

CASPER COLLEGE COURSE SYLLABUS

**ELTR-1760, 01  
INTRODUCTION TO DIGITAL ELECTRONICS**

<b>Semester/Year: Fall 2015</b>		
<b>Lecture Hours: 3</b>	<b>Lab Hours:3</b>	<b>Credit Hours: 4.5</b>
<b>Class Time:</b> Lecture: 10-10:50 AM Lab: 1-3:50 PM	<b>Days: Lec: M, W, F; Lab : TH</b>	<b>Room: GW 207</b>
<b>Instructor's Name: David Arndt</b>		
<b>Instructor's Contact Information:</b> <b>Office: GW 116E</b>	<b>Office Phone:</b> 307- 268-2521	<b>Email:</b> darndt@caspercollege.edu
<b>Office Hours:</b>	<b>Office Hours:</b> M, W	8-8:50 PM
	M, W, F	9-9:50 AM
<b>Course Description:</b>		
A study of logic circuits associated with the control and operation of microprocessors digital computers. The application of the specific logic circuits is studied through selected laboratory experiments.		
<b>Statement of Prerequisites:</b>		
None		
<b>Goal:</b> To demonstrate understanding of basic digital circuits, that are used in computers.		
<b>Outcomes:</b>		
Upon completion of this course, the student will:		
<ul style="list-style-type: none"> <li>• Demonstrate knowledge of basic digital circuits and their use in microprocessors and other digital devices.</li> <li>• Demonstrate the ability to read digital logic schematics, build digital circuits, and test and</li> </ul>		

troubleshoot digital circuits.

### Objectives:

The student will:

1. List and define the different types of digital gates.
2. Construct the truth table for the different types of digital gates.
3. List and define the different types of digital circuits used in microprocessors and computers.
4. Add and subtract binary numbers.
5. Determine and draw the output wave forms for digital circuits.
6. Explain how memory circuits work.
7. Explain the function of the three bus systems in a computer.
8. Read basic digital logic circuit schematics.
9. Use digital logic circuits schematics to build basic digital circuits.
10. Test digital logic circuits to determine their output codes.
11. Troubleshoot digital circuits, with logic probes, to determine wiring and faulty gate problems.

### Methodology:

Lectures will present information necessary for the student to understand the reading assignments. Lab experiments will be used to prove theories and information presented in lectures and homework assignments.

### Evaluation Criteria:

There will be three 1-hour lectures and one 3-hour lab period per week. Homework will be due as assigned, and lab reports will be due the following lab period. Any assignment (lab report of homework) turned in late will be marked down one letter grade for each day that it is late.

Homework	25%
Labs	25%
Tests	50%

If you are going to be absent from class or lab, please notify your instructor prior to being absent. Tests cannot be made up if missed unless prior arrangements are made with the instructor.

### GRADING GUIDELINES

<u>VALUE</u>	<u>TOTAL</u>
Full tests - total of 4, test average X 2	200 pts.
Lab Reports - lab report average	100 pts.
Homework - homework average	<u>100 pts.</u>
<b>Grand Total</b>	<b>400 pts.</b>

Letter Grade	Semester Average
A	400-360
B	359-320
C	319-280
D	279-240
F	239-0

**Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.**

**Required Text, Readings, and Materials:**

Floyd, *DIGITAL FUNDAMENTALS*, Merrill Publishing Company, latest Ed.

**Class Policies: Last Date to Change to Audit Status or to Withdraw with a W Grade: (**

The Friday of the ninth week of class.

**Student Rights and Responsibilities:** Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

**Chain of Command:** If you have any problems with this class, you should first contact the instructor to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head/Program Director, the Dean, and lastly the Vice President for Academic Affairs.

**Academic Dishonesty:** (Cheating & Plagiarism) Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct for more information on this topic.

**Official Means of Communication:** Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly. This is also, where you will find course evaluation links during course evaluation periods.

**ADA Accommodations Policy:** If you need academic accommodations because of a disability, please inform me as soon as possible. See me privately after class, or during my office hours. To request academic accommodations, students must first consult with the college's Disability Services Counselor located in the Gateway Building, Room 344, (307) 268-2557, [bheuer@caspercollege.edu](mailto:bheuer@caspercollege.edu). The Disability Services Counselor is responsible for reviewing documentation provided by students

requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.

## Calendar or schedule indicating course content

### Tentative Schedule:

### Lecture Outline

Week	Lesson
1	Ch. 1: Introduction to Digital Electronics Ch. 2: Decimal and Binary Numbers
2	Ch. 2 Ch. 3: Logic Gates: INVERTER, AND, OR, NAND, NOR
3	Ch. 2: Hexadecimal, BCD, and ASCII Numbers <b>TEST 1: Ch. 1, 2, 3</b>
4	Ch. 4 Boolean Algebra - Rules and laws, Algebraic and Karnaugh solutions
5	Ch. 4 Ch. 5
6	Ch. 5 Logic Circuits: AND-OR, AND-OR-INVERT, XOR and XNOR Logic <b>TEST 2, Ch 4 and 5</b>
7	Ch. 6 Parity Generators and Checkers Adders and Subtractors and Comparators
8	Ch. 6: Decoders and Encoders-Multiplexers and 7 Segment Display Decoders
9	Ch. 6 <b>TEST 3, Ch. 2 (Binary\Decimal\hex conversions) and Ch.6</b>
10	Ch. 7 Flop-flops
11	Ch. 7 Flip – Flops/Counters
12	Ch. 8 Counters
13	Ch. 8 Counters, <b>Test 4: Ch. 7 and 8</b>
14	Ch. 9 Shift registers

Ch. 10 Memory

15

Ch. 10 Memory

16

**TEST 5: Ch. 9 and 10**

**FINAL TEST AS SCHEDULED**