

COURSE: EUS 230 ELECTRIC UTIL PROT REL I

HOURS: Lecture: 2 Lab/Shop: 3 Work Exp/Clinical: 0 Credits: 3

COURSE DESCRIPTION:

This course introduces the art of protective relaying used in the electrical utility industry with emphasis on function and critically. Topics include substations zones protection, transmission lines, switchyards, relays, and power line carrier components. Upon completion, students should be able to understand the purpose for various relay schemes and protective relay.

PREREQUISITE(S): EUS 130

COREQUISITE(S): None

TEXTBOOK(S) & OTHER SPECIAL REQUIREMENTS:

No text required.

STUDENT LEARNING OUTCOMES:

Upon successful completion of this course, the student will be able to:

1. Discuss the purpose and importance of electric utility protective relaying.
2. Discuss why protective relaying is both an art and science.
3. Discuss the purpose, types, safety, calculations, and testing of current transformers.
4. Discuss the purpose, types, safety, calculations, and testing of potential transformers.
5. Discuss the classification of relays.
6. Discuss the difference between protection and control.
7. Discuss non-directional overcurrent protection.
8. Discuss an ABB CO overcurrent relay.
9. Discuss a GE IAC overcurrent relay.
10. Discuss relay zones of protection.
11. Discuss relay time curves.
12. Discuss circuit breaker reclosing.
13. Discuss the use and the impact of modern electric utility tools, equipment, techniques and solutions in a global context.
14. Use oral and written communication skills to explain the details of testing and calibration of electromechanical relay to others, and write a professional technical laboratory report.

EXPLANATION OF SYLLABUS:

The Student Learning Outcomes listed in this syllabus are those required actions that a student who successfully completes the course must be able to perform or exhibit. The educational experience, however, is a two-way, interactive process involving both the student and his/her instructor. The student must play an active role in the learning process in order to be successful.

Each Instructor will provide an Instructor's Course Requirements document at the first class meeting explaining how he/she measures each of the Student Learning Outcomes listed in the syllabus. A student who is unable to accomplish the outcomes will not receive a passing grade in the course.

The information in this RCC Syllabus may not be accurate beyond the current semester. Textbooks and other course materials are subject to change. Students should verify the textbooks at the first class meeting with their instructor prior to purchasing.

RCC ATTENDANCE POLICY:

Regular attendance is considered essential to realize course outcomes. Students are expected to attend all scheduled meetings of classes for which they register. Rules on tardiness and leaving class early are addressed in each Instructor's Course Requirements document.

No matter the basis for absence, students are held accountable for academic activities, and faculty may require special work or tests to make up for missed classes.

When courses are delivered through online instruction (DL or Distance Learning) or through a combination of traditional classroom and online instruction (hybrid), class participation is no less important, though its measurement may be somewhat different.

The Nursing Department's requirement related to attendance exceeds the college policy. Nursing students are required to attend 90% of classes, labs, and clinicals. At the discretion of the instructor, a written assignment or makeup clinical may be given for hours missed determined to be unavoidable.

RCC GRADING SYSTEM:

Richmond Community College employs a system of letter grades and corresponding quality points per grade to evaluate a student's performance in meeting the stated goals and objectives for each course. **

SECURITY AND SAFETY PROCEDURES:

RCC's upgraded security procedures require all doors to be locked at class start-time.

All students, faculty, staff, and visitors must wear visible identification (ID) badges. Identification badges should be worn on the front of clothing. RCC employees can stop, restrict, and remove from any school-related activity or function anyone who does not display an ID badge.

STUDENTS WITH DISABILITIES:

Richmond Community College complies with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act, which require that no qualified student with a disability be excluded from participation in or be denied the benefits of any services, programs or activities on the basis of his or her disability. If accommodations in the classroom and/or in extracurricular activities are required, the student is encouraged to contact the Disability Services Counselor in Student Services prior to the start of the semester; however, a student may request

accommodations at any time. Reasonable accommodations may take up to three (3) weeks to implement. Richmond Community College is committed to providing support and services to students with disabilities to help them obtain a quality education and to reach their goals. Assistance is provided, as necessary, and is intended to help students participate in and benefit from the programs and activities enjoyed by all students.

WITHDRAWAL:

In order to officially drop or withdraw from one or more courses without academic penalty, students must complete the "Change in Registration Status" form and submit it to the Registrar's Office before the 75% Point of the Term. Students may obtain the "Change in Registration Status" form from Student Services or from an instructor. Students are responsible for obtaining the course instructor(s) signature(s) and returning the "Change in Registration Status" form to the Registrar.

Students who withdraw before the 75% Point of the Term will receive a grade of "W." Students who withdraw after the 75 % Point of the Term will receive a grade of "WF" or "WP." The Registrar will inform the students by mail of their withdrawal and the right to appeal.

WITHDRAWAL AND FINANCIAL AID:

The Return of Title IV Funds policy affects any student who receives Federal Financial Aid (for example, Pell Grants) and who withdraws from all classes. Under this policy, any student who withdraws or is withdraw by the instructor completely from classes on or before the 60 percent point of the term will be required to repay all or a portion of his/her Federal Financial Aid.

****Please refer to the online version of RCC's Catalog & Student Handbook for current academic and general policies.**