

# A.A.S. Energy Systems Electrical Engineering Technology

(2 Years)

## Program Objectives:

1. Solve technical problems typical of those encountered in the electrical engineering technology discipline by using critical thinking skills, current technology, and practical use of trade equipment.
2. Work and communicate effectively in diverse teams in an industrial setting.
3. Understand the importance to pursue lifelong learning and stay current with technical standards and codes.

## Student Outcomes:

1. Demonstrate safe work practices.
2. Work and communicate effectively in a diverse team environment.
3. Utilize test equipment to troubleshoot and analyze electrical, electronic, and instrumentation related circuits.
4. Analyze Alternating Current (AC) circuits (including single and three phase) and Direct Current (DC) circuits.
5. Read, interpret, and edit schematics to document electrical, electronic, and process control systems.
6. Design, troubleshoot and document circuits for complex motor controls and associated devices.
7. Apply an in-depth knowledge of Variable Frequency Drives (VFD), motors, and generators to perform installation, troubleshooting, and maintenance related tasks.
8. Apply a fundamental understanding of pressure, temperature, level and flow to install, calibrate and troubleshoot process instrumentation.
9. Exhibit fundamental knowledge of electrical power generation, transmission, and distribution systems.
10. Test, troubleshoot and repair circuit breakers and switchgear - medium and low voltage.
11. Configure, test and troubleshoot protective relaying and power monitoring systems.
12. Design, build, and troubleshoot control systems consisting of Programmable Logic controllers (PLC) / Programmable Automatic Controllers (PAC) and associated Human Machine Interfaces (HMI).
13. Utilize the fundamentals of networks and digital communications to troubleshoot and maintain distributed plant automation and Supervisory Control and Data Acquisition (SCADA) systems.

Students must register concurrently for the lab course associated with each theory course.

## Program Admissions Requirements

Placement Test	Math
ACT	19
SAT	500
ALEKS	30

## General Education

The listing below includes program requirements that also fulfill General Education requirements.

Code	Title	Credits
Objective 1- ENGL 1101, or ENGL 1102 <sup>1</sup>		3
Objective 2		3
Objective 3 - Choose MATH 1143, MATH 1147, MATH 1153, MATH 1160, MATH 1170, or MGT 2216		3-5
Objective 5 - PHYS 1101 & PHYS 1101L, or CHEM 1100		4
Objective 6		3
Total Credits		16-18

<sup>1</sup> "P" courses are equivalent to the original course.

## Major Requirements

Code	Title	Credits
<b>Required Courses:</b>		
ESET 1100	Engineering Technology Orientation	1
ESET 1100L	Introduction to an Industrial Environment Laboratory	1
ESET 1101	Electrical Circuits I	4
ESET 1101L	Electrical Circuits I Laboratory	4
ESET 1102	Electrical Circuits II	5
ESET 1102L	Electrical Circuits II Laboratory	5
ESET 1140	Applied Technical Intermediate Algebra	5
ESET 1181	Introduction to Cyber-Physical Systems	3
ESET 2222	Process Control Theory	3
ESET 2226	Process Control Devices Laboratory	1
ESET 2292	Electrical Engineering Technology I	8
ESET 2292L	Electrical Engineering Technology I Laboratory	5
ESET 2293	Electrical Engineering Technology II	5
ESET 2293L	Electrical Engineering Technology II Laboratory	4
TGE 1159	Internship Strategies	1
<b>Chose one of the following Objective 1 courses:</b>		<b>3</b>
ENGL 1101	Writing and Rhetoric I	
ENGL 1102	Writing and Rhetoric II	
<b>Chose one of the following Objective 3 courses:</b>		<b>3-5</b>
MATH 1143	College Algebra	

MATH 1147	College Algebra and Trigonometry	
MATH 1153	Statistical Reasoning	
MATH 1160	Survey of Calculus	
MATH 1170	Calculus I	
MGT 2216	Business Statistics	
<b>Choose one of the following Objective 5 courses:</b>		<b>4</b>
CHEM 1100	Concepts of Chemistry	
PHYS 1101 & 1101L	Elements of Physics and Elements of Physics Laboratory	
Total Credits		65-67

## Degree Totals

Code	Title	Credits
	Program Admission Requirements	0
	General Education	16-18
	Major Requirements (Required General Education credits removed.)	55
	Free Electives	
Total Credits		71-73

ISU Degree Requirements (<http://coursecat.isu.edu/undergraduate/degerequirements/>)

ISU General Education for College of Technology (<http://coursecat.isu.edu/undergraduate/technology/#text>)

Major Academic Plan (MAP)