

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE
ACADEMIC AFFAIRS

Course Number: EET-255 ^{last?} Class/Lect. Hours: 3 Lab Hours: 0 Credits: 3 Dept.: ELEC.AS/EROB.COC
 Course Title: Advanced Topics in Electrical Engineering Semester: Spring Year: 2016

Course Description, Prerequisite, Corequisite:

This course will present the Electrical Engineering Technology student advanced topics relevant to their major. Topics will include Quality Initiatives, Lean, 5S, Six Sigma, Gantt Charts, project scheduling using MS Project, technical applications of Excel, dealing with EMI, battery & charging technology for portable devices, Microsoft Visio for technical drawings, Industrial networking protocols, cabling, data acquisition, SCADA and manipulating csv files. The course will also include topics which are news worthy and relevant to the major. This course will be delivered in a hybrid format which will require class room participation and internet research.

Prerequisites: EET-200, EET-210, EET-235, EET-240.

Corequisites: EET-265.

Course Objectives	Competencies
1. Understand the need for quality in a manufacturing environment. 2. Have familiarity with Microsoft Office, MSProject and MSVisio.	a. Understand the concept of LEAN b. Understand the concept of 5S c. Understand the concept of Six Sigma d. Understand how Lean/5S/Six Sigma can result in significant savings, improved reliability and less waste. a. Be familiar with the MS Office Suite. b. Be familiar with MSVisio, technical libraries and drawings. c. Be familiar with the technical applications of Excel. d. Be familiar with graphing abilities of Excel. e. Be familiar with importing & graphing csv files with Excel.

Course Objectives	Competencies
<p>3. Understand the implications of EMI in industrial processes.</p> <p>4. Be familiar with industrial networking protocols.</p> <p>5. Be familiar with battery technology and charging.</p> <p>6. Topics TBD as new technologies evolve.</p>	<p>f. Be familiar with MSProject to create a Gantt chart schedule.</p> <p>a. Understand EMI & RFI. b. Understand ways of minimizing EMI. c. Understand the purpose of proper grounding and shielding. d. Understand how differential (or balanced) signals and circuits add significant noise immunity to signal detection. e. Understand how twisted pair wires minimize noise. f. Understand how proper cabling and termination reduce noise and interference effects. g. Understand how fiber-optic solutions can eliminate noise problems.</p> <p>a. Understand common network topologies. b. Understand Ethernet/IP concepts and addressing. c. Understand industrial communication protocols such as ControlNet, DeviceNet, Ethernet/IP and others. d. Understand concept of Plug & Play for network devices. e. Understand how basic wireless networking protocols (Wifi) work.</p> <p>a. Understand common primary and secondary battery technologies. b. Understand how battery chargers work. c. Understand how inverters work. d. Understand how solar panels work.</p> <p>a. Keep student current with relevant topics in electrical engineering. b. Student will research new technologies.</p>