**Outcome:** Students will be introduced to troubleshooting process upsets resulting from various mechanical equipment malfunctions. Students will demonstrate their ability to identify the issue, develop and follow a logical methodology to troubleshoot the process issue, propose possible causes, diagnose the actual issue, and implement a practical solution.

**Lecture & Demo:**

1. Instructor lead discussions on troubleshooting.
2. Simtronics SPM-1100 Exercise 11

**Lab & Homework:**

Simtronics Lab

1. Simtronics SPM-1100 Process Loop Characteristics
   1. All four models
      1. Troubleshooting exercises 10-16 and 25-27
         1. Introduction to troubleshooting
            1. Troubleshoot basic process equipment issues

Pump cavitation

Pump, valve, or instrumentation failures

Simple instrument issues

* + 1. Document the issue symptoms
    2. Document the possible causes and why
    3. Document steps utilized to diagnose the actual cause
    4. Outline the actions required to correct the issue/

**Documentation:**

1. Simtronics SPM-1100

**Assessment:**

1. Homework
2. Lab Work
3. Lab Safety
4. Quiz(s) & Final Exam