

# EE 2369 – Digital Systems Design I

## Fall 2019

**Instructor:** Dr. P. Nava  
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**Office Hours:** 3:30 - 5:00 Monday  
12:30 - 1:30 Wednesday  
4:00 - 5:00 Wednesday  
Other times by appointment

**Text:** Digital Design with an Introduction to Verilog, 6<sup>th</sup> Ed. by M. M. Mano and M.D. Ciletti

**Course Description:** Design and synthesis of digital systems using both combinational and sequential circuits.

**Course (Learning) Outcomes:** (critical outcomes shown in italicized boldface)

*After successful completion of this course, students will be able to:*

1. Apply concepts of number systems to perform binary arithmetic and conversions
2. **Analyze & synthesize digital circuits, both combinational & sequential**
3. Design combinational circuits, such as binary adders, code converters, etc., by using logic gates
4. Design sequential circuits, such as counters, registers, etc., by using flip-flops and other hardware
5. Design, simulate or implement, and test digital circuits, both hands-on (using physical devices) and with CAD tools
6. **Solve engineering problems with the Algorithmic State Machines (ASM) technique**
7. **Design, simulate, and test digital circuitry using Verilog Hardware Description Language**
8. Design, implement, and test digital circuitry by prototyping designs using the selected development system

**Prerequisite:** EE 1305 or CS 1301 with a grade of “C” or better.

**Co-requisite:** EE 2169 (Lab for EE 2369). 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 Grading & Scale:

Homework/Quizzes .....20%  
Exams (4 equally weighted)<sup>1</sup> ..... 75%  
Instructor assessment .....5%

### Scale:

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

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<sup>1</sup> Grade is based on 3 exams, the lowest of the 4 will be dropped.

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### Course Policies:

- Attendance is mandatory, and may be used in the “Instructor Assessment” portion of the grade.
- If you are in attendance, *be in the moment*. Working on something else, texting, using your phone, disrupting class, or snoring will not be allowed... you will be asked to leave.
- The class is not dismissed until I dismiss it.
- Assignments must be completed by the deadline indicated.
- You are responsible for doing the homework, even though it may or may not be collected. Doing the homework is imperative, since the quizzes will be problems from the homework. You may collaborate on the homework (note that collaboration and studying together is not the same as copying or any form of academic dishonesty).
- All submitted work must have **Name, course, and assignment number** located in the **upper right corner** of the first page, with **name** (only) on all subsequent pages. A sample is provided on the last page of this handout.
- All printed work must be stapled, with good presentation. Final results must be emphasized (via box enclosing final results, if applicable).
- No late work will be accepted – however, special circumstances will be considered, if reported in time.
- Exams are on Fridays, outside of normal class meetings, and you will be asked to provide your official UTEP ID prior to getting the exam. (NOTE: without proper ID, you will not be allowed to take the exam.)
- Exam dates are provided on the associated handout entitled “Important Dates.”
- Most communication will be via email, therefore all email concerned with this course should have an “EE 2369:” prefix to the subject. An example is provided on the last page of this handout.
- Samples of student work will be collected for quality assurance purposes. Please notify the professor, in writing, if there is any confidentiality requirement.

**Tutor:** Diego Herrera Calzada

Location: IEEE Lounge (Engineering Building, Room E-337)

Tutoring Hours: MW - 11 am to 2 pm

TR - 1:30 pm to 3 pm

F - 12 pm to 2 pm

### 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). The Associate Dean of Students will assign a Student Judicial Affairs Coordinator who will investigate the charge and alert the student as to its disposition. Consequences of academic dishonesty may be as se-

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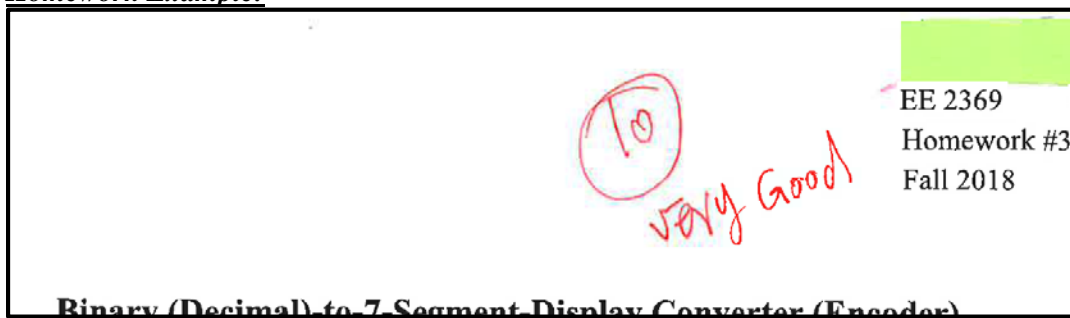
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vere as dismissal from the University. See the OSCCR homepage at <http://sa.utep.edu/osccr/> for more information.

### American Disabilities Act:

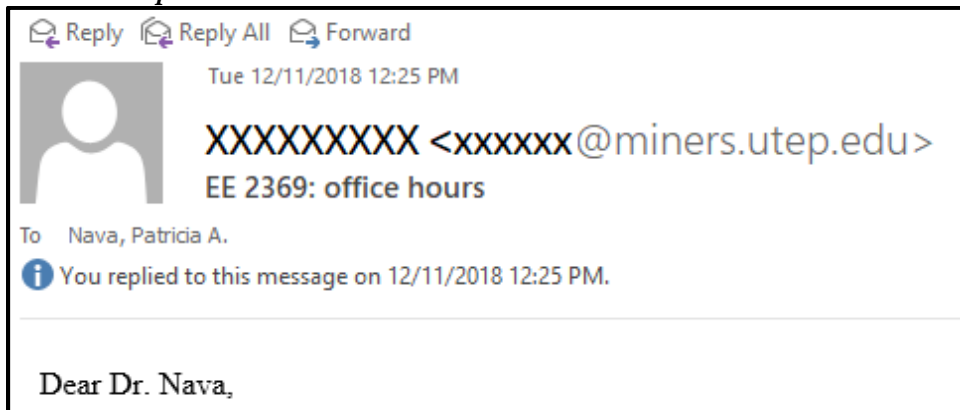
If you feel you may have a disability that requires accommodations, contact the Center for Accommodations and Support Services (CASS, <http://sa.utep.edu/cass>) at 747-5148 located in the Union East, Room 106.

### Homework Example:



The screenshot shows a document titled "Binary (Decimal) to 7-Segment Display Converter (Encoder)". In the center, there is a handwritten red circle containing the number "10" and the phrase "Very Good" written in red cursive. To the right, there is a green rectangular box containing the text "EE 2369", "Homework #3", and "Fall 2018".

### Email Example:



The screenshot shows an email interface with the following elements:

- Buttons: Reply, Reply All, Forward
- Date and Time: Tue 12/11/2018 12:25 PM
- Sender: XXXXXXXXXX <xxxxxxx@miners.utep.edu>
- Subject: EE 2369: office hours
- To: Nava, Patricia A.
- Info icon: You replied to this message on 12/11/2018 12:25 PM.
- Body text: Dear Dr. Nava,