

DIVISION: Workforce Services

CURRICULUM IN WHICH COURSE IS TAUGHT: Career Studies Certificate

COURSE NUMBER AND TITLE: INS 121 – Introduction to Measurement & Control

CREDITS: 3

HOURS/WK LECTURE: 3

HOURS/WK LAB:0-3

I. COURSE DESCRIPTION: Introduces applications of modern sensors, measurement equipment, and control systems, including operation and functions of components. Includes computer data acquisition and control with programming languages.

II. REALATIONSHIP OF THE COURSE TO CURRICUUM OBJECTIVES:
Factory Automation and Robotics Career Studies Certificate

III. REQUIRED BACKGROUND: Instructor Approval

IV. COURSE CONTENT:

- Introduction to Measurement and Process Control
- Instrument Tags
- Piping and Instrumentation Diagrams
- Loop Controllers
- Final Control Elements
- Level Measurements
- Liquid Level Control
- Methods of Automatic Control
- Basic Flow Measurement
- Control Loop Performance
- Ultrasonic Level Measurement and Control
- Differential Pressure Flow Measurement and Control

V. LEARNER OUTCOMES

VI. EVALUATION

<p>Upon successful completion of this course, students will</p> <ul style="list-style-type: none"> ✓ Understand the basics of Measurement and Controls including the different control functions, the types of control loops ✓ Be able to identification and know symbols used in measurement and control ✓ Be familiar with different types of 	<p>Attendance, homework and class-work, lab exercises, projects, quizzes and test</p>
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<p>field instrumentation</p> <ul style="list-style-type: none">✓ Understand the requirements for control rooms and the design of control panels✓ Be able to apply the concepts and implementation✓ Know the different types of computer-based control systems including PLCs and DCSs as well as review the basic requirements for good operator interface✓ Know the documentation required for measurement and control✓ Be familiar with requirements for a successful installation, instrument checkout, and controller tuning	
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The course supports the following objectives:

- A. DCC Educational Objectives
 1. Communication
 2. Critical Thinking
 3. Computational and Computer Skills