DIGITAL ELECTRONICS
PHYS 3444 SECTION 010 • SPRING 2021

CLASS MEETINGS
VIN 147 AND BLACKBOARD COLLABORATE
T 12:30PM–01:45PM
R 12:30PM–04:50PM

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COURSE OVERVIEW

This course will present a study of the behavior of digital logic circuit elements, with an emphasis on applications in research, instrumentation, industrial controls, and computer design. Although scheduled as separate lecture and laboratory sections, lecture and laboratory periods will not be treated as isolated components of the course and will instead be blended and intermixed.

This course is intended to reinforce existing knowledge of the scientific method and develop an understanding of basic digital devices and circuits which comprise simple computer systems. To this end, the course will emphasize a mix of conceptual questions, logical-reasoning skills, and the application of theoretical principles in a hands-on setting. The lab will provide an opportunity to explore the correlation between theory and practice.

EXPECTED LEARNING OUTCOMES

The expected learning outcomes for the course, listed below, will be assessed through performance on guided classroom discussions, worksheets, and embedded questions within the exams.

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

CONTACT INFORMATION

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Office: VIN 123 and Virtual Office
Phone: 325.486.6787
Email: michael.holcomb@angelo.edu
Webpage: www.mcholcomb.com/teaching

Office Hours
Monday 3:00pm–5:00pm
Wednesday 3:00pm–5:00pm
Friday 3:00pm–5:00pm
Also available by appointment

REQUIRED MATERIALS

- Digital Design by Mano/Ciletti
  4th, 5th, or 6th Edition is acceptable
- TopHat.com access – Learn about TopHat on the ASU website.
- Gradescope account – Free to ASU students; you will receive an email with sign-up information.
- Access to a computer with reliable high-speed internet access
- Access to a scanning device OR a handwriting-capable computer or tablet
COURSE COMPONENTS

Lecture & Participation
Lecture will be offered in what is known as a hyflex format using a split delivery model. During the scheduled class times, lecture will simultaneously be offered both in-person and streamed via Blackboard Collaborate. A recording of each lecture will be made available; however, my expectation is that everyone will participate during the in-person/synchronous lecture and use the recordings to review and refresh as necessary.

The class will be divided, and you will be assigned into a smaller group of students to maintain current physical distancing requirements in our classroom space. Each group will receive a schedule of in-person class meetings and on other class days will be expected to attend via Blackboard Collaborate. The group assignments and schedule are not flexible. In other words, you can neither switch between assigned groups nor attend in-person outside of the set schedule. The goal is to provide as close to a full in-person class as possible while simultaneously accommodating for social distancing needs and preparing for the possible need for timely contact tracing.

Please thoroughly read the section of this syllabus regarding classroom etiquette for further information on expectations for lecture attendance.

Lecture Preparation
You are expected to have access to the assigned texts, paper for notes, and a suitable writing utensil (preferably a pencil with an eraser), and a scientific calculator at every class meeting. You will likely find it helpful to read ahead in the textbook before each class.

TopHat
We will use TopHat this term during lecture to take attendance and complete conceptual checkpoints that will contribute to your participation grade in the course. TopHat offers a discounted price for ASU students. You must register yourself at www.TopHat.com. Use your legal name, ASU email, and ASU Campus ID number (ex: 87654321) when setting up your account. The course code is 820032.

Attendance is considered mandatory and will be taken daily. Attendance will directly contribute to your participation grade in the course. Students will be able to report their attendance daily via TopHat and a spirit of honesty will be maintained in the attendance policy. Note that you are responsible for everything that we do in lecture, so it is to your advantage to attend.

Additionally, conceptual checkpoints are an integrated part of lecture and will be administered unannounced using TopHat. These checkpoints will only be graded for completion and will sometimes be used as the subject of guided class discussion. Conceptual checkpoints will not have makeup opportunities.
Individual and Team-Based Worksheets (ITBW)

Throughout the term you will be asked to complete individual and team-based worksheets. These will consist of problems covering material that was recently discussed in class and may be either in-class or take-home worksheets. Unless explicitly assigned as take-home, worksheets are to be completed during class time. Some worksheets may be paper-only; however, most will involve building a circuit. You will be expected to scan completed worksheets to PDF and submit them for grading via Gradescope.

No makeup worksheets will be given. Late submission of worksheets is generally reserved for the case of extenuating circumstance, at the instructor's discretion; however, if you are unable to complete all the assigned worksheets after working on them during all available class time, talk to the instructor.

Exams

Three (3) take home exams will be administered as scheduled. No makeup exams will be given, so please plan accordingly.

All exams will be made available via Blackboard and you will be expected to print a copy of the exam, scan your completed exam to PDF, and then submit for grading via Gradescope. Please see the course calendar on the last page of this syllabus for scheduled exam dates and anticipated content.

Exam Rules

Calculators, the assigned textbook, instructor-provided materials, and your own lecture notes are permitted. Cell phones and smart watches are not considered to be calculators regardless of what apps may have been installed. Any other reference materials (including sources found via the internet) are not permitted. If I believe that you have made use of restricted materials or devices during the exam, you will be issued a zero for the exam without exception and may be reported to the Office of Student Conduct.
GRADING POLICIES
The following scores will be recorded during the course of the semester: Participation, ITBW, Exam 1, Exam 2, Exam 3, Final Exam. The course grade will be the weighted average of Participation at 10%, ITBW at 40%, Exams at 10% each, and the Final Exam at 20%.

There are no makeup ITBW; however, the 5 lowest scores will be dropped. The instructor reserves the right to increase this number at their discretion. The number of dropped scores will never be decreased below what is shown.

There are no makeup exams; however, the final exam score can replace the lowest midterm. In other words, the four highest scores from Exam 1, Exam 2, Exam 3, Final Exam, and Final Exam will be considered for the course grade.

Your letter grade will be determined on the following scale: F (≤59), D (60-69), C (70-79), B (80-89), A (90-100). The instructor reserves the right to lower the boundaries between letter grades at their discretion; however, the boundaries will never be raised above what is shown above.

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. Please see ASU Operating Policy 10.11 Grading Procedures for more information.

STRATEGIES FOR SUCCESS
Be prepared! These tips will help you keep up, make for more productive classroom interaction, and help you be prepared for homework, labs, and exams that make up your semester grade.

• Pay special attention to examples worked in class.
• Study your notes.
• Read the material in the text before we cover it in class.
• Begin all homework assignments as soon as possible. Don't get behind or wait until just before an exam to begin.
• Make use of the free in-person and online tutoring services available through the Tutoring Center.
• Supplemental Instruction (SI) sessions for some classes are offered through the campus Tutoring Center. These sessions can help you review difficult concepts as a group.
• If you are stuck, come prepared with questions during office hours or make an appointment to meet at another time.
• Once you can work through a problem with your notes, book, study group, etc., be sure you can rework it entirely on your own.
• Don’t “blow off” any exam just because there is a dropped score. The purpose of the dropped score is in case of illness or other extenuating circumstances.
CLASSROOM ETIQUETTE

Attending lecture is mandatory. You are considered both advised and responsible for anything discussed during lecture. Leaving lecture early or arriving late is considered both rude and distracting. If you have an expected reason to depart early, please inform the lecturer at the beginning of class. During our synchronous lectures, please keep your video and microphone muted unless you are directing a question to your professor or have been directed to interact with your peers in a group discussion.

In-Person Etiquette

When attending in-person classes, all students are expected to be respectful of their peers during lecture by not becoming a distraction. If you become a distraction to other students, then you will be dismissed from class for that day. Some actions, including but not limited to the following, will result in you being considered a distraction to your peers: repeatedly arriving late, reading unrelated material, using your cell phone in any way outside of approved exercises, visiting with your neighbor, sleeping, eating, “vaping,” and the use of any and all tobacco products.

No laptops or any other electronic devices are allowed in class unless the need for such a device for reason of a disability is documented by Student Disability Services.

For the safety of your lecturer and peers, all students will be expected to wear a mask/facial covering that covers both the nose and mouth while attending class face-to-face. Any student not appropriately wearing a mask/facial covering will be dismissed from class for the day. As a member of the Texas Tech University System, Angelo State University has adopted a mandatory facial covering policy and repeated non-compliance may result in disciplinary action through the Office of Student Conduct.

Collaborate Etiquette

When attending class via Collaborate, you are encouraged to engage with your peers during class via the chat window; however, all students are expected to be respectful of their peers during lecture by not becoming a distraction. If you become a distraction to other students, then you will be dismissed from class for that day. Some actions, including but not limited to the following, will result in you being considered a distraction to your peers: repeatedly arriving late or leaving early, the use of inappropriate language or humor, and the sharing of untoward materials be they written, auditory, or visual in nature.

As a rule, please reread everything before you send it and treat all of your online interactions as though you were speaking face-to-face with that person.
REQUIRED USE OF MASKS/FACIAL COVERINGS BY STUDENTS

As a member of the Texas Tech University System, Angelo State University has adopted a mandatory Facial Covering Policy to ensure a safe and healthy classroom experience. Current research on the COVID-19 virus suggests there is a significant reduction in the potential for transmission of the virus from person to person by wearing a mask/facial covering that covers the nose and mouth areas. Therefore, in compliance with university policy, students attending this class face-to-face are required to wear a mask/facial covering before, during, and after class.

Faculty members may ask you to display your daily screening badge as a prerequisite to enter the classroom. You are also asked to maintain social distancing practices to the best of your ability, which means keeping ~6 feet of distance between yourself and others. For the safety of everyone, any student not appropriately wearing a mask/facial covering will be asked to leave the classroom immediately. The student will be responsible for making up any missed class content or work. Continued non-compliance with the Texas Tech University System Facial Covering Policy may result in disciplinary action through the Office of Student Conduct.

MODIFICATIONS TO THE SYLLABUS

All components of this syllabus are subject to modification at the lecturer's discretion. In particular, the ongoing COVID-19 pandemic may require changes in course delivery, grade evaluation, schedule, and content on potentially short notice.

LET’S KEEP THE RAM FAM HEALTHY!

Screen your own health before you come to campus.
Wash your hands often.
Disinfect your work area before and after use.
Please wear face covering at all times.
Respect 6 feet distancing guidelines.

Protect your fellow Ram Fam every day.
angelo.edu/coronavirus

Let’s get serious about taking care of each other.
COVID-19 IS NO JOKE.
INCLUSIVE LEARNING ENVIRONMENT  (Adapted from Yale Center for Teaching and Learning)

Civility and Respect
Our university supports and wants to foster a civil, respectful, and open-minded climate so that all of us can live and work in an environment free of harassment, bias-motivated behaviors, unfair treatment, and fear. The university expects all members of our community to refrain from actions or behaviors that intimidate, humiliate, or demean persons or groups or that undermine their security or self-esteem based on traits related to race, ethnicity, country of origin, religion, gender identity/expression, sexual orientation, age, or physical or mental ability, including learning and/or developmental disabilities and past/present history of mental disorder or other category protected by state or federal law.

Accommodations for Students with Disabilities
Angelo State University 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. The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Director of Student Disability Services
Dallas A. Swafford
Email: dallas.swafford@angelo.edu
Office
Houston Harte University Center, Room 112
Office Email: ada@angelo.edu
Office Phone: 325.942.2047
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. For more information about resources related to sexual misconduct, Title IX, or Angelo State’s policy please visit: www.angelo.edu/title-ix.

Note from Dr. Holcomb: As a faculty member at Angelo State, I am a mandatory reporter and am obligated to 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).

Students are encouraged to report any incidents of sexual misconduct directly to ASU's Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator at:

**Director of Title IX Compliance and Title IX Coordinator**
Michelle Boone, J.D.
Email: michelle.boone@angelo.edu
Office Mayer Administration Building, Room 210
Phone: 325.942.2022
Report an incident: www.angelo.edu/incident-form

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 for more information.
**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 to disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the [Statement of Academic Integrity](#).

**Plagiarism**

Plagiarism is a serious topic covered in [ASU’s Code of Conduct](#) and [Academic Integrity policy](#) in the Student Handbook. Plagiarism is the action or practice of taking someone else’s work, idea, etc., and representing it 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 better understand this policy better are available at the [ASU Writing Center](#).

**Copyright Policy**

Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.
Our tentative course calendar is below. I reserve the right to change this calendar as needed; however, I will inform you in class and via Blackboard announcement of any changes.

Remember to check our Blackboard class page regularly for assigned readings and homework. Also remember to check your university email (RamMail) account regularly for class updates and other important university correspondence.

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<thead>
<tr>
<th>Week of</th>
<th>Events</th>
<th>Lecture Topic</th>
<th>Chapter</th>
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<tbody>
<tr>
<td>Jan 24</td>
<td>Tuesday, Jan 26: First class meeting</td>
<td>Boolean Algebra and Logic Gates</td>
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<td>Jan 31</td>
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<td>Feb 07</td>
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<td>Gate-Level Minimization</td>
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<td>Feb 14</td>
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<td>Feb 21</td>
<td>Friday, Feb 26: Exam 1 Assigned (Ch. 2, 3)</td>
<td>Digital Systems and Binary Numbers</td>
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<td>Feb 28</td>
<td>Sunday, Feb 28: Exam 1 DUE</td>
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<td>Mar 07</td>
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<td>Combinational Logic</td>
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<td>Mar 14</td>
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<td>Mar 21</td>
<td>Thursday, Mar 25: Exam 2 Assigned (Ch. 1, 4)</td>
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<td>Mar 28</td>
<td>Sunday, Mar 28: Exam 2 DUE</td>
<td>Synchronous Sequential Logic</td>
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<td>Apr 04</td>
<td>Friday, Apr 2: University closed for the Spring Holiday</td>
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<td>Apr 11</td>
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<td>Registers and Counters</td>
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<td>Apr 18</td>
<td>Thursday, Apr 22: Exam 3 Assigned (Ch. 5, 6)</td>
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<td>Apr 25</td>
<td>Sunday, Apr 25: Exam 3 DUE</td>
<td>Memory and Programmable Logic</td>
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<td>May 02</td>
<td>Friday, Apr 30: Last day to drop or withdraw</td>
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<td>May 09</td>
<td>Sunday, May 09: Final Exam Assigned (Comprehensive)</td>
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<td>Thursday, May 13: Final Exam DUE</td>
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*All due times are 11:59 pm CST, unless otherwise specified.*