

ELECTRIC UTILITY SUBSTATION AND RELAY TECHNOLOGY
(To be offered Fall 2011 pending State Board approval)

The Electric Utility Substation and Relay Technology curriculum provides the skills to maintain high voltage equipment and protective systems for the electric utility transmission system. Training in operation and maintenance of critical infrastructure associated with the transmission grid is included.

Courses will develop an understanding of maintenance/troubleshooting on transmission equipment. Courses include theory in three phase power, protective relaying, power transformers, voltage regulators, capacitors, and power circuit breakers. The skills apply to the electric utility industry and numerous other industries.

Graduates should qualify for entry-level employment in the electric utility industry and industrial power facilities. Employment opportunities include: control systems, instrumentation and control in general industry, electric utility industry, green energy markets, or positions with equipment related to power transmission.

COURSE REQUIREMENTS

	Class	Lab	Work Exp/ Clinical	Credit
A. General Education Courses				
1. Required Courses				
ECO 252 Principles of Macroeconomics	3	0	0	3
ENG 111 Expository Writing	3	0	0	3
ENG 112 Argument-Based Research	3	0	0	3
MAT 171 Precalculus Algebra	3	0	0	3
MAT 171A Precalculus Algebra Lab	0	2	0	1
Humanities/Fine Arts Elective*	3	0	0	3
B. Major Courses				
1. Core Courses				
<i>To receive a degree, diploma or certificate from RCC, a student must have a grade of "C" or better in all core courses for the program of study.</i>				
CIS 110 Introduction to Computers	2	2	0	3
EUS 110 Intro to Electric Utility Industry	3	0	0	3
EUS 120 Elect Utility Sys Overview and Operation	2	2	0	3
EUS 130 Electric Utility Print Reading	1	2	0	2
EUS 210 Large High Voltage Power Transformers	2	3	0	3
EUS 220 High Voltage Power Circuit Breakers	2	3	0	3
EUS 230 Electric Utility Protective Relaying	2	3	0	3
EUS 240 Substation Ancillary Systems	2	3	0	3
EUS 250 Metering Technology	2	3	0	3
EUS 260 Capstone & Case Studies in EUSRT	2	0	0	2
C. Other Major Courses				

ELC 112	DC/AC Electricity	3	6	0	5
ELC 117	Motors and Controls	2	6	0	4
ELC 128	Introduction to PLC	2	3	0	3
MAT 172	Precalculus Trigonometry	3	0	0	3
MAT 172A	Precalculus Trigonometry Lab	0	2	0	1
MAT 271	Calculus I	3	2	0	4
PHY 151	College Physics I	3	2	0	4
PHY 152	College Physics II	3	2	0	4
D. Other Required Courses					
ACA 111	College Student Success	1	0	0	1
Total Credit Hours					73

*Approved Electives are listed on the page before the Course Descriptions.

SEMESTER SCHEDULE ELECTRIC UTILITY SUBSTATION AND RELAY TECHNOLOGY

		Class	Lab	Work Exp/ Clinical	Credit
First Year – Fall Semester					
ACA 111	College Student Success	1	0	0	1
CIS 110	Introduction to Computers	2	2	0	3
ELC 112	DC/AC Electricity	3	6	0	5
ENG 111	Expository Writing	3	0	0	3
EUS 110	Intro to Electric Utility Industry	3	0	0	3
MAT 171	Precalculus Algebra	3	0	0	3
MAT 171A	Precalculus Algebra Lab	<u>0</u>	<u>2</u>	<u>0</u>	<u>1</u>
		15	10	0	19
First Year—Spring Semester					
ELC 117	Motors and Controls	2	6	0	4
ENG 112	Argument-Based Research	3	0	0	3
EUS 120	Electrical Utility System Overview and Operation	2	2	0	3
EUS 130	Electric Utility Print Reading	1	2	0	2
MAT 172	Precalculus Trigonometry	3	0	0	3
MAT 172A	Precalculus Trig Lab	0	2	0	1
PHY 151	College Physics I	<u>3</u>	<u>2</u>	<u>0</u>	<u>4</u>
		14	14	0	20

Second Year—Fall Semester

ELC 128	Introduction to PLC	2	3	0	3
EUS 210	Large High Voltage Power Transformers	2	3	0	3
EUS 220	High Voltage Power Circuit Breakers	2	3	0	3
MAT 271	Calculus I	3	2	0	4
PHY 152	College Physics II	<u>3</u>	<u>2</u>	<u>0</u>	<u>4</u>
		12	13	0	17

Second Year—Spring Semester

ECO 252	Principles of Macroeconomics	3	0	0	3
EUS 230	Electric Utility Protective Relaying	2	3	0	3
EUS 240	Substation Ancillary Systems	2	3	0	3
EUS 250	Metering Technology	2	3	0	3
EUS 260	Capstone & Case Studies in EUSRT	2	0	0	2
	Humanities/Fine Arts Elective*	<u>3</u>	<u>0</u>	<u>0</u>	<u>3</u>
		14	9	0	17

Total Credit Hours 73

*Approve by RCC Curriculum Committee 3/22/11
Effective Fall 2011*