

FMT 122 Course Syllabus Spring 2010

Course Information

Course title: Intro Program Logic Control
Course description: FMT-122-101 (54642) Intro Program Logic Control

This is an introductory course. It covers the principals of operation for programmable logic controllers (PLC's). Control applications will be applied using PLC's in a systematic approach involving problem analysis, ladder diagrams, selection of PLC input and output modules, programming logic functions, and testing. Laboratory will focus on implementation of simple applications.

Course date: February 1st through May 28th, 2010
Location: 107N and 107M
Meeting days: Tuesday and Thursday
Meeting times: Lecture 6:30 PM to 7:30 PM
Lab 7:45 PM to 9:35 PM
Prerequisite: AIRC 142 or (FMT 100 and 104 and 105); all with C or better

Instructor Information

Name: Richard Press
Email: Richard.Press@sjcc.edu
Office location: 107N
Office hours: Tuesday and Thursday 5:30 PM to 6:30 PM
Phone: 831-345-3959
Biography: My name is Richard Press. I have worked as an engineer and manager in the laser manufacturing industry since 1974. I have worked in Laser R&D, System Design, Field Service, Laser Applications, and System Integration. I have been employed at companies such as Spectra Physics, GTE Sylvania, Applied Technology, and LPL Systems. My most recent position was as President of LPL Systems inc. in MT View. I have co-founded four companies.

Textbooks and reference material

Required: Automating Manufacturing Systems with PLC's, Version 5.1 PDF (6MB)
April 21, 2008er 5.1. Open Source PDF file available for download at
http://engineeronadisk.com/book_plcs/ MAKE SURE TO DOWNLOAD VER 5.1

The entire website at http://engineeronadisk.com/book_plcs/
Download ALL Manuals, ALL Information and Resources, and ALL Tools and Resources, and the SLIDES listed on the website.

The websites AB.COM, PLCS.NET, and PLCTUTOR.COM and
[HTTP://OPENBOOKPROJECT.NET/ELECTRICCIRCUITS/DIGITAL/DIGI_6.HTML](http://OPENBOOKPROJECT.NET/ELECTRICCIRCUITS/DIGITAL/DIGI_6.HTML)

Recommended: Programmable Logic Controllers, Fifth Edition by W. Bolton
Publisher: Newnes; 5 edition (August 7, 2009)
SBN-10: 1856177513
ISBN-13: 978-1856177511

Course Goals and Learning objective

At the end of this course, the student should be able to:

- 1) Diagram the main elements of PLC internal architecture.
- 2) Describe and identify the characteristics of commonly used input and output devices.
- 3) Explain the processing of inputs to generate outputs by PLC's.
- 4) Develop ladder diagrams for the logic functions of AND, NAND, OR, NOR, NOT, and XOR.
- 5) Enter and Test ladder logic programs in a PLC.
- 6) Explain the operation of internal relays, timers, counters, shift register and sequencers.
- 7) Identify methods used for testing and debugging PLC operation.

Course Materials Required: Floppy disk or a USB flash disk.
Scientific calculator.
Laptop Computer or home PC with internet connection

Grading

The course will be taught with a combination of lecture and lab. There will be approximately one hour of lecture and two hours of lab for each class meeting. A reading or research assignment may be given after each lecture.

There will be 8 to 10 quizzes. The sum total of all quizzes will count for 20 points (20%) of the final grade.

The midterm exam will be given about half-way through the semester and will be 20 points (20%) of the student grade.

The final exam is on the last class day and will be 20 points (20%) of the student grade.

Laboratory exercises will count for 20 points (20%) percent of the grade. Laboratory exercises will be performed either individually or in teams of two. A team will receive a group grade for each exercise.

Lab assignments will be in the form of a written requirement, such as: "Create a level control system" The student will be required turn in: 1) The Ladder Diagram 2) The written code 3) A description on the circuit, and what it does and how it works.

There will be a final project which will count for 20 points (20%) of the grade. The project is due before the last day of class. It will require that the student develop a solution to a simple PLC control problem. *All projects will be chosen by the student, but must be approved by the instructor for approval prior to submission.*

Your notes, calculator, laptop computer, PDA, etc. will be allowed for testing: *EXCEPT FOR THE FINAL.* That is, all tests are open book and open note, except the final.

It is expected that when assignments are given as homework that they are turned in at the beginning of the next class. Three points will be removed from your total grade for each assignment NOT turned in, or turned in late. It is expected that you do all of the assignments on time.

Additional extra-credit projects will be allowed for students desiring to improve their standing.

Grading will be based on 100 points as follows:

Score	Grade
91-100	A
81-90	B
71-80	C
61-70	D
60 & below	F

Grades of 'Incomplete' will only be given when requested by the student, and the appropriate paperwork is filled out, before the end of the class. It is the student's responsibility to drop the class at A&R to receive a 'W' if they are unable to finish the class. It is NOT the Instructor's responsibility to drop a student. If the class is not dropped by the student, the grading policies above will apply based on the work the student has completed.

Grading summary

- 1) Quizzes will be 20 points (20%) of the final grade.
- 2) Midterm exam will be 20 points (20%) of the student grade.
- 3) Final exam will be 20 points (20%) of the student grade.
- 4) Laboratory exercises will count for 20 points (20%) percent of the grade.
- 5) Project will count for 20 points (20%) of the grade.

Policies and Additional information:

If you have a disability-related need that may require special accommodations in this class, I suggest you notify me of your needs and that you make an appointment to discuss this with the counselor in the Disabled Students Program (DSP), Room 310, 288-3746 (voice), 995-5594 (TDD).

This is not a computer class but you will be required to use computers to get your work done. If you are behind in class from poor computer skills, you will need to arrange for tutoring. Some materials will only be available from an internet connected computer, so you will need to plan ahead for studying at home.

Learning to use and read technical documents on a computer without printing is a skill you will need to learn. If you want to print large volumes of documentation you will need to provide your own paper.

Information literacy is a set of abilities requiring individuals to “recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.” Information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments, and to all levels of education. An example of having “information literacy” is being able to find information online quickly and efficiently. Here is the web site that provides tools to do that: <http://www.sjcc.edu/Library/libresources.html>

Any documents that you use or programs that you write need be saved to your own storage medium. Bring your own USB storage device and BACK UP your work frequently! It is the responsibility of the student to save their own work. Anything saved to a classroom computer is likely to be erased by some other student.

Ringling cell phones and beepers are very disruptive to the class. Please turn these devices off prior to class. Use them only outside of the classroom.

Excessive talking during class, for whatever reason, is very disruptive. Please respect your fellow students and refrain from talking during the lectures.

This is a college level course. Errant behavior and/or attendance will not be tolerated. Disruptive students will be asked to leave the class. Students will be dropped from the class on the second unexcused absence. Excused absences for good reasons can be obtained by voicemail or email, as long as you keep up with your class work. Three tardy arrivals or early departures from class will count as an absence. If you withdraw from this class before the end of the semester, it is your responsibility to notify Admissions and Records and fill out the required drop form.

We will follow the college catalog for the Student Disciplinary Procedures and Complaint/Grievance Policy.

Please take time to read the General Information section within the San José City College class schedule or review. http://www.sjcc.edu/Catalog2008/Chapter%209_2007-08_Final.pdf Student honesty is expected during quizzes, exams. Plagiarism will not be tolerated.

If you feel frustrated, exhausted or out of ideas on what to do or how to move onto the next step, please take the time to look at this website. This site has very useful hints on preparing to learn, studying, and classroom participation, learning with others, preparing and taking tests, writing basics, math and science and web ideas. This site is translated into many different languages. <http://www.studygs.net/>

Good luck and I hope you do well in this class!