

Program Planning Guide

Electrical Systems Technology, Associate in Applied Science Degree (A35130)

Program Length: 5 Semesters

Career Pathway Options: Associate in Applied Science Degree in Electrical Systems Technology

Program Site/s: Chatham Main Campus

Suggested Course Schedule:

		Hours				Notes:
		Class	Lab	Clinical	Credit	
1st Semester (Fall)						
ELC 112	DC/AC Electricity	3	6	0	5	
ELC 113	Residential Wiring	2	6	0	4	
ELC 118	National Electrical Code	1	2	0	2	
ISC 112	Industrial Safety	2	0	0	2	
ACA 122	College Transfer Success	0	2	0	1	
					14	
2nd Semester (Spring)						
ELC 114	Commercial Wiring	2	6	0	4	
ELC 117	Motors and Controls	2	6	0	4	
ELC 119	NEC Calculations	1	2	0	2	
ELN 131	Analog Electronics I	3	3	0	4	
					14	
3rd Semester (Summer)						
ELC 127	Software for Technicians	1	3	0	2	
ELC 121	Electrical Estimating	1	2	0	2	
MAT 110	Math Measurement & Literacy	2	2	0	3	
Humanities/Fine Arts Elective					3	
English: Take one course:					3	
ENG 110	Freshman Composition					
ENG 111	Writing and Inquiry					
					13	
4th Semester (Fall)						
BPR 130	Print Reading - Construction	3	0	0	3	
ELC 128	Intro to PLC	2	3	0	3	
ALT 120	Renewable Energy Tech	2	2	0	3	
ELC 122	Advanced Residential Wiring	2	4	0	4	
					13	
5th Semester (Spring)						
ELC 220	Photovoltaic Sys Tech	2	3	0	3	
BUS 110	Introduction to Business	3	0	0	3	
WBL 111	Work-based Learning I	0	0	10	1	
Social/Behavioral Science Elective					3	
Communications, take one course:					3	
COM 110	Introduction to Communication					
COM 120	Intro Interpersonal Com					
COM 231	Public Speaking					
ENG 112	Writing/Research in the Disc					
ENG 114	Prof Research & Reporting					
ENG 115	Oral Communication					
ENG 116	Technical Report Writing					
					13	
Total Semester Hours Credit Required for Graduation:					67	

Electrical Systems Technology, AAS (A35130)

Course Descriptions

~ 2 ~

ACA 122 College Transfer Success 0-2-1

This course provides information and strategies necessary to develop clear academic and professional goals beyond the community college experience. Topics include the CAA, college policies and culture, career exploration, gathering information on senior institutions, strategic planning, critical thinking, and communications skills for a successful academic transition. Upon completion, students should be able to develop an academic plan to transition successfully to senior institutions. This course has been approved for transfer under the CAA and ICAA as a premajor and/or elective course requirement.

ALT 120 Renewable Energy Technologies 2-2-3

This course provides an introduction to multiple technologies that allow for the production and conservation of energy from renewable sources. Topics include hydro-electric, wind power, passive and active solar energy, tidal energy, appropriate building techniques, and energy conservation methods. Upon completion, students should be able to demonstrate an understanding of renewable energy production and its impact of humans and their environment.

BPR 130 Print Reading-Construction 3-0-3

This course covers the interpretation of prints and specifications that are associated with design and construction projects. Topics include interpretation of documents for foundations, floor plans, elevations, and related topics. Upon completion, students should be able to read and interpret construction prints and documents.

BUS 110 Introduction to Business 3-0-3

This course provides a survey of the business world. Topics include the basic principles and practices of contemporary business. Upon completion, students should be able to demonstrate an understanding of business concepts as a foundation for studying other business subjects. This course has been approved for transfer under the CAA and ICAA as a premajor and/or elective course requirement.

COM 110 Introduction to Communication 3-0-3

This course provides an overview of the basic concepts of communication and the skills necessary to communicate in various contexts. Emphasis is placed on communication theories and techniques used in interpersonal group, public, intercultural, and mass communication situations. Upon completion, students should be able to explain and illustrate the forms and purposes of human communication in a variety of contexts. This course has been approved for transfer under the CAA and ICAA as a general education course in Communications.

COM 120 Intro to Interpersonal Communication 3-0-3

This course introduces the practices and principles of interpersonal communication in both dyadic and group settings. Emphasis is placed on the communication process, perception, listening, self-disclosure, speech apprehension, ethics, nonverbal communication, conflict, power, and dysfunctional communication relationships. Upon completion, students should be able to demonstrate interpersonal communication skills, apply basic principles of group discussion, and manage conflict in interpersonal communication situations. This course has been approved for transfer under the CAA and ICAA as a universal

general education transfer component (UGETC) course in Humanities/Fine Arts.

COM 231 Public Speaking 3-0-3

This course provides instruction and experience in preparation and delivery of speeches within a public setting and group discussion. Emphasis is placed on research, preparation, delivery, and evaluation of informative, persuasive, and special occasion public speaking. Upon completion, students should be able to prepare and deliver well-organized speeches and participate in group discussion with appropriate audiovisual support. This course has been approved for transfer under the CAA and ICAA as a universal general education transfer component (UGETC) course in Humanities/Fine Arts.

ELC 112 DC/AC Electricity 3-6-5

This course introduces the fundamental concepts of and computations related to DC/AC electricity. Emphasis is placed on DC/AC circuits, components, operation of test equipment; and other related topics. Upon completion, students should be able to construct, verify, and analyze simple DC/AC circuits.

ELC 113 Residential Wiring 2-6-4

This course introduces the care/usage of tools and materials used in residential electrical installations and the requirements of the National Electrical Code. Topics include NEC, electrical safety, and electrical print reading; planning, layout, and installation of electrical distribution equipment; lighting; overcurrent protection; conductors; branch circuits; and conduits. Upon completion, students should be able to properly install conduits, wiring, and electrical distribution equipment associated with basic electrical installations.

ELC 114 Commercial Wiring 2-6-4

This course provides instruction in the application of electrical tools, materials, and test equipment associated with electrical installations. Topics include the NEC; safety; electrical blueprints; planning, layout, and installation of equipment and conduits; and wiring devices such as panels and overcurrent devices. Upon completion, students should be able to properly install equipment and conduit associated with electrical installations.

ELC 117 Motors and Controls 2-6-4

Local Prerequisites: ELC 112

This course introduces the fundamental concepts of motors and motor controls. Topics include ladder diagrams, pilot devices, contactors, motor starters, motors, and other control devices. Upon completion, students should be able to properly select, connect, and troubleshoot motors and control circuits.

ELC 118 National Electrical Code 1-2-2

This course covers the use of the current National Electrical Code. Topics include the NEC history, wiring methods, overcurrent protection, materials, and other related topics. Upon completion, students should be able to effectively use the NEC.

Electrical Systems Technology, AAS (A35130)

Course Descriptions

~ 3 ~

ELC 119 NEC Calculations 1-2-0-2

This course covers branch circuit, feeder, and service calculations. Emphasis is placed on sections of the National Electrical Code related to calculations. Upon completion, students should be able to use appropriate code sections to size wire, conduit, and overcurrent devices for branch circuits, feeders, and service.

ELC 121 Electrical Estimating 1-2-2

The course covers the principles involved in estimating electrical projects. Topics include take-offs of materials and equipment, labor, overhead, and profit. Upon completion, students should be able to estimate simple electrical projects.

ELC 122 Advanced Residential Wiring 2-4-4

Prerequisite: ELC 113

This course introduces advanced topics in residential electrical installations including the requirements of the National Electrical Code (NEC). Topics include NEC, special purpose outlets, telephone and low voltage signal systems, swimming pool electrical systems, home automation systems, standby power systems and residential utility-interactive photovoltaic systems. Upon completion, students should be able to properly install conduits, wiring, electrical distribution equipment, low voltage, standby power, automated systems, and utility-interactive photovoltaic systems associated with advanced residential electrical installations.

ELC 127 Software for Technicians 1-3-2

This course introduces computer software which can be used to solve electrical/electronics problems. Topics include electrical/electronics calculations and applications. Upon completion, students should be able to utilize a personal computer for electrical/electronics-related applications.

ELC 128 Introduction to PLC 2-3-3

Local Prerequisite: ELC 112 or ELC 131 or Permission of Instructor

This course introduces the programmable logic controller (PLC) and its associated applications. Topics include ladder logic diagrams, input/output modules, power supplies, surge protection, selection/installation of controllers, and interfacing of controllers with equipment. Upon completion, students should be able to install PLC systems and create simple programs.

ELC 220 Photovoltaic Sys Tech 2-3-3

This course introduces the concepts, tools, techniques, and materials needed to understand systems that convert solar energy into electricity with photovoltaic (pv) technologies. Topics include site analysis for system integration, building codes, and advances in photovoltaic technology. Upon completion, students should be able to demonstrate an understanding of the principles of photovoltaic technology and current applications.

ELN 131 Analog Electronics I 3-3-0-4

This course introduces the characteristics and applications of semiconductor devices and circuits. Emphasis is placed on analysis, selection, biasing, and applications. Upon completion, students should be able to construct, analyze, verify, and troubleshoot

ENG 110 Freshman Composition 3-0-3

Prerequisites: DRE 097; or appropriate placement test scores

This course is designed to develop informative and business writing skills. Emphasis is placed on logical organization of writing, including effective introductions and conclusions, precise use of grammar, and appropriate selection and use of sources. Upon completion, students should be able to produce clear, concise, well-organized short papers.

ENG 111 Writing and Inquiry 3-0-3

Prerequisites: DRE 098 or ENG 002

Local Prerequisites: Take one: 1) ENG 011; 2) ENG 002; 3) DRE 098; 4) ENG 090; 5) ENG 095

This course is designed to develop the ability to produce clear writing in a variety of genres and formats using a recursive process. Emphasis includes inquiry, analysis, effective use of rhetorical strategies, thesis development, audience awareness, and revision. Upon completion, students should be able to produce unified, coherent, well-developed essays using standard written English. This course has been approved for transfer under the CAA and ICAA as a universal general education transfer component (UGETC) course in English Composition.

ENG 112 Writing/Research in the Disciplines 3-0-3

Prerequisite: ENG 111

This course, the second in a series of two, introduces research techniques, documentation styles, and writing strategies. Emphasis is placed on analyzing information and ideas and incorporating research findings into documented writing and research projects. Upon completion, students should be able to evaluate and synthesize information from primary and secondary sources using documentation appropriate to various disciplines. This course has been approved for transfer under the CAA and ICAA as a universal general education transfer component (UGETC) course in English Composition.

ENG 114 Professional Research and Reporting 3-0-3

Prerequisite: ENG 111

This course, the second in a series of two, is designed to teach professional communication skills. Emphasis is placed on research, listening, critical reading and thinking, analysis, interpretation, and design used in oral and written presentations. Upon completion, students should be able to work individually and collaboratively to produce well-designed business and professional written and oral presentations. This course has been approved for transfer under the CAA and ICAA as a general education course in English Composition.

ENG 115 Oral Communication 3-0-3

This course introduces the basic principles of oral communication in both small group and public settings. Emphasis is placed on the components of the communication process, group decision-making, and public address. Upon completion, students should be able to demonstrate the principles of effective oral communication in small group and public settings.

ENG 116 Technical Report Writing 3-0-3

Prerequisite: ENG 110 or ENG 111

This course, the second in a series of two, introduces layout and design of technical reports used in business and industry. Emphasis is placed on audience analysis, data collection and analysis, technical writing style and organization, oral presentation

Electrical Systems Technology, AAS (A35130)

Course Descriptions

~ 4 ~

or technical data, and the appropriate use of graphics in written and oral presentations. Upon completion, students should be able to produce written and oral reports using a variety of technical communication models.

ISC 112 Industrial Safety 2-0-2

This course introduces the principles of industrial safety. Emphasis is placed on industrial safety and OSHA regulations. Upon completion, students should be able to demonstrate knowledge of safe working environment and OSHA compliance.

MAT 110 Math Measurement & Literacy 2-2-3

Prerequisite: Take one set: Set 1: DMA 010, DMA 020, and DMA 030; Set 2: DMA 025; Set 3: MAT 003

Local RISE corequisites: Take one group: 1) MAT 010; 2) MAT 003; 3) DAM 010, DMA 020, DMA 030; 4) MAT 060; 5) DMA 025

This course provides an activity-based approach that develops measurement skills and mathematical literacy using technology to solve problems for non-math intensive programs. Topics include unit conversions and estimation within a variety of measurement systems; ratio and proportion; basic geometric concepts; financial literacy; and statistics including measures of central tendency, dispersion, and charting of data. Upon completion, students should be able to demonstrate the use of mathematics and technology to solve practical problems, and to analyze and communicate results.

WBL 111 Work-Based Learning I 0-10-1

Local Prerequisite: Approval of Instructor or Department Chairperson

This course provides a work-based learning experience with a college-approved employer in an area related to the student's program of study. Emphasis is placed on integrating classroom learning with related work experience. Upon completion, students should be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies.