Course Syllabus

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<tr><td rowspan="8">1</td><td rowspan="8">Course Information</td><td colspan="2">Columbia Gorge Community College</td><td>Fall 2011</td></tr>
<tr><td>Basic Electricity for Maintenance Technicians</td><td>Basic Electricity</td><td>CRN: *
Non-credit</td></tr>
<tr><td colspan="2">Time:
Thursdays, beginning November 3, 12:30-3:30 pm</td><td>Place:
Tentative Rm 1.361 and 1.365</td></tr>
<tr><td colspan="3">Instructor: Bill Marsh</td></tr>
<tr><td>Lab / Lecture combined</td><td>Basic Electricity Lab</td><td>CRN: *
Non-credit</td></tr>
<tr><td colspan="3">Instructor: Bill Marsh</td></tr>
<tr><td colspan="2">Office Location:
“Fish bowl” (1.037)</td><td>Office Hours:
By appointment</td></tr>
<tr><td colspan="2">Voice and Messages Phone:
541-506-6175 (temp)</td><td>E-mail: bmarsh@cgcc.cc.or.us</td></tr>
<tr><td>2</td><td>Course Description:</td><td colspan="3">Course Description For Publication:

This is a non-elective course in electricity for service and maintenance technicians. It introduces the student to the basic electrical principles, components and systems encountered in the industrial environment. The focus is on safely diagnosing and troubleshooting electrical systems and includes:

• Direct and Alternating current power supplies.
• Characteristics of components such as resistors, capacitors and inductors.
• Measuring instruments including meters and oscilloscopes.
• Principles of motors and transformers.
• Sensors and actuators.
• Basics of programmable logic controllers (PLCs).

The student will be expected to enter the class with the following:
• A basic understanding of algebra and simple geometry.
• Willingness to safely participate in lab exorcises utilizing live electrical circuits.
• Ability to read and understand the course material.

Course Activities and Design:
Course activity primarily involves lectures and labs. Lectures will introduce the goals, procedures and components for a particular lab session. Material will be presented with a minimum of math however, a understanding of basic algebra and geometry is expected. Labs will give the student a hands-on opportunity to demonstrate the principles covered in the lectures.</td></tr>
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Course Syllabus

		Instructional Goal: The goal is to develop an understanding of basic electricity and the components involved in electrical systems encountered in industry. Objectives: Provide the student with the knowledge and skills to safely troubleshoot and maintain equipment and systems in the manufacturing environment.	
O	Course Pre-requisites	None	
4	Course Content	The follow topics will be covered: 1. Promote Safety in an electrical / mechanical environment. 2. Emphasize diagnostic and troubleshooting skills. 3. Safe usage and limitations of test instruments. 3.1. Mechanical and digital meters. 3.2. Oscilloscopes and data loggers. 3.3. Insulation testers. 4. Power Supplies. 4.1. Direct Current. 4.2. Alternating Current. 4.2.1. Single Phase. 4.2.2. Multiple Phases. 5. Components and their usage. 5.1. Resistors. 5.2. Capacitors. 5.3. Inductors. 5.4. Transformers. 5.5. Switches. 5.6. Relays. 5.7. Motors. 6. Sensors and their application. 6.1. Photo Sensors. 6.2. Proximity sensors. 6.3. Temperature sensors. 6.4. Position sensors. 6.5. Level sensors. 7. Motors and motor controls. 7.1. DC motors. 6.2. AC motors. 6.2.1. Single phase motors. 6.2.2. Three phase motors. 8. Programmable logic controllers. 8.1. CPU and basic operating principles. 8.2. Input modules. 8.3. Output modules.	
5	Instructional Materials	Required Textbooks:	Electrical Studiers for Trades Herman 4th edition ISBN-10: 1435469828

		Reference	Same
		Software	All software will be provided by CGCC
		Equipment	Lab equipment will be provided by CGCC
6	Learning Activities and Major Assignments	In-class activities and assignments	Participation in tasks assigned to individuals and /or small groups. Asking and answering appropriate relevant questions. Listening to others. Completing daily assignments. Turning in assigned work on time to the instructor.
		Out-of-class activities and assignments	Students should expect to spend approximately the same amount of time outside the classroom working on their course as they spend in the classroom. Activities will include reading and studying the text and lab manual for the class, working assigned homework problems and generally preparing to participate in class.
7	Classroom Expectations and Policies	Attendance, Absences, and Tardiness	Students are expected to attend all class meetings. Students are expected to be on time for class. When a formal break is given as a part of a class students are expected to return to class at the appropriate time. Unless a particular presentation is being made (usually at the start of the lab period), in the lab portion of the class, students may leave the lab room when they complete the lab work or to take a break as they feel necessary.
		Class cancellation and school closure process	When classes are cancelled as a result of inclement weather, local radio stations should carry announcements. If a class is cancelled we will try to notify effected students as quickly as the cancellation is determined and post notices of the cancellation.

		Missed assignments, assessments, and make-up policy	Students are responsible for assignments made by the instructor. If a class is missed, the student is responsible for determining any assignment by contacting the instructor or other students. In general assignments are made in one class period and should be accomplished prior to the next class period. Daily assignments/homework may not be made up for credit. The final exam may not be made up for credit. Mid term exams may not be made up for credit unless it is done prior to the next scheduled class period. Lab activities may be turned in late based on one point per day being deducted from the possible point value available up to a maximum of 7 late points, after that the assignment will not be accepted for credit. Any exceptions to the above policy will be applied at the discretion of the instructor and depending on the particular emergency situation requiring the person to not complete an assigned task. When you are unable to attend a class it is best to notify the effected instructor ahead of time, particularly if any sort of quiz or test will be missed.
		Classroom behavior and courtesy	Students are expected to act as if they respect the instructor, their classmates, and any other person they come in contact with as part of taking this course. This implies that they will behave in a politically correct fashion whether or not they actually believe it is appropriate or necessary to do so. Students must observe all safety procedures and conduct themselves in a manner consistent with safe behavior. Unsafe behavior will not be tolerated.

		Academic honesty – cheating and plagiarism	Students are expected to be honest and ethical in their academic work. Academic dishonesty includes cheating and plagiarism. All work submitted in this course is to be your own new, original work written in response to the assignments. Consciously or unknowingly presenting the ideas or writings of others as your own will result in academic sanctions that may include a grade of F for the assignment or for the class and possible institutional sanctions including suspension or expulsion. See the Code of Student Conduct and the Students Rights and Responsibilities policy for further information.
8	Assessment and Grading	How learning will be assessed	Your work will be assessed based on the number of correctly completed assignments. The instructor will determine the level of completeness and correctness. The instructor will determine the value of the various accomplishments. The instructor will try to make such determinations in a rational and objective way.
		Criteria or Standards used	Credit will be given for correct answers. Partial credit may at times be assigned for correct procedures, if it is easy for the instructor to determine that correct procedures were followed despite the wrong answer being produced. Students are encouraged to document their work so that they are able to determine at what step a mistake is made in a multi-step problem and are thus able to learn from rather than repeat the mistake. Generally letter grades will be assigned based on the percentage of correct work done according to the following standard: "A" = 90-100% "B" = 80-89% "C" = 70-79% "D" = 60-69% "F" = < 60%

		Weighting assessments for final grade	A grade for the course will be determined based on your performance in the following areas of the class: Labs 40% Tests & Quizzes 25% Final Exam 25% Homework 10%
9	ADA Statement	*CGCC is committed to providing support for students with disabilities. I f you are a student with physical, learning, emotional, or psychological disabilities you are encouraged to stop by Student Services and make an appointment with Lori Ufford, the Disabilities Coordinator at 506-6025 or by email at lufford@cgcc.cc.or.us. If you have an accommodation plan please see me as soon as possible so we can make any arrangements necessary for your learning. No accommodations can be provided until a Reasonable Accommodation Plan is in place. Please remember plans are not retroactive and cannot be used for assignments prior to the date of my signature*.	
10	Safety Statement	Students should only do those things, which they know are safe. Safety involves both human and facility and equipment concerns. Human safety must not be compromised. Hazards present in classroom and lab situations involve both electrical hazards and physical hazards. Good "housekeeping" practices should eliminate most recognized physical world safety concerns. Students should avoid becoming part of any energized electrical circuit by working only on circuits from which the power source has been disconnected. This technique not only preserves the human being but also additionally is the recommended process for preserving the integrity of the various parts and equipments we use in lab. Under "ideal" conditions 100 milliamps is adequate to cause loss of life in humans. At this low level of current most fuses and circuit breakers within equipment will not interrupt current flow. If you are unsure whether a particular procedure is safe…. ask the instructor prior to trying. Students are expected to preserve their physical safety by maintaining a "clean" environment in classroom and lab areas. All equipment and parts should be appropriately stored prior leaving the lab area. Food and drink are not allowed in lab. The instructor will cover safety concerns related to specific activities as procedures are introduced. We are each dependent on each other to maintain a safe working environment. If you lack it presently, you should quickly develop common sense related to working with and around others in hazardous environments. Students are expected to use wrist straps and anti-static mats	

		whenever handling computer components.
11	Flexibility Statement	Assignment and exam schedules may be changed in response to institutional, weather, or class changes or problems.