ELECTRIC UTILITY SUBSTATION AND RELAY TECHNOLOGY (A50510)

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					
	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.					
	CIS 110	Introduction to Computers	2	2	0	3
	EUS 110	Intro to Electric Utility Industry	3	0	0	4
	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 **74**

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

SEMESTER SCHEDULE
ELECTRIC UTILITY SUBSTATION AND RELAY TECHNOLOGY

First Year – Fall Semester

		Class	Lab	Work Exp/ Clinical	Credit
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 Elect Util Ind	3	0	0	3
MAT 171	Precalculus Algebra	3	0	0	3
MAT 171A	Precalculus Algebra Lab	0	2	0	1
		15	10	0	20

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 Util Sys Ov & Oper	2	2	0	3
EUS	130	Electric Util 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	3	2	0	4
			14	14	0	20

Second Year—Fall Semester

ELC	128	Introduction to PLC	2	3	0	3
EUS	210	Lg High Volt Power Trans	2	3	0	3
EUS	220	High Volt Power Cir Br	2	3	0	3
MAT	271	Calculus I	3	2	0	4
PHY	152	College Physics II	3	2	0	4
			12	13	0	17

Second Year—Spring Semester

ECO	252	Principles of Macroeconomics	3	0	0	3
EUS	230	Electric Util Prot Rel	2	3	0	3
EUS	240	Substation Ancillary Sys	2	3	0	3
EUS	250	Metering Technology	2	3	0	3
EUS	260	Caps & Case Stud in EUSRT	2	0	0	2
		Humanities/Fine Arts Elective*	3	0	0	3
			14	9	0	17

Total Credit Hours **74**

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