York Technical College
One College. Many Opportunities.

**Course Prefix/No.:** **CIM 241**
**Course Title:** **Automated Manufacturing Equipment**
**Lecture Hours/Week:** **3.0**
**Lab Hours/Week:** **3.0**
**Credit Hours/Semester:** **4.0**

Distance Learning Attendance/VA Statement
Textbook Information

**COURSE DESCRIPTION:**
This course is an introduction to the basic operation of equipment that is used for automation.

**COURSE COMPETENCIES:**
Upon successful completion of this course, the student should be able to:

**Module 1 – Functional Analysis**
Perform functional analysis of:
- The FMS 200 (Main Campus)
  - The transfer station.
  - The base supply station.
  - The bearing assembly station.
  - The shaft insertion station.
  - The storage station.
- The IPC 200 (Chester)
- The batch process cell
- The bottling cell
- The storage cell

**Module 2 – Start-up**
Set up each of the stations following testing procedures and perform a successful startup of the following:
- The FMS 200 (Main Campus)
  - The transfer station.
  - The base supply station.
  - The bearing assembly station.
  - The shaft insertion station.
  - The storage station.
- The IPC 200 (Chester)
- The batch process cell
- The bottling cell
- The storage cell

**Module 3 – Block Analysis**
Use sequential flow charts to perform a block analysis of all inputs, outputs, control, communications, and the type of components that realize each one of these functions for the following:
- The FMS 200 (Main Campus)
  - The transfer station.
  - The base supply station.
  - The bearing assembly station.

    - The shaft insertion station.
    - The storage station.
- The IPC 200 (Chester)
- The batch process cell
- The bottling cell
- The storage cell

**Module 4 – Electrical Analysis**
Perform an electrical analysis using circuit diagrams and components of the electrical operation for each of the following:

- The FMS 200 (Main Campus)
    - The transfer station.
    - The base supply station.
    - The bearing assembly station.
    - The shaft insertion station.
    - The storage station.
- The IPC 200 (Chester)
- The batch process cell
- The bottling cell
- The storage cell

**Module 5 – Pneumatic Analysis**
Perform a pneumatic analysis using circuit diagrams and components of the pneumatic operation for each of the following:

- The FMS 200 (Main Campus)
    - The transfer station.
    - The base supply station.
    - The bearing assembly station.
    - The shaft insertion station.
    - The storage station.
- The IPC 200 (Chester)
- The batch process cell
- The bottling cell
- The storage cell

**Module 6 – Installation/Assembly and Fine-Tuning**
Connect all electrical and pneumatic connections that are needed for proper operation for each of the following:

- The FMS 200 (Main Campus)
    - The transfer station.
    - The base supply station.
    - The bearing assembly station.
    - The shaft insertion station.
    - The storage station.
- The IPC 200 (Chester)
- The batch process cell
- The bottling cell
- The storage cell

Make any adjustments needed for proper operation for each of the following stations:

- The FMS 200 (Main Campus)
    - The transfer station.
    - The base supply station.
    - The bearing assembly station.

    - The shaft insertion station.
    - The storage station.
- The IPC 200 (Chester)
- The batch process cell
- The bottling cell
- The storage cell

**Module 7 – Programming Analysis**
Perform programming analysis of the control PLC for each station on the process machine.

- The FMS 200 (Main Campus)
    - The transfer station.
    - The base supply station.
    - The bearing assembly station.
    - The shaft insertion station.
    - The storage station.
- The IPC 200 (Chester)
- The batch process cell
- The bottling cell
- The storage cell

**Module 8 – Maintenance and Troubleshooting**
Perform proper maintenance and troubleshooting techniques by identifying preventative maintenance needs in each one of the following stations.
Gather information during troubleshooting to effectively troubleshoot faulty systems in each one of the following:

- The FMS 200 (Main Campus)
    - The transfer station.
    - The base supply station.
    - The bearing assembly station.
    - The shaft insertion station.
    - The storage station.
- The IPC 200 (Chester)
- The batch process cell
- The bottling cell
- The storage cell

**MINIMAL STANDARDS:**
Assignments and attendance must be completed as designated in “Evaluation Strategies/Grading.” Criteria for minimal acceptable performance will be provided by the instructor.

**COURSE REQUIREMENTS:**

**Attendance Policy**
The college attendance policy stated in the college handbook will be honored. The instructor will provide specific requirements for the course.

**Academic Honesty**
Students are expected to adhere to the college policy regarding student conduct as stated in the college handbook.

**Assignments**
Students are expected to complete all assignments and any supplementary exercises designated by the instructor.

**EVALUATION STRATEGIES/GRADING:**
Successful completion of the course requires the completion of each module with an average of 70 points. Grades will be calculated from work attitude, all tests/projects, homework assignments, and laboratory assignments.

**Grading Scale**
A = 90.0 – 100
B = 80.0 – 89.9
C = 70.0 – 79.9
D = 60.0 – 69.9
F = 00.0 – 59.9

Evaluation Method:

| | |
|---|---|
| Tests/Projects (minimum of eight) | 50% of the course |
| Lab Work | 25% of the course |
| Work Attitude | 25% of the course |
| | 100% Final Grade |

Work Attitude is defined as:

| | |
|---|---|
| Participation | Effort |
| Cooperation | Safety |
| Responsibility | Attendance |
| Professionalism | Self Motivation |
| Appearance | Works Independently |

**METHODS OF INSTRUCTION:**
Lectures, reading assignments, projects, discussions, video presentations, multi-media presentations, and web content are the major teaching methods used in this course. See instructor for specifics.

**ENTRY LEVEL SKILLS:**
The student must be able to read, have a knowledge and understanding of PLCs, fluid power, motors and controls, and basic computer skills.

**PREREQUISITES:** EEM 250 and EEM 271
OR
**CO-REQUISITES:** EEM 250 and EEM 271

**Disabilities Statement:** Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.

Effective: 2009FA