

**ECHT-11 - 3 Units  
August 25 - December 10**

**No Classes on November 26 due to Thanksgiving**

**Division of Industry & Technology 310-660-3600**

**9:30 AM ~ 10:30 AM M, W Lecture ... Bob Diaz.....ITEC-208  
10:45 AM ~ 12:50 PM M, W Lab ..... Bob Diaz.....ITEC-208  
The exact end of lecture and beginning of lab will vary.  
ECHT-11 #7450 r Diaz@elcamino.edu**

El Camino College is committed equal employment and educational opportunities for all individuals, regardless of race, color, ancestry, religion, gender, national origin, martial status, sexual orientation, handicap, age, and Vietnam-era status.



**Textbook:** Required; **Understanding Basic Electronics, By Walter Banzhaf**, I believe this book is **around \$33** from the **ECC Book Store**.

The second item is the **ECHT-11 Lab Packet, by Steve Cocca** around \$\_\_\_\_\_.

This list may be different from the listing in the ECC Bookstore.

There will also be handouts for this class. I also STRONGLY suggest you **get a 3 ring binder to hold all the materials** and a wire bound notebook for labs.

**Course Discription:** This course is an introduction to electronics for students preparing to enter the field and for students interested in consumer electronics; it provides the basis for further studies in electronics and computer hardware technology. Topics include safety, employment opportunities, the basic theory and applications of electricity, analysis of circuit values using a standard scientific calculator, component identification and schematic diagrams, and the techniques of electrical measurement. Also introduced are alternating current measurements and the use of the oscilloscope. Common devices employed in automotive and air conditioning systems are also covered.

**Course Prerequisite:** None

**Course Objectives:**

1. Apply fundamental circuit theories, Alternating Current (AC) and Direct Current (DC) to compute component values and voltages, resistances, currents and power in various circuit configurations.
2. Differentiate color codes and component symbols to build a circuit.
3. Connect meters to circuits, select proper meter ranges and obtain accurate measurements.
4. Use a scientific calculator and a computer to calculate circuit values with data expressed using engineering notation.
5. Recognize dangerous situations in handling electric circuits and chemicals, used in normal electronic work environment.
6. Identify employment options and be aware of the preparation necessary for success.
7. Demonstrate the use of various types of test equipment, including Digital Multimeter (DMM), signal generators, power supplies and oscilloscope to make various circuit measurements.

**Student Learning Outcomes:**

**ECHT 11 SLO #1** The student will make basic "in -circuit" measurements: AC/DC Voltages and Currents, and Resistance, using both a Bench and Portable DMM.

**ECHT 11 SLO #2** The students will be able to incorporate data and analysis reporting protocols, using either "paper" and "paperless" environments, similar to data reporting and analysis used by many Electronics Manufacturers and Service Organizations.

**ECHT 11 SLO #3** The students will be able to use various circuit analysis calculations to predict a basic circuits operation.

**Assessment Activites:**

Four things determine your grade: Test #1, Test #2, Test #3 (Final), and Labs. The total for each item is converted into a percentage of the total grade as follows:

Test-1	25%
Test-2	25%
Test-3 (Final Exam)	25%
All Labs (Kits = 10%)	25%
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Total	100%

**Evaluation Criteria:**

All tests will be True/False and Multiple Choice. You will be writing directly on the test.

For all tests, there is a set day for taking each one. If you are going to be out that DAY, please let me know BEFORE the test. **There are no "Late Tests"**.

**Grading Scale:** Your final grade for this class is calculated as a percentage of possible points.

100% - 90%	=	A
89% - 80%	=	B
79% - 70%	=	C
69% - 60%	=	D
59% - 0%	=	F

**Instructor:**

Bob Diaz, Instructor, El Camino College

**rdiaz@elcamino.edu**

I do not have an office.

If you need to talk to me, I will stay late for you.

**310-660-3593 x4209 voicemail only**

***El Camino College***  
**CLASSROOM POLICIES**

***EL CAMINO COLLEGE MISSION STATEMENT***

The mission of El Camino College is to meet the educational needs of our diverse community and ensure student success by offering quality comprehensive educational opportunities.

***ATTENDANCE POLICY***

**1. Attendance at first class**

Students who enroll in class but do not attend the first scheduled class meeting may be dropped from the roster. A student who registers for a class and never attends is still responsible for dropping the class.

**2. Attendance without official enrollment**

Students will not be permitted to attend classes in which they are not enrolled.

**3. Attendance during semester**

A student may be dropped from class when the number of hours absent exceeds the number of units assigned to the course. If your absences and tardiness exceed the unit value of the course, you can be dropped. This rule also applies to excessive absences due to illness or medical treatment.

***CHILDREN IN CLASSROOMS***

Children are not permitted in classrooms while class is in session. Attendance in class is limited to officially enrolled students and authorized visitors or guests. In addition, students must not allow children to be left unsupervised or unattended anywhere on campus.

***CLASSROOM MISCONDUCT***

1. Dishonesty, including but not limited to cheating, plagiarism or knowingly furnishing false information to the College.
2. Forgery, alteration, or misuse of college documents, records, or identification.
3. Violation of college policies or off-campus regulations, including but not limited to campus regulations concerning student organizations, the use of college facilities, or time, place, and manner of public expression.
4. Continued disruptive behavior, continued willful disobedience, profanity or vulgarity, or continued defiance of the authority of, or abuse of, college personnel or to anyone on campus.
5. Willful misconduct which results in injury or death to a student or college personnel.
6. Assault, battery, sex crimes including sexual assault or rape, or any threat of force or violence upon a student or college personnel.
7. Sexual harassment which includes unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature.

8. Obstruction or disruption of teaching, research, administration, disciplinary proceedings, or other authorized college activities including but not limited to its
9. community service functions or to authorized activities held off campus. Obstruction or disruption includes but is not limited to the use of skateboards, bicycles, radios, and roller skates.
10. Unauthorized entry to or use of college facilities, equipment or supplies.
11. Theft or deliberate damage to property of a college staff member, a student, or a visitor to the college including but not limited to the Library, Bookstore, and Food Service areas.
12. Defacing or damaging any college real or personal property.
13. Failure to comply with the directions of a member of the college certificated personnel, college management or supervisor personnel, or campus police acting within the scope of his or her duties.

### ***DISCIPLINARY ACTION***

Disciplinary action appropriate to the misconduct as defined above may be taken by an instructor the Dean of Student Services or his or her designee and the Board of Trustees.

Misconduct should be brought to the immediate attention of the Campus Police, or local police department/security force for courses taught off campus.

*Removal by Instructor* — In addition to an instructor's right to drop a student permanently from a class when the student is no longer participating i.e. lack of attendance in the course, an instructor may remove (suspend) a student from his or her class for the day of the incident and the next class meeting. During this period of removal, a conference should be held with the instructor and the student to attempt to resolve the situation that led to the student's removal and the student shall not be returned to the class from which he or she was removed without the concurrence of the instructor of the class.

1. If a student is suspended for one class meeting, no additional formal disciplinary procedures are necessary.
2. If a student is suspended from class for the day of the incident and the next class meeting, the instructor shall send a written report of the action to his or her dean who shall forward this information to the Dean of Student Services, the Provost. If the student removed by an instructor is a minor, the President's designee (Dean of Student Services) shall ask a parent or guardian of the student to attend a parent conference regarding the removal as soon as possible. If the instructor or the parent or guardian so requests, a college administrator shall attend the conference.
3. The instructor may recommend to his or her dean that a student be suspended for longer than two class meetings. If the dean, instructor and student cannot resolve the problem, the suspension will be referred to the President or the President's designee.
4. During the period following the initial suspension from class for the day of the incident and the following class meeting, the student shall be allowed to return to the class until due process and the disciplinary procedures are completed unless the student is further suspended as a result of actions.

## ***CHEATING OR PLAGIARISM POLICY***

**This policy applies to all forms of dishonesty, including but not limited to cheating, plagiarism or knowingly furnishing false information to the college.**

### **CONSEQUENCES FOR CHEATING OR PLAGIARISM**

Given alleged violation of the Standards of Conduct, any or all of the following actions may be imposed:

1. When there is evidence of cheating or plagiarism in classroom work, students may receive an F for that piece of work or may be suspended from all classes for that term and the following term if deemed appropriate.
2. The instructor may assign a failing grade to the examination or assignment in which the alleged cheating or plagiarism occurred. This action is based on information that the instructor had.
3. The instructor may dismiss the student from the class or activity for the present and/or following class session(s)
4. The instructor may recommend suspension or expulsion of the student from the college as stipulated in BP5138, Section IIB6 and 8. This recommendation must be in accordance with El Camino College's Due Process and Disciplinary Procedures.
5. The instructor will complete the Academic Dishonesty Report Form and submit it to the Academic Affairs Office.

### **EXAMPLES OF CHEATING OR PLAGIARISM**

1. Representing the words, ideas or work of another as one's own in any academic exercise (plagiarism), including the use of commercial term paper companies;
2. Copying or allowing another student to copy from one's paper or answer sheet during an examination;
3. Allowing another individual to assume one's identity for the purpose of enhancing one's grade in any of the following: testing, field trips or attendance;
4. Falsifying or attempting to falsify attendance records and/or grade rosters;
5. Changing answers on a previously scored test, assignment or experiment with the intent to defraud;
6. Inventing data for the purpose of completing a laboratory experiment or case study analysis with the intent to defraud;
7. Giving and/or taking information during an examination by any means such as sign language, hand signals or secret codes;
8. Obtaining copies of notes, exams or exam questions by any means other than distribution from the instructor. (This includes copying and removing exam questions from the classroom for any purpose.);
9. Using study aids such as calculators, tape recorders or notes that have been specifically prohibited by the instructor.

### **STUDENTS WITH DISABILITIES**

Students with disabilities who believe they may need accommodations in this class are encouraged to contact the Special Resource Center as soon as possible to better ensure such accommodations are implemented in a timely fashion. Also, please contact the instructor privately to discuss your specific needs.

## ADDITIONAL ITEMS

**USB Flash Memory Stick not required, but helpful;** The deep freeze software on the computer will erase anything you try and save on the hard drive. The USB Drive is the only way to keep your work. There are also additional documents that we use in class and the flash drive is how we save them.

**Scientific Calculator, required:** The The **TI-30x IIs** (about \$15) has an engineering mode that allows you to enter and see the standard engineering units.

**Class Number Assignment:** All students will be assigned a one or two digit class number. This number will be used for checking out equipment, on labs, quizzes, and tests. The number makes it easier to keep track of things.

**Lab Equipment:** Many of the labs we will build and test the circuits. You are responsible for the equipment. If the equipment is lost or damaged, you will have to pay for it. Failure to pay the damages will result in freezing all of your grades and locking you out of getting into new classes until the debt is paid.

**Late Labs:** I will allow for late labs (labs past the end of the time), but be careful, you can fall behind very quickly.

**There is no lab time on the week of the final.**

**Class Notes:** Please put all you class notes into a spiral binder. **You may use your own handwritten notes during any test.** Lose papers will not be allowed, nor will any printed material.

## Tentative Schedule

**Week 1: August 24 & August 26**

Introduction & Orientation, **No Labs for this week**  
Basic Parameters, Symbols, Notation, DMM, Power Supply & Color Code.  
Book Sections: [Unit 1, Chapters 1 --> 5]

**Week 2: August 31 & September 2**

Basic Parameters, Symbols, Notation, DMM, Power Supply & Color Code.  
Book Sections: Unit 2, Chapters 6 & 7

**Week 3: September 7 Holiday (Labor Day) & September 9**

Ohm's Law, Series Circuits, Intro to Parallel Circuits  
Book Sections: Unit 2, Chapters 10, 11, & 12

**Week 4: September 14 & September 16**

Ohm's Law, Series Circuits, Intro to Parallel Circuits  
Book Sections: Unit 2, Chapters 10, 11, & 12

**Week 5: September 21 & September 23**

Series/Parallel Circuits, Meter Design, Batteries, and Relays  
Book Sections: Unit 2, Chapters 8 & 12

**Week 6: September 28 & September 30**

Series/Parallel Circuits, Meter Design, Batteries, and Relays  
**>>> Test #1, September 30 <<<**

Book Sections: Unit 2, Chapters 8 & 12

**Week 7: October 5 & October 7**

AC Intro, Oscilloscope, Capacitors & Inductors, RC & RL Timing  
Book Sections: Unit 3, Chapters 14, 15, 16, & 17

**Week 8: October 12 & October 14**

AC Intro, Oscilloscope, Capacitors & Inductors, RC & RL Timing  
Book Sections: Unit 3, Chapters 14, 15, 16, & 17

**Week 9: October 19 & October 21**

Magnetism, Electronic Motors  
Book Sections: Unit 3, Chapters 18 & 19

**Week 10: October 26 & October 28**

Magnetism, Electronic Motors  
Book Sections: Unit 3, Chapters 18 & 19

**Week 11: November 2 & November 4**

Series Reactance (RC, RL, RLC), Series RLC Circuits, Resonance  
**>>> Test #2, November 4 <<<**

Book Sections: Unit 3, Chapters 20 & 21

**Week 12: November 9 & November 11 Holiday (Veterans Day)**

Series Reactance (RC, RL, RLC), Series RLC Circuits, Resonance  
Book Sections: Unit 3, Chapters 20 & 21

**Week 13: November 16 & November 18**

Series Reactance (RC, RL, RLC), Series RLC Circuits, Resonance  
Book Sections: Unit 3, Chapters 20 & 21

**Week 14: November 23 & November 25**

Rectifier Circuits, Zeners, Transformers, Transistors, Amplifiers  
Book Sections: Unit 4, Chapters 22, 23 & 24

**Week 15: November 30 & December 2**

Rectifier Circuits, Zeners, Transformers, Transistors, Amplifiers  
Book Sections: Unit 4, Chapters 22, 23 & 24

**Week 16: December 7 & December 9      Review & FINAL EXAM**

Basic Digital (Gates & Counters)  
Book Sections: Unit 4, Chapter 26

December 7 = Review, **No Labs on the last week**

**>>>>> Thursday, December 9 = Final Exam <<<<<**