

**Tentative Syllabus**  
**Physics 332 - Digital Logic and Circuitry**  
**Fall 2015**

**Course Description:** Four semester hours (3 lecture, 2 lab). Boolean logic, digital circuits, digital integrated circuits, and programmable logic devices using VHDL. Laboratory instruction in basic digital instrumentation and circuit design tools.

**Textbook:**

1. Digital Fundamentals by T. Floyd  
ISBN: 978-0-13-273796-8

**Lecture Time and Place:** MWF, 10:00AM – 10:50AM, Room: STC – 114

**Lab Time and Place:** Tuesday, 3:30PM – 6:20PM, Room: STC – 114

**Instructor:** Albert Menchaca

**Office Location:** STC-344

**Office Phone:** 903-468-8765 (no voice mail)

**Physics Office:** 903- 886-5488      **FAX:** 903-886-5480

**Office Hours:** Tuesday & Thursday, 2:00PM – 3:00PM or by appointment

**Email:** [albert.menchaca@tamuc.edu](mailto:albert.menchaca@tamuc.edu)

**Student Learning Outcomes:**

- Develop a strong knowledge of digital electronics.
- Describe the functionality of logic gates, Boolean expressions, simplifying digital circuits, combinational and sequential circuits.
- Demonstrate using a hands-on (lab) approach the applications of the concepts taught in the class.
- Understand how digital signals are used to transmit analog information.

**Goals of the Course:**

Students learn the principles and applications of digital electronics. The course also provides background for laboratory work in applied electronics at the graduate level. The laboratory instruction for this course includes circuit design and analysis using electronic instrumentation and interactive schematic capture and circuit simulation software.

## **Grading Procedure and Scale:**

**Lab Grade:** The laboratory grade counts 25% of the total class grade. The lab grading procedure will be discussed in lab. You must pass the lab to pass this course. The lab grading procedure will be discussed in lab.

**Lecture Grade:** The lecture portion of the grade is determined from homework, tests, and the final exam as outlined below:

Homework, attendance, quizzes (15%)  
3-exams (40%) – lowest grade will be dropped  
Comprehensive final exam (20 %)

### **Scale:**

90 and above: A  
80 and above but less than 90: B  
70 and above but less than 80: C  
60 and above but less than 70: D  
Less than 60: F

Missing an exam without first making arrangements for a make-up with the instructor (excused absence must be cleared before the exam) will automatically result in the failing grade. Missing other class periods will result in penalties as described under the attendance section below.

## **Lecture Topics (Tentative);**

Chapter 1: Introduction to digital electronics  
Chapter 2: Number systems, operations, and codes  
Chapter 3: Logic gates and integrated circuit logic families  
Chapter 4: Boolean algebra and logic simplification  
Chapter 5: Combinational logic  
Chapter 6: Timing and state diagrams & introduction to FPGAs  
Chapter 7: Computer tools -- logic simulation and QM logic simplification  
Chapter 8: Adders, comparators, encoders/decoders, and code conversion  
Chapter 9: Multiplexers/demultiplexers, and parity generators/checkers  
Chapter 10: Flip-flops, latches, one-shots, clock generators (including 555)  
Chapter 11: Counters  
Chapter 12: Shift Registers  
Chapter 13: Memory circuits  
Chapter 14: Programmable logic  
Chapter 15: Fundamentals of digital computers (includes a 3-bit machine)

**Final Exam is on Monday, December 14 at 10:30AM to 12:30PM**

**Attendance and Tardiness:**

Students are expected to be on time and present for all class meetings. Excused absences can be arranged prior to the class period being missed for appropriate activities as determined by the instructor. If an emergency results in an absence, the student should contact the instructor as soon as possible informing the instructor of the emergency and inquiring about ways to make up the missed class. The instructor will make judgment on how to handle the situation. Possible reasons for excused absence are listed in the “Student’s Guidebook” under class attendance policy. Attendance and tardy records will be maintained and both may result in deductions from your overall grade. **Five unexcused absences will automatically result in a failing grade.**

**Classroom Behavior:** Disorderly conduct which interferes with the normal classroom atmosphere will not be tolerated. The classroom instructor is the judge of such behavior and may instruct a disorderly student to leave the room with an unexcused absence or in more serious situations a student may be removed from the class with a failing grade.

**Cheating and other Breaches of Academic Conduct:** Academic cheating, plagiarism, and other forms of academic misconduct may result in removal of the student from class with a failing grade or may in extreme cases result in suspension or expulsion from the University as described in the “Code of Student Conduct” section of the “ Student’s Guidebook”.

**Students with Disabilities:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

**Office of Student Disability Resources and Services**

Texas A&M University-Commerce

Gege Library 132

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

StudentDisabilityServices@tamu-commerce.edu

**Evaluation of Instruction:** Students will be given opportunities to evaluate instruction near the end of the semester. The physics department utilizes a scantron graded questionnaire with statements regarding various elements of instruction and in addition utilizes an open ended form where students can make comments on all elements of the classroom. These comments are given to the instructor and department head soon after the grades are recorded. If students have concerns about the classroom experience during the semester, they should inform the instructor of those concerns and failing a satisfactory response may, as a last resort, contact the physics department head with those concerns.