

SYLLABUS

- COURSE TITLE:** Residential House Wiring & Codes
CTR 0060
CRN: 45089 Units: 3
- PREREQUISITE:** None
- CLASS TIMES:** 1/27/14 – 5/24/14 M W 6:00 PM – 9:05 PM
Classroom: H 004 – Rocklin Campus
- INSTRUCTOR:** Steve Geiger
Office: Sierra College (Main Rocklin Campus) – B3
5000 Rocklin Road, Rocklin, CA 95677
Campus Phone/VM: 916-660-8288 x4212
E-mail: sgeiger@sierracollege.edu
U.S. mail: Sierra College – Construction & Energy Technology
5000 Rocklin Road, Rocklin, CA 95677 College
Website: www.sierracollege.edu
Office Hours: By Appointment.
Instructor's Website: www.energyinstructor.com
- REQUIRED TEXT:** **Electrical Wiring – Residential**, 17th Edition by Ray C. Mullin and Phil Simmons, published by Delmar Cengage Learning. ISBN-13: 978-1-4354-9826-6, and ISBN-10: 1-4354-9826-7.
- REQUIRED SUPPLIES:** Safety glasses, wire stripper, needle nose pliers, lineman's pliers with side cutter, multi-screwdriver (6 in 1), utility knife, tape measure, gloves, belt pouch, pencil, calculator, proper shoes (NO open toes), DMM.
- COURSE DESCRIPTION:**
Instruction basic to the electrical wiring trade. Inside wiring as applied to residential structures. Electrical service requirements for photovoltaic systems. Use of tools and materials of the trade. Review of the National Electrical Code and the applications and CEC updates due to California Green Technology and "Net Zero Energy" policies.
- COURSE OBJECTIVES:**
- Objectives – Lecture:**
1. Discuss and demonstrate the safety aspects of correct tools for electrical work;
 2. Identify and discuss symbols employed in electrical blueprints;
 3. Describe various methods of calculating residential wiring and electrical loads as required by the National Electrical Code;
 4. Describe and demonstrate various methods of installing and connecting wiring in practical residential applications following code requirements;
 5. Identify and discuss California Green Technology and "Net Zero Energy" policies related to residential electrical construction.
- Objectives – Lab:**
1. Calculate correct wire size and conduit size to identify conduit type and size;
 2. Apply safety practices in laboratory activities;
 3. Install electrical systems to meet code and inspection requirements;
 4. Apply electrical theories to electrical circuitry and its applications;
 5. Calculate amperage needed to perform function of a circuit;

6. Calculate type and wire size to carry the amperage;
7. Determine type and size of conduit compatible with a selected wire size;
8. Connect circuit wires in the box including continuity of ground and pigtails when applicable;
9. Install the number of circuits required by code;
10. Install from code requirements correct number and type of circuits for each type of room;
11. Determine correct type of circuit necessary to provide power for different applications;
12. Determine correct type of circuit necessary to provide power for photovoltaic systems;
13. Install isolated ground for all circuits supplying power to computer work station areas;
14. Select proper transformer for door chimes;
15. Determine location of entertainment center unit to provide adequate power for anticipated equipment;
16. Calculate total load for the structure to determine minimum service load;
17. Prepare proper grounding for service load for UFER and ground rod applications;
18. Assemble sub-panels including main disconnect requirements and proper grounding methods;
19. Compare and contrast grid and stand alone photovoltaic systems;
20. Identify additional service panel connections required for photovoltaic system installations;
21. Determine and apply appropriate California Green Technology and "Net Zero Energy" policies to lab electrical wiring projects and exercises.

VI. PERFORMANCE CRITERIA:

Exams: Two exams worth 100 points each	200
Student Project	100
Lab Activities	300
Quizzes	100
Homework	200
Class Participation	100
Instructor's Evaluation (of student participation & class contribution)	(+/-)
Total Points	1000

<u>Course Grade</u>	<u>Point Range</u>
A	900 -- 1000
B	800 -- 899
C	700 -- 799
D	600 -- 699
F	Less than 600
Incomplete	Only granted in very rare circumstances – please see college policy

- A. **Student responsibility:** The *student* is responsible for meeting all requirements, prerequisites, deadlines, registration requirements and fees. Incomplete grades will not be given in lieu of poor course work or lack of attendance. Students are expected to be familiar with and to observe rules regarding honesty and plagiarism as outlined in the official college *Students Rights and Responsibilities Handbook*.
- B. **Exams:** Each exam will be drawn from textbook material and in-class lecture notes. NO MAKE-UP EXAMS WILL BE GIVEN. You may contact me in advance to request to take an exam early. If so, please be prepared to substantiate the necessity of your request in writing.
- C. **Lab Activities:** Students will be assigned a number of hands-on lab activities throughout the semester. These activities will often be performed in groups, but also may be performed individually. Documentation of findings, processes, and methodologies will be required to be turned in to obtain credit for lab activities. No make-up labs will be allowed.
- D. **Attendance and Participation:** It is very important that you attend class regularly to benefit from review of reading assignments, lab activities, and lectures. However, your involvement is most important because it gives you the chance to show support and caring for other students for working together in your work teams. Your instructor will take attendance each session and keep track of

those students who regularly participate in discussions, small group work, and contribute to a positive classroom environment. If you are absent from lecture five times or more during the semester, you will be jeopardizing your success in this course. Grades are partly based on in-class activities, which will occur *every* session (discussion, labs, quizzes, etc.). None of these activities will be repeated and none will be "made up," and none will be completed "at home," so excessive absences may result in a reduced or even failing grade. Being dropped from the class is not automatic; you will need to either contact me and let me know your intentions, or go to the Admissions and Records office and complete the drop procedure. **I will not drop you from the class without your telling me to do so.**

- E. **Withdrawal:** Students must officially withdraw from courses in a manner approved by the college. Failure to withdraw properly *before the deadline* may result in an "F" grade. Consult an Official College Calendar for the last withdrawal date.
- F. **Quizzes and homework:** Unannounced quizzes and homework may be given *frequently*. No make-up quizzes will be allowed without prior authorization and no homework will be accepted after its assigned due date. One quiz/homework grade will be dropped in calculation of final grade.
- G. **Safety:** Students will be expected to promote a safe study and work environment. Everyone will adhere to prescribed safety procedures and follow basic electrical work and fall protection standards. Students will dress appropriately for lab and construction environments and will not be allowed to participate in activities if/when safety is compromised.
- H. **Emergency Procedures:** Students should become familiar with the school's emergency procedures and classroom safety rules.
- I. **Late Assignments:** You will be assigned due dates for all homework. In order to receive 100% credit for your graded work, you must turn in the assignments by the assigned due date. ***If you must be absent on the day of a presentation***, you must contact me in advance or as soon as possible and be prepared to submit written verification of your absence (i.e. doctor's note). ***If you must be absent on the date a written assignment is due***, the assignment can either be turned in by the student or friend or fellow student, sent through the U.S. mail, or e-mailed to me. Late work must be made up within one week of the original due date, but will be automatically downgraded by 25%. Make-up work past this point will not be accepted, and will receive no grade.
- J. **Incompletes:** On rare occasions, students need to request an incomplete grade for the semester. They are granted for unforeseeable, emergency, and justifiable reasons at the end of the academic term. (Typically, the student has accomplished at least 80% of the coursework for the semester.) If you encounter such a situation, contact me as soon as possible, and you will need to complete the appropriate paperwork available from Admissions and Records.
- K. **Code of Conduct:** This course has opportunities for hands-on lab work with partners or in teams. You will be expected to handle yourself with the same professional conduct and courtesy that would be required of you by any employer or on any jobsite – in both the classroom setting, as well as the lab. Your professionalism, conduct and communication with fellow employees and your employer is an extremely important element of your future success in this industry.

Final Comments – My Objective:

This instructor has a goal to provide equal opportunity for success for all students. If you feel a learning disability might influence your successful completion of this course, please request a conference with the instructor during the first two weeks of the semester.

This instructor is pleased to accept suggestions regarding ways the class, labs, lectures, etc. may be made more fun, interesting, meaningful, and/or useful. Even though the essential content and required effort of the course cannot be diminished, all such suggestions will be carefully considered.

As your instructor, it is my objective to teach you the material in a dynamic and positive environment, as well as from personal first-hand experience. I like to teach in a synergistic and solution-oriented style. Your own motivation will help you succeed and excel in this class. I wish you the best for this semester.