MNE601: Computerized Manufacturing Systems

Fall 2024

Instructor: Evens Aristilde

Email: ea4@njit.edu

Office hours: Mondays 5pm-6pm

COURSE DESCRIPTION

This course provides a comprehensive description of the concepts of manufacturing systems, manufacturing metrics and economics with variety of examples on them.

Robot anatomy, the control system and robotic programming are discussed as well as PLC programming. Fundamental and application of automated material transport and storage systems are discussed, and different types of automated storage systems are provided in the slides.

The lab experiments of the course focus on two fundamental objectives: 1) PLCs programing and troubleshooting, using simulator and HMI which train students to execute real world projects, 2) Programming and troubleshooting techniques necessary to run industrial robots. Moreover, during the class students will gain exposure to quantitative methodologies and algorithms to analyze the automated manufacturing systems.

CANVAS

The course will make extensive use of the Canvas system to optimize student-instructor communication. All course materials including lecture slides will be distributed through Canvas. All submission projects and assignments will also be through Canvas. To access the system, you will need a valid UCID to login.

GRADING

Based in individual and team performance as follows:

15% Project Presentation	30% Lab Experiments
35% Final Exam	20% Midterm

LECTURE SLIDES AND SUGGESTED READINGS

MNE601, Computerized Manufacturing Systems lectures slides will be distributed electronically through Canvas.

Textbook: Automation, Production Systems and Computer-Integrated Manufacturing, 5th Edition, by Mikell P. Groover, Pearson. It is highly recommended students register for a student membership to ISA (International Society of Automation) via **www.ISA.Org**

LAB EXPERIMENTS

The lab experiments will be completed as teams and individually. Each person is assigned 3 PLC projects and one robotic project. At the end of each project, a short report of the project should be submitted through Canvas. Experiments can be done using simulation and other software provided by the instructor. In person experiments will be require adherence to NJIT COVID-19 guidelines.

PROJECT PRESENTATION

Each student will be assigned a unique manufacturing and automation project, in which student is required to review and discuss the assigned case and create a detailed PowerPoint report which focuses on given tasks. Each student will make a 15-20 minute presentation to the class Presentations will be scheduled and announced and have to be submitted through Canvas.