

# Engineering Technology: Electrical & Control Option

## Bachelor of Science (BS)

# Electrical and Control Option

Engineering technology emphasizes the application of scientific and engineering techniques to a variety of real-world problems. Application is the key word in this definition, in that engineering technology emphasizes practical applications as well as theory. Engineering technologists work in the job spectrum between the engineer and the skilled technician with responsibilities closest to those of the engineer.



Students in the electrical and control option focus on the electrical power and control systems. Within the area of power, students study motors, generators, complex power, three-phase systems, and transmission concepts. Within the area of controls, students examine many different control technologies, including microprocessors, FPGAs, PLCs, industrial robots, and other industrial controllers.

### Engineering technology: electrical & control students will...

- Gain technical proficiency in the engineering technology practice and engage in life-long learning.
- Effectively use technology for problem solving, decision making, implementation, management, and optimization of systems and processes.
- Work effectively in a team environment.
- Maintain the highest ethical and professional standards with commitment to protect the public interest, safety, and the environment.
- Gain theory and laboratory practice in areas of digital and electronic systems; industrial instrumentation; electromechanical/mechanical/optical sensors; actuation systems; AC and DC drives; electrical machines and control; power electronics; energy management; microprocessors/embedded controls; automatic process control systems; and industrial automation and robotics.
- Be educated in the advanced techniques of system design and installation using innovative state-of-the-art technologies reinforced throughout the program by integrated laboratory experiences.

### Career Planning

Career preparation is part of the mission of Southeast. In fact, more than 90% of Southeast students participate in internships, clinical opportunities, student teaching, research assistantships, and study abroad.

Professional career counselors are available for all students. The Office of Career Services in Academic Hall 057 can provide students with professional career counseling, resume critiques, practice interviews, job search strategies, career events, networking opportunities, and more.

Demonstrated Career Proficiency is a Requirement of all Southeast Students		
CL001/CL002	First Semester	Complete the FOCUS2 assessment and develop a Career Action Plan.
CL003	Junior Year	Students gain information about career planning and job searching resources.
CL004	Senior Year	Students demonstrate advanced proficiency by identifying a position in their field, developing a cover letter, and tailoring a resume for the position. Materials are critiqued to ensure preparedness for a successful job search.

### Career Opportunities

- Industrial electrician
- PLC Programmer
- Electrical Technician
- Process Control Engineer
- Product Test Engineer
- Electronics Technician
- Instrumentation Engineer
- Engineering Technician
- Automation Systems Integrator
- Energy Manager
- Electrical Apprentice

### Professional and Student Organizations

The Electric Vehicle Club offers members a chance to be involved in all aspects of designing and building electric vehicles, including both the electrical and mechanical systems. With sufficient interest, the club would like to enter vehicles into competitions and/or construct practical vehicles for commercial use. Open to all students, regardless of background or major.

**To learn more**  
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This is a guide based on the 2015-2016 Undergraduate Bulletin and is subject to change. The time it takes to earn a degree will vary based on several factors such as dual enrollment, remediation, and summer enrollment. Students will meet with an academic advisor each semester and use DegreeWorks to monitor their individual progress.

### CURRICULUM CHECKLIST

#### Engineering Technology: Electrical & Control Option – 100 Hours Required

- \_\_\_ CH181 Basic Principles of Chemistry (5)
- \_\_\_ ET160 Basic Electricity/Electronics (3)
- \_\_\_ ET164 AC Principles & Circuits (3)
- \_\_\_ ET245 Logic Circuits (3)
- \_\_\_ ET260 Electronic Circuits Design/Analysis I (3)
- \_\_\_ ET304 Introduction to PLCs (3)
- \_\_\_ ET365 Industrial Electrical Power (3)
- \_\_\_ ET366 Microcontrollers (3)
- \_\_\_ ET367 Motor Control and Drive Systems (3)
- \_\_\_ ET374 Industrial Electronics (3)
- \_\_\_ ET468 Industrial Control (3)
- \_\_\_ ET470 Energy Management (3)
- \_\_\_ IM102 Technical Communications (3)
- \_\_\_ IM301 Industrial Safety Supervision (3)
- \_\_\_ IM311 Statistical Process Control (3)
- \_\_\_ MA137 Precalculus (5)
- \_\_\_ MA140 Analytic Geometry & Calculus I (5)
- \_\_\_ MA144 Integral Calculus & Differential Equations (5)
- \_\_\_ MN220 Engineering Economic Analysis (3)
- \_\_\_ MN260 Technical Computer Programming Applications (3)
- \_\_\_ MN356 Robotic Fundamentals (3)
- \_\_\_ MN383 Fluid Power (3)
- \_\_\_ MN412 Advanced Manufacturing Systems (3)
- \_\_\_ MN416 Manufacturing Seminar (1)
- \_\_\_ PH120 Introductory Physics I (5)
- \_\_\_ PH121 Introductory Physics II (5)
- \_\_\_ SW207 Understanding Cultural & Social Diversity (3)
- \_\_\_ TN255 Microcomputer Maintenance (3)
- \_\_\_ UI319 Science, Technology, & Society (3)
- \_\_\_ UI410 Manufacturing Research (3)

#### University Studies Requirements (not already listed above):

UI100 First Year Seminar, EN100 English Composition, Artistic Expression, Written Expression, Oral Expression, Literary Expression, Behavioral Systems, Living Systems, Development of a Major Civilization, Political Systems, and IU/UI3XX

### SAMPLE FOUR-YEAR PLAN

	Fall Semester		Spring Semester	
	Course #	Hrs	Course #	Hrs
<b>FIRST YEAR</b>	UI100	3	ET160	3
	EN100	3	MA140	5
	CH181/081/001	5	PH120/021	5
	MA137	5	Written Expression	3
	<b>Total</b>	<b>16</b>	<b>Total</b>	<b>16</b>
<b>SECOND YEAR</b>	ET164	3	ET260*	3
	ET245	3	ET304	3
	MA144	5	IM102	3
	PH121/021	5	MN260	3
			MN383	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>15</b>	
<b>THIRD YEAR</b>	ET374*	3	ET365*	3
	IM301	3	ET366	3
	IM311	3	ET468*	3
	MN220	3	UI319	3
	TN255	3	Oral Expression	3
	Living Systems	3	Political Systems	3
<b>Total</b>	<b>18</b>	<b>Total</b>	<b>18</b>	
<b>FOURTH YEAR</b>	ET367*	3	ET470*	3
	MN356	3	MN412	3
	IU/UI3xx	3	MN416	1
	Artistic Expression	3	SW207	3
	Behavioral Systems	3	UI410	3
	Literary Expression	3	Develop of a Majr Civ	3
<b>Total</b>	<b>18</b>	<b>Total</b>	<b>16</b>	

\*Many major courses are on a set rotation and thus dependent on when prerequisite courses are completed. The actual semester a course is taken may vary based on the rotation.

**Degree requirements for all students:** a minimum of 120 credit hours, completion of University Studies program, career proficiencies (CL001-004), Writing Proficiency Exam (WP003), and completion of the Measure of Academic Proficiency and Progress (MAPP) at the senior level.

Refer to the Undergraduate Bulletin or DegreeWorks for additional graduation requirements (i.e., minimum GPA and course work) for your program of study.

Revised  
3/19/2015