

SAM HOUSTON STATE UNIVERSITY

COLLEGE OF SCIENCE & ENGINEERING TECHNOLOGY

DEPARTMENT OF ENGINEERING TECHNOLOGY

COURSE SYLLABUS ETEE 4373 DIGITAL ELECTRONICS

Spring 2018

Department: Engineering Technology Course Name/ Title: ETEE 4373 01 Digital Electronics - 21455 Semester: Spring 2018 Credit: 3 Hours (2-2 Format) Location/Time: Pirkle 220 (Lecture) and Pirkle 140 (Lab), Mon/Wed: 10:00am – 11:50am Instructor: Iftekhar Ibne Basith Office: Pirkle 420F Email: iib002@shsu.edu Phone: 936-294-4139 Office Hours: Mon/Wed 9:00am – 10:00am or by appointment

Course Catalog Description: This course is a study of the principles and applications of digital logic circuits including logic gates, counters, shift registers, and combinational logic circuits. Laboratory experiences consist of experimental problems. Prerequisite: ETEE 3350.

Required Textbook: Digital Fundamentals, 11th Edition. Thomas L. Floyd, Pearson Prentice Hall, 2015. ISBN-13: 9780132737968. ISBN-13: 9780133514896 (eBook).

Required Laboratory Workbook: The course instructor will provide Laboratory experiments documentation.

Required Supplies: A notebook, A Texas Instruments scientific/engineering type calculator.

Course Objectives: This course is intended to provide the student with a basic knowledge of sequential logic circuits used in timing, sequencing, and storage functions. Upon completion of the course, the student should be able to learn:

- The conversion between binary and decimal numbering systems.
- The implementation and operation of the major components of digital circuits.
- Digital logic gate operation.
- The use of Boolean algebra in design and description of logic operation.
- Transistor-to-Transistor Logic (TTL).
- Binary and Binary-Code Decimal (BCD) counters, registers, and sequential logic circuits.
- Designing combination and sequential logic circuits.
- The operation and application of digital counters in time and frequency measurements.
- The design and operation of shift registers.
- The fundamental principles of programmable logic devices.

Class Structure and Attendance: This is an important fundamental class and your attendance is <u>highly</u> <u>encouraged.</u> *Lectures, in-class problems* and *discussions, laboratory experimental projects,* and *homework assignments* will constitute the structure of the course. The make-up labs and exams will be given only in the case of <u>documented physical illness</u> (In this case, students must inform instructor at least 24 hours before the exam).

Homework Assignments: Homework assignments will be available through SHSU Blackboard. The HW assignments will be automatically graded by blackboard system and be available to students after completion of each HW assignment. The HW assignments will not be available to the students after the due dates. No credit will be given for late/missed homework assignments. The best four HW will be counted <u>only</u> on the condition that you submit all the HW on time and within deadline. If you miss any single deadline for HW submission, then the average of the HW will be considered for your grade.

Blackboard Use: Presentations, course syllabus, Lab/HW assignments will be available in blackboard system. All the HW assignments will be completed through Blackboard systems. Please pay attention to the due dates.

Grading Scale: The final grade will be based on the following requirements.

Mid-term Exam (Average of Two)				20%
Final Exam				20%
Laboratory Experiments				30%
Homework Assignments (Best Two of Minimum Three)			10%	
Attendance, Observed performance, Attitude				5%
Project Presentation			15%	
Total			100%	
	Percentage range	Grade		
	90 - 100	А		

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90 - 100	А
80 - 89	В
70 – 79	С
60–69	D
0-59	F

Classroom Rules of Conduct: Students will avoid doing behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, obstructs the mission of the university. Cellular *telephones* and *pagers* must be turned off before class begins. Students are prohibited from *eating in class*, *using tobacco products, making offensive remarks, reading newspapers, sleeping, talking at inappropriate times*, or *engaging in any other form of distraction*. Inappropriate behavior in the classroom shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.

Course Content and Lab Schedule: The tentative course content schedule will include the following topics. Depending upon extra handouts//homework assignment explanations, *the tentative course content may be shifted slightly later in the semester*.

Laboratory Instructions

Laboratory Assignments: There are regular labs will be announced by the instructor during the lectures for this course. All laboratory project assignments must be completed for your lab grading. You must obey departmental laboratory safety rules & policies. You must attend and successfully complete each lab. Before each Lab, please prepare yourself enough by reading the objective, procedure and theory from the required book. LAB reports due dates are provided in the tentative schedule. Make sure you write clearly and neatly! If you miss any LAB you will lose points (30) for that corresponding LAB. Make up labs are only allowed in case of documented illness and within one week of the missed deadline. After one week of the deadline, you won't be allowed to make up for the LABS you missed and receive a grade of "ZERO" for the corresponding LAB.

Note: It is the student's responsibility to arrange make-up labs with the instructor/TA. Make-up labs may be considered with a report proven medical reason.

Week	Date	Subject	
1	1/17	No Class	
2	1/22	Introduction to the Course Syllabus	
	1/24	Ch 1. Digital Concepts	
3	1/29 - 1/31	Ch 2. Number Systems, Operations, and Codes	
4	2/5	Ch 3. Logic Gates	
	2/7	Lab Experiment #1	
5	2/12	Ch 4. Boolean Algebra and Logic Simplification	
	2/14	Lab Experiment #2	
6	2/19	Exam # 1 (Chapter 1, 2 and 3)	
	2/21	Project Mid-Presentation	
7	2/26	Ch 5. Combinational Logic Analysis	
	2/28	Lab Experiment #3	
8	3/5	Ch 6. Functions of Combinational Logic	
	3/7	Lab Experiment #4	
9	3/12 - 3/16	MARCH BREAK	
10	3/19	Ch 7. Latches, Flip-Flops, and Timers	
	3/21	Lab Experiment #5	
11	3/26	Ch 8. Shift Registers	
	3/28	Lab Experiment #6	
12	4/2	Exam # 2 (Chapter 4, 5 and 6)	
	4/4	Lab Experiment #7	
13	4/9	Ch 9. Counters	
	4/11	Lab Experiment #8	
14	4/16	Ch 11. Data Storage	
	4/18	Lab Experiment #9	
15	4/23	Ch 12. Signal Conversion and Processing	
	4/25	Lab Experiment #10	
16	4/30	Lab Experiment #11	
	5/2	Final Project Presentation	
17	5/9	FINALS (Chapters 7, 8 and Last Lecture)	
		2.30 pm – 4.30 pm	

Rules and Recommendations for Effective and Safe Use of the Laboratory and Work Benches in Pirkle 140 (Electronics Lab)

- 1. DO NOT turn on the power before the instructor checks your circuit!
- 2. Use the coat racks for neat laboratory appearance as well as safety. Do not place coats or book bags on workbenches.
- 3. Refrain from drinking beverages in the laboratory. The hall may be used for intervals of relaxation.
- 4. The lab bench must be cleaned and all wires must be returned to the hooks provided in the lab room before leaving the room.
- 5. Report all component and equipment failures to your Instruct or lab TA. Neglecting to report faulty equipment causes problems for the next group that uses the bench and may result in injuries.

- 6. When using the instruments **DO NOT STACK THEM**, as the combined heat may cause component failure.
- 7. Place all of the trainer units, transformers, motors, DMMs, resistors, inductors, capacitors, etc., back to their original places and/or *original rated* boxes after you are done with the laboratory.
- 8. All power switches should be turned off before leaving the lab bench.
- 9. Rings and other jewelry, which may cause a potential hazard, must be removed before working in the laboratory.
- 10. No individual should operate equipment in the laboratory until the appropriate examinations are passed and/or demonstrations by instructor are safely observed.

Lab Submission Procedure

Since most labs will be done using LabVolt online system, you will just need to write a separate after each LAB. REPORT convert it into pdf; name the file LAB as "LABNUMBER LASTNAME SAMID ETEE 4373 SPRING2018" and upload in the blackboard. <u>NO email submission</u> is accepted. Only one <u>single pdf</u> file is accepted; <u>no picture</u> files is accepted; you will receive a grade of "ZERO" for not following the format and/or instruction given.

In case of documented illness, and make up LABs, follow the same proceure and make one single pdf file. Name it as name the file as "MAKEUP_LABNUMBER_LASTNAME_SAMID_ETEE 4373_SPRING2018" and email instructor the file.

General Safety Procedures – Introduced by the instructor					
I. Introduction: How Electricity Works	II. Hazards of Electricity				
a. Conductors	a. Electrical shock				
b. Insulators	b. Electrical burns				
c. Grounding	c. Electrical fires				
	d. Case Studies of Electrical Accidents				
III. Types of Electrical Hazards	IV. How to Protect Yourself from Electricity				
a. Working on energized (hot) circuits	a. General electrical safety rules				
b. Loose connections	b. Properly grounded electrical circuits				
c. Frayed or missing insulation	c. Ground fault protection near water				
d. Missing ground prongs on plugs	sources				
e. Water and electricity don't mix	d. Insulated power tools				
f. Damaged power tools	e. Proper housekeeping				
g. Ungrounded equipment	f. Don't overload circuits				
h. Improper use of extension cords					
V. Soldering Hazards					
a. General soldering safety rules					
b. Proper handling of soldering					
equipment					

Academic Dishonesty: All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.

Student Absences On Religious Holy Days Policy: Section 51.911(b) of the Texas Education Code requires that an institution of higher education excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student who is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence. University policy 861001 provides the procedures to be followed by the student and instructor. A student desiring to absent himself/herself from a scheduled class in order to observe (a) religious holy day(s) shall present to each instructor involved a written statement concerning the religious holy day(s). This request must be made in the first fifteen days of the semester or the first seven days of a summer session in which the absence(s) will occur. The instructor will complete a form notifying the student of a reasonable timeframe in which the missed assignments and/or examinations are to be completed.

Disabled Student Policy: It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance should register with the Office of Services for Students with Disabilities located in the Lee Drain Annex (telephone 936-294-3512, TDD 936-294-3786, and e-mail <u>disability@shsu.edu</u>). They should then make arrangements with their individual instructors so that appropriate strategies can be considered and helpful procedures can be developed to ensure that participation and achievement opportunities are not impaired.

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Services for Students with Disabilities and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. NOTE: No accommodation can be made until you register with the Services for Students with Disabilities. For a complete listing of the university policy, see:

http://www.shsu.edu/dept/academic-affairs/documents/aps/students/811006.pdf

Tobacco Policy: In order to promote a healthy, safe, and aesthetically pleasing work, educational, and living environment, Sam Houston State University (SHSU) will endorse a smoke free and tobacco free environment. The primary purpose of this policy is to establish guidelines prohibiting smoking and the use of all tobacco products. Tobacco products include cigarettes, cigars, pipes, smokeless tobacco, and all other tobacco products. This policy applies to all faculty, staff, students, employees of contractors, and visitors of Sam Houston State University on the premises of the university.

Visitors in the Classroom: Only registered students may attend class. Exceptions can be made on a case-bycase basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar's Office.

"The above schedule, policies, and assignments in this course are subject to change in the event of extenuating circumstances or by mutual agreement between the instructor and the students."

SHSU Blackboard: Please see below. All the course documents are located under "Course Documents" tab.



8	Student Preview mode is ON Settings Exit Preview	^
A 💿 (Course is unavailable	e to students until Wednesday, January 13, 2016) > Course Documents	
Technical Support	Course Documents	
Spring 2016 ETEE 1340	Chapter's Students = select this link to view all of the resources for each chapter. You will find all presentations, videos, resource files, etc inside of this "folder".	
Notifications My Grades Send Email COURSE CONTENT Co	Home Work KEEP CALM COURSE Syllabus inside of this "folder". DOTHAT HOMEWORK	
COURSE INFORMATION Online Learning Technical Requirements		
HELP & HOW-TO		
Bb Student Orientation Blackboard Help		
Bb.com Video Tutorials For Students		
YouTube how-to videos for the ASET Dept		