

University of Texas at El Paso
EE 4342: Digital Systems Design II
Spring 2017

CRN: 21391

Class time: TR 10:30AM-11:50AM

Classroom: PSCI 222A

Instructor Professor Miroslava Barúa

Phone (915) 747-5720

Office E320 (Engineering Bldg.)

E-mail miroslav@miners.utep.edu

Office Hours TR 12:00PM –1:00PM or by appt.

Required Course Materials

1. Textbook: “**Logic and Computer Design Fundamentals**”, **4th Edition**, by M. Morris Mano and Charles R. Kime (2008). Pearson Prentice Hall.
2. Use of **@miners** e-mail account and **Blackboard** for class resources, announcements and submitting certain assignments.

Course Description: In Digital Systems Design II you will learn about design techniques for complex digital systems, with emphasis on computer hardware design and computer- aided techniques, including hardware description languages and hardware simulation packages. Algorithmic State Machine design is stressed for small systems. Emphasis on problem definition, design, and verification.

Prerequisite: EE 3376 with a grade of "C" or better. Prerequisite by Topic: (1) combinational and sequential digital design techniques (2) basic microprocessor architecture (3) assembly language programming (4) High-Level language programming.

Corequisite: EE 4142 must be taken concurrently with EE 4342.

Students completing EE 4342 will be able to:

1. Apply different design methods for digital circuitry from problem statement to physical implementation
2. Use good design techniques, especially top-down design such as the ASM method.
3. Recognize and apply typical hardware constructs for processing units.
4. Recognize and apply typical hardware constructs for control units: hardwired and microprogrammed.
5. Write microcode using standard microcoding techniques
6. Use computer aided tools to simulate and verify designs
7. Find information on specific chips and how to obtain application notes

Topics Covered:

1. Review of combinational and sequential digital design techniques, HDL representation, memory components and PLDs
2. Algorithmic State Machine (ASM) design procedure
3. Datapath (CPU) operations and design; design of a control word
4. Sequencing and Control: hardwired and microprogrammed
5. Instruction set architecture
6. I/O, communication and memory systems (if time allows)

Grading & Course Assignments

There will be no curving of grades in this course.

Grading will be based on the standard scale:

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

| Course Assignment Distribution: | |
|-----------------------------------|------------|
| 3 Exams (equally weighted) | 75% |
| Homework & Quizzes | 20% |
| Instructor Assessment | 5% |

Exams: Each exam (1, 2 and final) will assess your knowledge of the digital systems design techniques studied during each period of the course. All exams are closed book/closed notes and no calculators allowed. I expect you to use your own class notes, problem sets, quizzes, handouts and textbook as your study guide. **No make-up exams will be given.** If there is an extenuating circumstance that can cause a student to miss one examination and the circumstance warrants an excused absence (by providing a medical excuse signed by physician or signed letter from boss on a company's letterhead), a COMPREHENSIVE make-up exam will be given at the end of the semester to replace that missed exam. The student will take both the final exam (exam #3) and the comprehensive exam on Thursday May 11th, 2017.

Homework: A significant portion of your content mastery depends on completion of homework assignments. Homework assignments will include reading the textbook prior to class, individual or group problem sets. You must submit your homework at the beginning of the class by the due date. Late homework will only be accepted in the case of illness or an emergency; you are responsible for notifying me as soon as possible (**before class**) of the situation (illness or emergency) necessitating late submission of homework. Good homework presentation, including neatness and legibility, are **expected and required.**

Quizzes: Random quizzes will be given to assess your basic understanding of the class topics or completion of reading assignments. Quizzes will provide you with feedback. Quizzes may be given at the beginning of the class or at any point during the session. **No make-up quiz will be given** if you are late or absent for any reason.

Extra credit: Extra credit may be assigned to the ENTIRE CLASS ONLY. No individual can request to present work for extra credit.

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:

- * Successfully complete a final project (worth 10 % of the final grade)
- * Successfully complete a final exam, prepared especially for graduate students; and
- * Maintain an 80% average (minimum) on homework, design work and exams

Failure to comply will warrant a failing grade in the course

Learning Environment

Prepare in advance: In order to be successful, each student must come to class prepared to participate. This means that you must complete reading assignments, homework, and other assignments **BEFORE** you arrive to the classroom. Coming to class late is unprofessional and is very disruptive to the class. If you are late to class, you are to come in quietly and take your seat but **DO NOT** attempt to turn in assignments.

Classroom Etiquette/ Student Conduct:

You must be courteous, respectful and professional in the way you address others; either in person or in writing. **All submitted work must have Student's Name, Class Name & Section and Due date.**

E-mail Communication:

For all your class related e-mails use the prefix "**EE4342:**" followed by the rest of the message's subject description (Example: "**EE4342: Question about homework**").

Course & University Policies

Attendance: Attendance is key to your academic success. If you miss a class session, you are responsible for obtaining notes, handouts, and assignments and for meeting the same deadlines as the rest of the class. If you have an excessive amount of absences from class I will ask you to meet with me to discuss your progress in the class, and you may be dropped from the course. The grade that you receive will be a W until **March 30, 2017, course drop deadline**. After this date, the grade you receive will be an F, and only under exceptional circumstances a W.

Electronic Devices: Use professional discretion with electronic devices by shutting them off, or setting them to mute before coming to class. **Do not use text messaging or web browser features while in class.**

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.

Tips for Success in this class:

1. Come to class, take good notes and keep everything organized.
2. Read and study textbook, hand-outs, and complete reading assignments **before** class.
3. Visit instructor during office hours if you need assistance, or use e-mail to set up an appointment
4. Finish your assignments early.
5. Don't cram for examinations; start your success by not falling behind!

Important Dates:

Spring 2017

| | | | |
|---------------------------|--------------|------------------------------|--|
| Classes begin | January 17 | Cesar Chavez– No classes | March 31 |
| Spring Break (no classes) | March 13- 17 | Spring Study day –No classes | April 14th |
| Course Drop deadline | March 30 | Last day of classes | May 4 |
| | | Our Final Exam | Thursday, May 11th 10:00am-12:45pm |