

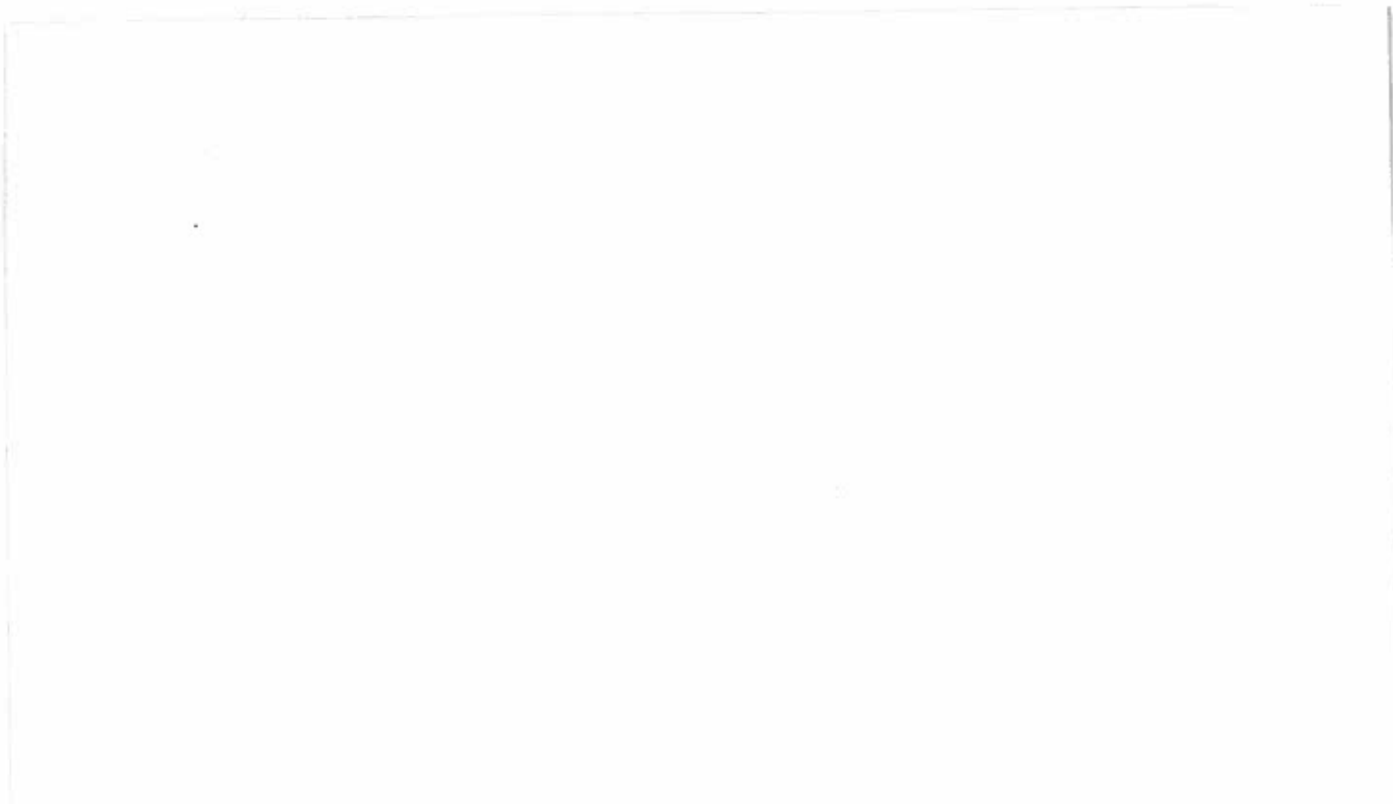
SPRINGFIELD TECHNICAL COMMUNITY COLLEGE  
ACADEMIC AFFAIRS

Course Number: EE1-105      Class/Lect. Hours: 1      Lab Hours: 0      Credits: 1      Dept: EEC,AS/ROB,COC  
Course Title: Technical Diagrams for Automation      Semester: Fall      Year: 2015

**Course Description, Prerequisite, Corequisite:**

This course will introduce the student to the various technical diagrams which may be found in an automated manufacturing environment. The majority of emphasis of the course will be on electrical & electronic symbols and schematics, relay and ladder logic diagrams. In addition flowcharts, hydraulic and pneumatic diagrams (Fluid Power), piping symbols and diagrams, and HVAC components and diagrams. Microsoft Visio will be presented in this course to create & edit technical documents. This course will meet for 5 weeks.

**Prerequisite:** None.



| Course Objectives  | Competencies  |
|--|---|
| 1. Understand basic technical diagrams.                          | <ul style="list-style-type: none"> <li>a. Understand basic purpose and characteristics of schematic diagrams.</li> <li>b. Know basic symbols used in schematic diagrams.</li> <li>c. Explain how flow is indicated on a schematic.</li> <li>d. Know how to use these diagrams for troubleshooting.</li> <li>e. Be able to use Microsoft Visio to create &amp; edit technical drawings.</li> </ul> |
| 2. Be able to read Electrical & Electronic Symbols & Schematics. | <ul style="list-style-type: none"> <li>a. Understand basic electrical and electronic schematic symbols.</li> <li>b. Understand current flow in series and parallel circuits.</li> <li>c. Understand and follow relay logic diagrams.</li> <li>d. Understand and follow ladder logic diagrams.</li> <li>e. Identify safety devices in electrical diagrams.</li> </ul>                              |
| 3. Understand Flowcharts.  | <ul style="list-style-type: none"> <li>a. Understand basic flowchart concepts.</li> <li>b. Understand basic flowchart shapes and their application.</li> <li>c. Understand how flowcharts describe process operation.</li> <li>d. Understand how flowcharts are used in system diagnoses.</li> </ul>  |
| 4. Be able to read Fluid Power diagrams.                         | <ul style="list-style-type: none"> <li>a. Understand basic fluid power concepts.</li> <li>b. Know the differences between pneumatic and hydraulic systems.</li> <li>c. Know basic pneumatic and hydraulic components.</li> <li>d. Know basic pneumatic and hydraulic schematic symbols.</li> <li>e. Identify safety devices in fluid power systems.</li> </ul>                                    |
| 5. Be able to read basic piping diagrams.                        | <ul style="list-style-type: none"> <li>a. Understand basic piping concepts.</li> <li>b. Understand importance of proper pipe sizing.</li> <li>c. Understand basic pipe connections &amp; fittings.</li> <li>d. Understand valve operation.</li> <li>e. Identify safety devices in piping systems.</li> </ul>  |

| Course Objectives                  | Competencies   |
|------------------------------------|--|
| 6. Understand basic HVAC diagrams. | a. Understand the key components of HVAC systems.<br>b. Identify the key HVAC components on diagrams.<br>c. Understand the concept of analog, digital & computer control.<br>d. Identify safety devices in HVAC systems. |