METROPOLITAN STATE COLLEGE OF DENVER
Office of Academic Affairs

REGULAR COURSE SYLLABUS

School of Professional Studies

Department: Engineering Technology Studies

Semester(s) Offered: Spring and Fall

Prefix & Course Number: MET 3330 Crosslisted With*: 

Course Title: Robotics for Manufacturing

Credit Hours: 2 (2+2)

Contact Hours: Lecture 30 Lab 30 Internship ____ Practicum ____

Schedule Type(s): B Grading Mode(s): L

Repeat* (Variable topics): ____ *(Pertinent only if the course can be repeated; enter maximum number of hours that can be earned by taking this course.)

Restrictions (Variable Topics Course): NONE

Prerequisite(s): MET 3100 and EET 2000 with grades of “C” or better

Corequisite(s): NONE

Prerequisite(s) or Corequisite(s): NONE

Banner Enforced:
- Prerequisite(s): MET 3100 and EET 2000 with grades of “C” or better
- Corequisite(s): NONE
- Prerequisite(s) or Corequisite(s): NONE

Catalog Course Description:
The course examines robotic components utilized in robots and automated systems. Manufacturing automation is analyzed as the robot is integrated with other flexible automation equipment. The focus is how to apply and design robotic integrated manufacturing systems. The laboratory work supplements the lectures using industrial robots for different applications.

Required Reading and Other Materials will be equivalent to (Title, Author, Publisher, Copyright Date):


APPROVED:

Department Chair/Institute Director

Dean

Associate VP, Academic Affairs

*If cross listed, attach completed Course Cross listing Agreement Form
Prefix and Course Number: MET 3330

SPECIFIC (MEASURABLE) STUDENT BEHAVIORAL LEARNING OBJECTIVES:

Upon completion of this course the student should be able to demonstrate:

1. Analyze robot design, operation, and function in the industrial logic controlled manufacturing environment.
2. Apply knowledge learned about industrial robots to manufacturing automation in industry.
3. The student will program and design his/her own programs to accomplish specific robotic arm movements to accomplish specific tasks.
4. Design robotic process control features that enhance automation features.
5. Design mechanized parts feeding, handling, and orientation systems essential for many robot applications.
6. Integrate NC/CNC machines, industrial robots, and flexible automation.
7. Analyze and relate industrial logic control systems as controllers for industrial robots.
8. Integrate robots and process control computers to control single robots, work cells, or simplified production line

OUTLINE OF COURSE CONTENT (Major Topics and Subtopics):

I. Introduction to Robots and Automation
   A. Industrial Robots
   B. Teaching Robots to Work
   C. Robot Implementation
   D. Building Blocks of Automation

II. Industrial Applications of Robots
    A. Machine Loading
    B. Parts Handling
    C. Automated Production and Assembly
    D. NC/CNC Integration

III. Industrial Robots
    A. Robot Geometry, Drives, and Controls
    B. Robot Utilization and Justification
    C. Performance and Programming Methods
    D. Industrial Applications and Implementation

IV. Robots and Industrial Automation
    A. Logic Control Systems
    B. Programmable Controller/Robot Systems
    C. On-line Computer Control

V. Research Trends and Ethics
    A. Flexible Manufacturing Systems (FMS)
    B. Group Technology
    C. Robots and Computer Integrated Manufacturing (CIM)

EVALUATION OF STUDENT PERFORMANCE:
Quizzes 30%
Final Examinations 30% and
Laboratory performance 40%