

Course Syllabus for CET 2112C - Digital Systems I - CRN 21437 – 3 Credit Hours

Course Description: Introductory lecture/laboratory course in computer technology. Introduces principles and techniques required for development of analysis skills in digital circuitry. Topics include computer number systems; digital codes and parity error detection methods; Boolean algebra; Karnaugh mapping; logic gate minimization techniques; arithmetic operations via combination logic gate minimization techniques; arithmetic operations via combination logic; flip-flop timing and synchronization circuits; and pulse waveform generation. Laboratory projects provide hands-on experience in use of laboratory instruments and in techniques for measurement and interpretation of digital data. (Special Fee: \$64.00)

Prerequisites: MTB 1329C and EET 1214C

Class Time and Location: **Lecture/ Laboratory: Wednesday, 9:00 AM – 12:30 PM, Building 9, Room 210**

Textbook: *Digital Systems: Principles and Applications*, 11th Ed., by Ronald J. Tocci

Lab Manual: *Digital Systems Laboratory Manual* by Dr. Nasser Hedayat

Required Materials:

- Scientific calculator (at least a Casio fx-115W or the equivalent)
- Highlighter and pencil or erasable pen
- USB flash drive

Professor's Information:

Instructor: Dr. Hall
Office: West Campus, University Center-254
Phone: (Office) 407.582.1963
Email: dhall@valenciacollege.edu
Office Hours: Posted online and outside my office door

Student Performance Assessment:

Pre-Labs (Multisim) 10%
Lab Reports 30%
Exams 30%
Final Exam 20%
Attendance and In Class Participation 10%

A: 90% - 100%
B: 80% - <90%
C: 70% - <80%
D: 60% - <70%
F: < 60%

Important Dates:

Martin Luther King Day	January 21 st
Learning Day	February 8 th
Spring Break	March 4 th – 10 th
Withdrawal Deadline for "W" Grade	March 22nd
Final Grades Viewable in Atlas	April 30 th

Date	I ♥ Digital Systems Course Activities	Weekly Digital System Fun
1 (1-9)	<ul style="list-style-type: none"> ➤ Introductions ➤ Course Overview ➤ Chapter 2: Numbering Systems and Codes 	
2 (1-16)	<ul style="list-style-type: none"> ➤ Chapter 2 (continued...) ➤ Chapter 3: Logic gates and Boolean Algebra 	
3 (1-23)	<ul style="list-style-type: none"> ➤ Chapter 3 (continued...) ➤ Complete Experiment 1 Pre-Lab both with a logic converter and with SPDT switches and probes 	
4 (1-30)	<ul style="list-style-type: none"> ➤ Exam ➤ Chapter 4: Combinational Logic Circuits ➤ Experiment 1: Basic Boolean Operation 	<p><u>Due Online Before Class Today:</u></p> <ul style="list-style-type: none"> ➤ Experiment 1 Pre-Lab <p><u>Suggested EPP Fun to Complete Before Class Today:</u> CH 2 Exam Preparation Problems</p>
5 (2-6)	<ul style="list-style-type: none"> ➤ Chapter 4 (continued...) ➤ Experiment 2: Combinational Logic Circuits 	<p><u>Due Online Before Class Today:</u></p> <ul style="list-style-type: none"> ➤ Experiment 1 Lab Report ➤ Experiment 2 Pre-Lab
6 (2-13)	<ul style="list-style-type: none"> ➤ Exam ➤ Experiment 3: Advanced Logic Gates: Part One – NAND and NOR Gates 	<p><u>Due Online Before Class Today:</u></p> <ul style="list-style-type: none"> ➤ Experiment 2 Lab Report ➤ Experiment 3 Pre-Lab <p><u>Suggested EPP Fun to Complete Before Class Today:</u> CH 3 & CH 4 Exam Preparation Problems</p>
7 (2-20)	<ul style="list-style-type: none"> ➤ Chapter 5: Flip-Flop and Related Devices ➤ Experiment 4: Boolean Theorems 	<p><u>Due Online Before Class Today:</u></p> <ul style="list-style-type: none"> ➤ Experiment 3 Lab Report ➤ Experiment 4 Pre-Lab
8 (2-27)	<ul style="list-style-type: none"> ➤ Chapter 5 (continued...) ➤ Experiment 5: Demorgan's Theorems 	<p><u>Due Online Before Class Today:</u></p> <ul style="list-style-type: none"> ➤ Experiment 4 Lab Report ➤ Experiment 5 Pre-Lab
9 (3-6)	Spring Break	
10 (3-13)	<ul style="list-style-type: none"> ➤ Exam ➤ Experiment 6: Advanced Logic Gates: Part Two -EX-OR and EX-NOR Gates 	<p><u>Due Online Before Class Today:</u></p> <ul style="list-style-type: none"> ➤ Experiment 5 Lab Report ➤ Experiment 6 Pre-Lab <p><u>Suggested EPP Fun to Complete Before Class Today:</u></p>

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		CH 5 Exam Preparation Problems
11 (3-20)	<ul style="list-style-type: none"> ➤ Chapter 6: Digital Arithmetic ➤ Experiment 7: Troubleshooting Logic Circuits 	<u>Due Online Before Class Today:</u> <ul style="list-style-type: none"> ➤ Experiment 6 Lab Report ➤ Experiment 7 Pre-Lab
12 (3-27)	<ul style="list-style-type: none"> ➤ Chapter 6 (continued...) ➤ Experiment 8: Introduction to Flip-Flops ➤ Experiment 9 Pre-Lab Overview 	<u>Due Online Before Class Today:</u> <ul style="list-style-type: none"> ➤ Experiment 7 Lab Report ➤ Experiment 8 Pre-Lab
13 (4-3)	<ul style="list-style-type: none"> ➤ Chapter 7: Counters and Registers ➤ Experiment 9: Designing a Logic Circuit 	<u>Due Online Before Class Today:</u> <ul style="list-style-type: none"> ➤ Experiment 8 Lab Report ➤ Experiment 9 Pre-Lab
14 (4-10)	<ul style="list-style-type: none"> ➤ Chapter 7 (continued...) ➤ Experiment 10 Pre-Lab: Arithmetic Logic Devices - Add/Subtract circuit 	<u>Due Online Before Class Today:</u> <ul style="list-style-type: none"> ➤ Experiment 9 Lab Report
15 (4-17)	<ul style="list-style-type: none"> ➤ Experiment 10 Bench: Arithmetic Logic Devices - Add/Subtract circuit 	<u>Due Online Before Class Today:</u> <ul style="list-style-type: none"> ➤ Experiment 10 Pre-Lab
16 (4-24)	<ul style="list-style-type: none"> ➤ Final Exam: Comprehensive [Theory, Multisim, Bench] 	<u>Due Online Before Class Today:</u> <ul style="list-style-type: none"> ➤ Experiment 10 Lab Report ➤ All Grade Enhancement Opportunities <p>(a.k.a. Extra Credit...Not Required) [Submit within our online Blackboard Learn course under Assignments - See Blackboard Learn for more details...]</p> <p><u>Suggested EPP Fun to Complete Before Class Today:</u></p> <ul style="list-style-type: none"> ➤ CH 6 & CH 7 Exam Preparation Problems

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Exam Preparation Problem Fun	
Chapter 2: Numbering Systems and Codes	1,2,3,4,11,12,24,25
Chapter 3: Logic gates and Boolean Algebra	1,2,3,7,11,12,15,16,26
Chapter 4: Combinational Logic Circuits	1,2,4,8,12,15,17,18
Chapter 5: Flip-Flop and Related Devices	1,2,8,11,12,13,14,18
Chapter 6: Digital Arithmetic	1,2,3,7,8,9,13,17
Chapter 7: Counters and Registers	1,2,3,5,13,14,35,43

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Rules and Comments:

- ❑ Students are strongly encouraged to read the Valencia policy Manual *Student Code of Conduct* and *Computer Acceptable Usage* found at:
<http://valenciacollege.edu/policies/policydetail2.cfm?PolicyCatID=10&PolicyID=3>
- ❑ You are expected to be in class **on time**. You are responsible for all information and/or assignments given during class, whether you are present or not.
- ❑ **NO LATE WORK** will be accepted (no exceptions).
- ❑ **NO MAKE UPS** on missed lab assignments or missed exams (no exceptions).
- ❑ Students **MUST** complete the required pre-lab Multisim assignment before class begins.
- ❑ All lab experiments must be completed during class time. **Labs performed in the University Center Open Lab will not be accepted unless prior permission from professor.**
- ❑ Use pencil or erasable pen **ONLY** and **erase all errors** when recording data within your lab manual. **Five points will be deducted** on each lab report grade if non-erasable pen is used in the lab manual or for scratch outs done with any type of writing instrument.
- ❑ Lab reports are to be submitted in an organized, well documented, and structured manner representative of the student's best effort. No hand-written material will be accepted in the lab reports.
- ❑ As we embark upon completing various lab experiments within this course during which you will be recording various data within your lab manual, be diligent every step of the way to try and record an explanation of why you think your circuit is behaving as you are observing it during the lab and not to simply just note down your data observations without conveying some reason as to why they might be occurring.
- ❑ No audio or video recording allowed in class unless prior permission is granted from professor and every other student in the class.
- ❑ It is the student's responsibility to withdraw from the course. Any withdrawal after the withdraw deadline may result in earning an **F** as the overall grade for the course.
- ❑ If interested, you may calculate your most current grade in the course utilizing the "Student Performance Assessment" section listed on the first page of this syllabus along with what grades have been posted in Blackboard Learn and with what graded assignments have been returned in class to you thus far in the course. Your professor will calculate the final grade in the course that you have earned after the final exam has been

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given and will post this grade in Atlas for you to view at the end of the semester.

Student Core Competencies:

The faculty members of Valencia College have established four Core Competencies that describe the learning outcomes for a Valencia graduate. They are: THINK, VALUE, COMMUNICATE, and ACT. These general competencies can be applied in many contexts and must be developed over a lifetime. They specify how learning can be expressed and assessed in practice. They enable students and faculty to set learning goals and assess learning within and across the many disciplines of human inquiry. Use the descriptions and examples of academic work for each to measure your own learning outcomes. Samples of the academic work are great additions to your Learning Portfolio. For further information on student core competencies please go to: www.valenciacollege.edu/competencies.

Expected Student Conduct:

Valencia College is dedicated not only to the advancement of knowledge and learning but is concerned with the development of responsible personal and social conduct. By enrolling at Valencia College, a student assumes the responsibility for becoming familiar with and abiding by the general rules of conduct. The primary responsibility for managing the classroom environment rests with the faculty. Students who engage in any prohibited or unlawful acts that result in the disruption of a class may be directed by the faculty member to leave the class. Violation of any classroom or Valencia's rules may lead to disciplinary action up to and including expulsion from Valencia. Disciplinary action could include being withdrawn from class, disciplinary warning, probation, suspension, expulsion, or other appropriate and authorized actions. You will find the Student Code of Conduct in the current Valencia Student Handbook

Students with disabilities who qualify for academic accommodations must provide a letter from the Office for Students with Disabilities (OSD) and discuss specific needs with the professor, preferably during the first two weeks of class. The Office for Students with Disabilities determines accommodations based on appropriate documentation of disabilities (West Campus SSB 102, ext. 1523).

Valencia College is interested in making sure all our students have a rewarding and successful college experience. To that purpose, Valencia students can get immediate help with issues dealing with stress, anxiety, depression, adjustment difficulties, substance abuse, time management as well as relationship problems dealing with school, home or work. BayCare Behavioral Health Student Assistance Program (SAP) services are free to all Valencia students and available 24 hours a day by calling (800) 878-5470. Free face-to-face counseling is also available.

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