corresponding order and the name of the file must follow this format: **“Lastname\_Report#X”**

**EE 2169 – “Lab for EE 2369”**  
**Digital Systems Design I Lab- Updated for Online mode**

**Lab Report Guidance:**

You will be provided with a Lab Assignment (write-up) on a weekly basis. It will have a short reading assignment, Pre-Lab assignment (preparation for the lab), Lab Procedure, and some guiding questions for writing your conclusion.

**Pre-Lab:**

- Calculations (tables, diagrams, K-maps, etc.)
- Justifications – 1 paragraph

**Lab Procedure and Results:**

- Steps involved in the procedure
- Schematics, HDL, screenshots (pictures), Simulation, etc.
- Justifications – 1 paragraph
- Notes on any problems encountered, and solutions implemented

**Demonstration:**

- **Demonstrate working software, simulation Teaching Assistant**

**Conclusions:**

- Discussion of the objective of the lab (given in the Lab Assignment), and what was learned during this lab. Answer questions given in the Lab write-up, which are intended to guide your conclusions.

Some general questions that could be addressed here are:

- What is the relationship between the course lecture and how you implemented this lab?
- Comment on expected and unexpected results during the lab procedure.
- How is what you did in this Lab seen in technologies in the real world? Give examples.

**Academic Dishonesty:**

As an entity of The University of Texas at El Paso, the Department of Electrical and Computer Engineering is committed to the development of its students and to the promotion of personal integrity and self-responsibility. The assumption that a student's work is a fair representation of the student's ability to perform forms the basis for departmental and institutional quality. All students within the Department are expected to observe appropriate standards of conduct. Acts of scholastic dishonesty such as cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in the whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student, or the attempt to commit such acts will not be tolerated. Any case involving academic dishonesty will be referred to the Office of Student Conduct and Conflict Resolution (OSCCR). See the OSCCR homepage at <http://sa.utep.edu/osccr/> for more information.

**American Disabilities Act:**

If you feel you may have a disability that requires accommodations, contact the Center for Accommodations and Support Services (CASS, <http://sa.utep.edu/cass>) at 747-5148 located in the Union East, Room 106.