Syllabus

SST 234 Cyberphysical Automation Control II

General Information

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Author
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Department
Science and Technology

Course Prefix
SST

Course Number
234

Course Title
Cyberphysical Automation Control II

Course Information

Credit Hours
4

Lecture Contact Hours
3

Lab Contact Hours
2

Other Contact Hours
0

Catalog Description
Students in this capstone class prepare to take part in a technological co-op experience in a local company. Students will apply concepts and techniques of mechatronics and machine vision in order to complete a team-based case study project to solve problems encountered in high technology businesses.

Prerequisites
SST 231 and TECH 123

Co-requisites
None

Grading Scheme
Letter

First Year Experience/Capstone Designation

This course is designated as satisfying the outcomes applicable for status as a
Capstone Course

SUNY General Education

This course is designated as satisfying a requirement in the following SUNY Gen Ed category
None

FLCC Values

Institutional Learning Outcomes Addressed by the Course

Course Learning Outcomes

Course Learning Outcomes

1. Define the mechatronic control and/or machine vision requirements to specify tasks to be performed.
2. Simulate machine vision and/or mechatronic actuators and control hardware (ex. Microcontroller, PLC, or PAC) using LabVIEW, Multisim and/or Ladder Logic software.
3. Construct mechatronic and/or machine vision system using industry standard hardware.
4. Verify mechatronic and/or machine vision systems through tests.
5. Document and communicate mechatronic and/or machine vision solutions.

Program Affiliation

This course is required as a core program course in the following program
AAS Instrumentation and Control Technologies

Outline of Topics Covered

I. Principles and Practice of Motion Control
   a. Selecting and Sizing Servo and Stepper Motors
   b. Using Feedback in Motion Control
   c. Control of Trajectory using Motion Control Software Mechatronics
   d. Hardware and software

II. Principles and Practice of Industrial Machine Vision
   a. Choice of Lighting, Optics, Camera, and Image Acquisition Devices
   b. Acquiring and Displaying Images
   c. Techniques and Algorithms of Image Processing
   d. Calibrating Images
   e. Industrial Machine Vision Applications: Metrology, Automated Inspection, Robotics
   f. Simulation of Motion Control and Machine Vision Hardware and Software

III. The students will complete a team-based case study project in which they will define and develop an innovative automation control solution using industry standard hardware and software tools.