

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: ESET-112 Department: ESET.AS

Course Title: Electronics for Technicians 1 Semester: Fall Year: 2008

Course Objective	Competencies
1. Understand basic electrical and electronic quantities and signals.	a. Understand Voltage b. Understand Current c. Understand Resistance d. Understand Power e. Understand Conductance f. Understand direct current concepts g. Understand alternating current concepts h. Understand magnetic concepts i. Identify sinusoidal waveforms j. Identify pulse waveforms k. Identify periodic and aperiodic signals l. Understand period information m. Understand frequency n. Know peak, peak-to-peak, rms and average signal levels o. Know insulator, conductor and semi-conductor materials p. Understand RF (radio frequency) spectrum q. Understand “light pipe” understanding of fiber-optics r. Understand battery technologies s. Understand amp-hour measurement

Course Objective	Competencies
<p>2. Understand the fundamentals of common electronic components, sensor types and actuators.</p>	<ul style="list-style-type: none"> a. Understand proper sizing of wires and the AWG system. b. Understand ground and shielding concepts. c. Understand the operation & application of: <ul style="list-style-type: none"> i. resistors ii. capacitors iii. inductors iv. diodes v. transistors vi. amplifier blocks. d. Understand the use of switches and relays. e. Understand the basic operation of thermal, optical, fluid flow, pressure and other transducer types. f. Understand common linear and rotary motor types and their application to motion & remote control systems. g. Understand common linear and rotary motion sensors. h. Understand proper testing procedures and techniques for actuators and various sensor technologies.
<p>3. Develop practical skills necessary for accurate electrical and electronic diagnostics.</p>	<ul style="list-style-type: none"> a. Proficient using digital and analog multimeters to measure: <ul style="list-style-type: none"> i. DC voltage ii. AC voltage iii. Resistance iv. Continuity b. Understand the operation of a dual trace oscilloscope: <ul style="list-style-type: none"> i. Understand the vertical and horizontal controls. ii. Understand the triggering and display modes. iii. Be able to display a signal on the 'scope.

Course Objective	Competencies
<p>4. Understand the role of the computer for a technician in an electronics related field.</p>	<ul style="list-style-type: none"> iv. Be able to measure voltage parameters v. Be able to measure time parameters c. Understand schematic diagram notation and schematic symbols of common electronic components. d. Understand common schematic diagram symbols. e. Ability to follow a diagnostic flow chart. f. Be able to use a schematic diagram along with diagnostic equipment to resolve problems. g. Be able to strip, splice and solder wire connections. h. Be able to repair, construct & test common cables. a. Be able to use the computer to create simple reports. b. Be able to use the computer & internet as a research tool. c. Understand how a computer can be used in simulation and diagnostic roles.