Electrical and Control Option

Bachelor of Science (BS)

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.

Becoming Career Ready...

/ Faculty with relevant industry experience work closely with students by providing them with career-ready practical experience and a technology-based curriculum in the state-of-the-art Otto & Della Seabaugh Polytechnic building.

/ Engineering technologists graduates work in the job spectrum between the engineer and the skilled technician with responsibilities closest to those of the engineer. Examples of job titles include electrical engineer, control systems engineer, electrical engineering technician and controls engineer.

/ 100% of Southeast programs offer real-world experience. Electrical & Control students earn this experience through a senior design capstone course for students to work in teams to solve open-ended industrial projects. Students also gain valuable hands-on experience through required labs that accompany the courses work.

/ The path to a successful career starts with you! You can maximize your career development by working closely with Career Services and Southeast faculty – they are here to help you connect your passions, interests and skills to jobs and opportunities in the field. Career Services provides professional career counseling and coaching, resume critiques, practice interviews, job search strategies, career events, networking opportunities and more.

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

Equipment and Computer Programs

We have developed laboratories to provide our students with an opportunity to master a working knowledge of engineering technology. Electrical & Control students will:

- Gain technical proficiency in the engineering technology practice and engage in lifelong 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.

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.

Transfer and Dual Credit Students

If you have dual credit or transfer credit, please visit our transfer course equivalencies guide at semo.edu/transfercredit.
This is a guide based on the 2020-2021 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 Degree Works to monitor their individual progress.

### CURRICULUM CHECKLIST

**Engineering Technology: Electrical & Control Option – 99 Hours Required**

- CH181 Basic Principles of Chemistry (5)
- ET304 Introduction to PLCs (3)
- IM300 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)
- PH121 Introductory Physics I (5)
- PH122 Introductory Physics II (5)
- SW207 Understanding Cultural & Social Diversity (3)
- UI319 Science, Technology, & Society (3)
- UI410 Manufacturing Research (3)

**Electrical & Control Option:**

- ET160 Basic Electricity/Electronics (3)
- ET164 AC Principles & Circuits (3)
- ET245 Logic Circuits (3)
- ET260 Electronic Circuits Design/Analysis I (3)
- ET304 Introductory Control Systems (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)
- TN259 Microcomputer Maintenance (3)

**General Education Requirements** – some requirements may be fulfilled by coursework in major program

- Social and Behavioral Sciences – 6 hours
- Constitution Requirement – 3 hours
- Written Communication – 6 hours
- Oral Communication – 3 hours
- Natural Sciences – 7 hours (from two disciplines, one to include a lab)
- Mathematics – 3 hours
- Humanities & Fine Arts – 9 hours (from at least two disciplines)
- Additional requirements – 5 hours (to include UI100 for native students)
- Civics examination

### SAMPLE FOUR-YEAR PLAN

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*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 the General Education program, and completion of 39 senior division hours (300-599). Refer to the Undergraduate Bulletin or Degree Works for additional graduation requirements for your program.

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For advising Center for Academic Advising semo.edu/advising

To learn more Office of Admissions (573) 651-2590 admissions@semo.edu semo.edu

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