



Syllabus

SST 174 Computing for Smart Systems

General Information

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Author Sam Samanta

Department Science and Technology

Course Prefix SST

Course Number 174

Course Title Computing for Smart Systems

Course Information

Catalog Description This is a computational course focused on developing and implementing algorithms for monitoring and control of engineering systems using LabVIEW, MATLAB, C and Python software. Topics covered include: problem solving, data acquisition, instrumentation and control, computer programming concepts, and spreadsheet concepts.

Credit Hours 2

Lecture Contact Hours 1

Lab Contact Hours 2

Other Contact Hours 0

Grading Scheme Letter

Prerequisites

None

Co-requisites

None

First Year Experience/Capstone Designation

This course DOES NOT satisfy the outcomes applicable for status as a FYE or Capstone.

SUNY General Education

This course is designated as satisfying a requirement in the following SUNY Gen Ed categories

None

FLCC Values

Institutional Learning Outcomes Addressed by the Course

Inquiry and Perseverance

Course Learning Outcomes

Course Learning Outcomes

1. Learn and use the LabVIEW, MATLAB, C programming and Python computing environments.
2. Write programs in LabVIEW, MATLAB, C and/or Python programming to solve basic engineering problems.
3. Explain the basic principles of computer programming and their application to the solution of engineering problems.

Outline of Topics Covered

- I. Flow Charts algorithm for solving problems
- II. Software as Virtual Instrument (VI) object
- III. Front Panel Controls, Indicators
- IV. Block Diagram arithmetic and logic functions
- V. Types of Numbers and Variables
- VI. Editing and Debugging Programs
- VII. SubVI
- VIII. Structures I: For loop, While loop, Formula Node, MathScript Node
- IX. Structures II: Case Structure, Shift Registers & Feedback
- X. Arrays & Clusters
- XI. Charts & Graphs: Waveforms, XY Graphs
- XII. Polymorphisms of Simple Operators
- XIII. Strings and File I/O
- XIV. Introduction to Data Acquisition
- XV. Introduction to Data Analysis built-in functions
- XVI. Introduction to Numerical Calculus tools in LabVIEW
- XVII. Some computational exercises are introduced in Excel

XVIII. Most of the above concepts addressed using combination of MATLAB, C and Python as appropriate.