

REQUEST FOR COURSE-EQUIVALENCY CREDIT

PART I (by Jan Kania)

QCC Course Prefix and Number: MNT 115

QCC Course Title: Instrumentation in Manufacturing

Summarize the goal of the course and attach

current course description from college catalog:

Date of Request: <u>Summer 2012</u>
Date Sent to CPS Representative: <u>Summer 2012</u>
Originator: <u>Kathy Rentsch</u>
Sponsoring Agency: <u>QCC and MassMBP</u>
Instructional Dean: <u>Kathy Rentsch</u>
Coordinator/Faculty: <u>Lee Duerden</u>
CPS Representative: <u>Faith Wong</u>

Course Goal:
The content of this course identifies the basic instruments involved in the Manufacturing and Production Plant Environment. The student is introduced to the purpose and function of various instruments that may be encountered on a daily basis. A strong focus is placed on the safety aspects and dangers that may be faced along with proper use and understanding of manufacturing instrumentation.

Course Description:
This course covers practical applications of instruments that are frequently used in current manufacturing industries. Students learn an overview of basic electronic theory with an emphasis on the operational aspect components such as programmable logic controllers (PLCs), pressure gauges, transducers, strain gauges, electronic recorders, and controllers. Class projects help students develop the analytical ability necessary for using manufacturing instrumentation.

1. INSTRUCTIONAL OBJECTIVE:

Understand the design and function of Pressure, Temperature, Level, Flow, and Analytical control equipment along with safety issues associated with their use

MEASURABLE STUDENT OUTCOME(S):

- a) Identify the design components of gauges.
- b) Identify the functions of gauges.
- c) Identify proper usage and applications.
- d) Identify safety issues surrounding their usage and misuse.

2. INSTRUCTIONAL OBJECTIVE:

Understand the purpose, function, and application of Control Loops, Primary Sensors, Transmitters, Valves, and Regulators

MEASURABLE STUDENT OUTCOME(S):

- a) Identify the design components and transmission methods.
- b) Identify the functions of control components.
- c) Identify proper usage and applications.

Project and Presentation: Research, Review, Analyze, and offer corrective action Recommendations on a past Safety Failure that resulted or could have resulted in Personal Injury. Present it to the class

7. INSTRUCTIONAL OBJECTIVE:
 a) Identify components and functions of PLC processors.
 b) Identify basic and ladder logic.
 c) Identify how counters, timers, sequencers, math functions, inputs and outputs are managed and programmed.

MEASURABLE STUDENT OUTCOME(S):
 Analyze, PLCs (Programmable Logic Controllers) Functions, Later Logic, and Programming.

6. INSTRUCTIONAL OBJECTIVE:
 a) Comparing text knowledge of instruments and processes to actual applications.
 b) Identifying high-tech refinements to instruments applications.

MEASURABLE STUDENT OUTCOME(S):
 INSTRUCTIONAL OBJECTIVE: Plant Tour

5. INSTRUCTIONAL OBJECTIVE:
 a) Identify types and purposes of industry Switches including proximity and optical.
 b) Identify types of alarm notifications.
 c) Identify purpose and designs of motor control centers.
 d) Identify how switches and relays control and transfer power.
 e) Identify the purpose and function of permissives, interlocks, and analytical monitoring controls.
 f) Demonstrate a knowledge of the safety and risk concerns of misuse of protective equipment.

MEASURABLE STUDENT OUTCOME(S):
 Understand sources and types of Instrumentation Power Supply Emergency Shutdown (EDS) Interlocks , and Protective Devices

4. INSTRUCTIONAL OBJECTIVE:
 a) Identify standard Tag numbers, Symbols and Diagram layout.
 b) Identify organizations who have developed industry standards.

MEASURABLE STUDENT OUTCOME(S):
 Gain proficiency in the understanding of Instrument Tag Numbers, Symbolology Process Diagrams and Instrument Sketching

3. INSTRUCTIONAL OBJECTIVE:
 d) Identify safety issues surrounding their usage and misuse.

8. INSTRUCTIONAL OBJECTIVE:
 Weekly homework: Research and Analyze style using, defining data found in the chapter information
- MEASURABLE STUDENT OUTCOME(S):
- a) Research and selection.
 - b) Analyze using critical thinking techniques.
 - c) Demonstrate communications skills required in today's industries.
- MEASURABLE STUDENT OUTCOME(S):
- d) Research and selection.
 - e) Analyze using critical thinking techniques.