

ITT Technical Institute

AM411 Advanced PLC

Onsite Course

SYLLABUS

Credit hours: 4

Contact/Instructional hours: 50 (30 Theory Hours, 20 Lab Hours)

Prerequisite(s) and/or Corequisite(s):

Prerequisites: ET345 Control Systems or equivalent, AM410 Process Control Circuits

Course Description:

A detailed study of the control of batch processes and analog processes using advanced PLC functions, including PID algorithms.

Outside Work:

For purposes of defining an academic credit hour for Title IV funding purposes, ITT Technical Institute considers a quarter credit hour to be the equivalent of: (a) at least 10 clock hours of classroom activities and at least 20 clock hours of outside preparation; (b) at least 20 clock hours of laboratory activities; or (c) at least 30 clock hours of externship, practicum or clinical activities. ITT Technical Institute utilizes a "time-based option" for establishing out-of-class activities which would equate to two hours of out-of-class activities for every one hour of classroom time. The procedure for determining credit hours for Title IV funding purposes is to divide the total number of classroom, laboratory, externship, practicum and clinical hours by the conversion ratios specified above. A clock hour is 50 minutes.

A credit hour is an artificial measurement of the amount of learning that can occur in a program course based on a specified amount of time spent on class activities and student preparation during the program course. In conformity with commonly accepted practice in higher education, ITT Technical Institute has institutionally established and determined that credit hours awarded for coursework in this program course (including out-of-class assignments and learning activities described in the "Course Outline" section of this syllabus) are in accordance with the time-based option for awarding academic credit described in the immediately preceding paragraph.

Instructor

Office Hours

Class Hours

I. MAJOR INSTRUCTIONAL AREAS

Batch Processes

Proportional Controllers

Integral Controllers

Proportional-Integral Controllers

Derivative Control

Proportional-Derivative Controllers

Proportional-Integral-Derivative Controllers

Loop Tuning

II. COURSE OBJECTIVES

1. Demonstrate an understanding of the basics of using a PLC to control discrete (on-off) processes.
2. Interpret and draw ladder diagrams for on-off control tasks.
3. Design and implement control for a given batch process.

4. Design and implement control including using a PID function for an analog process.
5. Evaluate success of an analog control problem via simple stability criteria (not to include more advanced mathematical analyses).

Teaching Strategies

Curriculum is designed to promote a variety of teaching strategies that support the outcomes described in the course objectives and that foster higher cognitive skills.

Delivery makes use of various media and delivery tools in the classrooms.

III. TEXT

Stenerson, Jon, Fundamentals of Programmable Logic Controllers, Sensors, and Communications, third edition, Prentice-Hall. 1999. ISBN 0-13-746124-0

IV. EVALUATION

Homework Quizzes.....	20%
Progress Tests (2).....	20%
Labs.....	40%
Final Exam.....	20%

Final grades will be calculated from the percentages earned in class as follows:

A	90 - 100%	4.0
B+	85 - 89%	3.5
B	80 - 84%	3.0
C+	75 - 79%	2.5
C	70 - 74%	2.0
D+	65 - 69%	1.5
D	60 - 64%	1.0
F	<60%	0.0