PHYS–3444 Digital Electronics

Course Schedule

Day	Date	Module	Description
1	June 6	1A	Boolean Algebra
2	June 7	1B	Gate-Level Minimization
3	June 8	1C	Universal Gates
4	June 9	1D	Hardware Description Languages
5	June 13	1R	Review and Catchup
6	June 14	1X	Midterm Exam 1
7	June 15	2A	Unsigned Numbers
8	June 16	2B	Signed Numbers
9	June 20	2C	Combinational Components 1
10	June 21	2D	Combinational Components 2
11	June 22	2R	Review and Catchup
12	June 23	2X	Midterm Exam 2
13	June 27	3A	Latches and Flip-Flops
14	June 28	3B	Sequential Circuit Analysis
15	June 29	3C	Sequential Circuit Design
16	June 30	3D	Registers and Counters
17	July 4	—	*NO CLASS – Holiday*
18	July 5	3R	Review and Catchup
19	July 6	3X	Midterm Exam 3
20	July 7	—	Cleanup and Study Session
21	July 8 (Friday)	F	Comprehensive Final Exam (12:30–14:30)

Instructor: Charles Allen

Email: charles.allen@angelo.edu
Phone: 325-486-6780
Office: VIN 126
Office Hours: MTWR 11:30-12:30 or by appointment

Course Information

Course Description

A study of the behavior of digital logic circuit elements, with an emphasis on applications in research instrumentation, industrial controls, and computer design.

Prerequisite and Co-requisite Courses

CS–2336 or CS–3304 or (PHYS–2326 and PHYS–2126)

Prerequisite Skills

Ability to use Blackboard.

Student Learning Outcomes

Upon completion of this course, students will be able to:

- Transform combinational logic information between truth tables, Boolean expressions, logic diagrams, schematic diagrams, and breadboard circuits.
- Transform sequential logic information between state tables, state diagrams, logic diagrams, schematic diagrams, and breadboard circuits.
- Transform integer numbers between signed and unsigned decimal, binary, octal, and hexadecimal representations.

Course Delivery

This is a face-to-face course with online components that students are expected to access in Blackboard.[1]

Required Texts and Materials

Digital Design, Mano/Ciletti, 5th or 6th edition

Technology Requirements

To successfully complete this course, students need to download and install the Digital logic simulator (a Java app) by H. Neemann. This is not technically required, since the simulator will be available on the computers in the electronics lab, but you will find it useful to have more immediate access when studying.

Communication

Faculty will respond to email and/or telephone messages within 24 hours during working hours Monday through Friday. Weekend messages may not be returned until Monday.

Written communication via email: All private communication will be done exclusively through your ASU email address. Check frequently for announcements and policy changes. In your emails to faculty, include the course name and section number in your subject line.

Virtual communication: Office hours and/or advising may be done with Collaborate.

Grading

Evaluation and Grades

Course grades will be determined as indicated in the table below.

Assessment	Percent of Total Grade
Worksheets	40
Midterm Exams	40
Comprehensive Final Exam	20
Total	100%

Grading System

Course grades will depend on completing course requirements and meeting the student learning outcomes.

This course uses the following grading scale:
    A = 90.00-100 points
    B = 80.00-89.99 points
    C = 70.00-79.99 points
    D = 60.00-69.99 points
    F = 0-59.99 points (Grades are not rounded up)

Assignment and Activity Descriptions

The course is split into three main topics, with each topic split into 4 modules. In addition to lecture material presented in class, each module has several short, focused worksheets that may require writing solutions by hand, building a logic simulation using Digital, building a breadboard solution using the lab equipment, or a combination of these three methods.

Each worksheet is typically due on the same day it is assigned. Some worksheets may be assigned as homework, to be turned in at the beginning of class the next day. At the

instructor's discretion, students may be allowed to complete some of the more complex hardware builds on the review/makeup day before each midterm exam.

At the end of each topic, a midterm exam will be given, requiring both handwritten solutions and a hardware build.

A comprehensive final exam will have the same format as the midterm exams, but without the hardware build.

General Policies Related to This Course

All students are required to follow the policies and procedures presented in these documents:

- [Angelo State University Student Handbook](#)[2]
- [Angelo State University Catalog](#)[3]

Academic Integrity

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university's [Statement of Academic Integrity](#)[4] (Page 97).

Accommodations for Students with Disabilities

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the [Student Disability Services website](#).[5] The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dr. Dallas Swafford
Director of Student Disability Services
Office of Student Affairs
325-942-2047
dallas.swafford@angelo.edu
Houston Harte University Center, Room 112

Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures[6] for more information.

Plagiarism

Plagiarism is a serious topic covered in ASU's Academic Integrity Statement[7] in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality. Resources to help you understand this policy better are available at the ASU Writing Center.[8]

Student Absence for Observance of Religious Holy Days

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day[9] for more information.

Title IX at Angelo State University

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: [Incident Reporting Form](https://www.angelo.edu/incident-form)[10]
Face to Face: Mayer Administration Building, Room 210
Phone: 325-942-2022
Email: michelle.miller@angelo.edu

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit the [Title IX website](https://www.angelo.edu/title-ix).[11]

Information About COVID-19

Please refer to ASU's [COVID-19 (Coronavirus) Updates](https://www.angelo.edu/covid-19/)[12] web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

Modifications to the Syllabus

This syllabus, including grade evaluation and course schedule, is subject to modification on potentially short notice based on developing circumstances.

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[1] https://blackboard.angelo.edu/
[2] https://www.angelo.edu/current-students/student-handbook/
[3] https://www.angelo.edu/academics/catalog/
[4] https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=97
[5] https://www.angelo.edu/current-students/disability-services/
[6] https://angelo.policystat.com/policy/10659448/latest/
[7] https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=97
[8] https://www.angelo.edu/current-students/writing-center/academic_honesty.php
[9] https://angelo.policystat.com/policy/10659368/latest/
[10] https://www.angelo.edu/incident-form
[11] https://www.angelo.edu/title-ix
[12] https://www.angelo.edu/covid-19/