

PLC Troubleshooting

TEAM - 2040 101

Course Description

This course covers the Allen Bradley Compact Logix, troubleshooting PLC's , identifying types of PLC faults, use of PLC diagnostics indicators, troubleshoot PLC power supplies, and test and troubleshoot discrete input/output devices. It is recommended that students complete TEAM 2010 & TEAM 2025 prior to taking this course.

Semester(s): All

Course Student Learning Outcomes

- Demonstrate PLC troubleshooting skills and techniques.
- Utilize PLC's status and diagnostic indicators to determine the status of PLC operation.
- Demonstrate ability to troubleshoot a PLC power distribution system.
- Test discrete input/output devices.
- Use the force function to test a PLC discrete output device.
- Troubleshoot an industry PLC for faults.
- Use a six-step sequence to troubleshoot a PLC system.
- Troubleshoot a continuous cycle reciprocating motor PLC project.
- Troubleshoot a PLC-controlled machine with manual and automatic modes.
- Use the application diagnostics tools to find and replace an instruction.
- Analyze, test, and troubleshoot analog input/outputs.
- Analyze, test, and troubleshoot PWM applications.
- Analyze, test, and troubleshoot variable speed drives PLC applications.

- Analyze, test, and troubleshoot stepper motors PLC applications

College Wide Student Learning Outcomes

- Students acquire substantive knowledge in their intended major
- Students think critically

Course Prerequisites

As listed in catalog

Transfer/Certification/Licensure/Employment Information

As listed in SLTC transfer information.

Engagement Plan

Example language:

- We will respond to email within 24 to 48 hours except Saturday and Sunday. We will offer feedback on major assignments within 24 to 48 hours except Saturday and Sunday] The best way to contact us regarding course work is via the Canvas Inbox, as I will prioritize this email over other modes of communication. Other issues use Outlook.

Keys for Success (how to succeed in the course)

Regular attendance and making daily progress is critical.

Staying on track and working on a regular basis.

Ask for assistance when needed.

Complete all assignments as listed.

Course Content Advisory

PACE Plans are designed to keep you on PACE and making good progress.

Required Text or Materials

Title: As listed in course introduction module

For more information on textbook accessibility, contact Accessibility & Disability Services at ads@slcc.edu.

Brief Description of Assignments/Exams

Grading Criteria & Assessment Definitions

Grading System: The list below is how letter grades will be defined for the course work required and completed. Each course will have specific requirements as listed in the canvas course site.

Letter Grades Scale:

The SLTC Electronics Department has as a minimum grade requirement of: B (77%) as a passing grade for all courses and all course assignments and assessments.

Grades for SLTC Electronics Department are based on the categories assignment/assessments areas below: In most courses there are all 4 categories as shown below and the letter grade will be based upon the average of the applicable categories. There are courses that do not have 4 categories and those exceptions are below.

4 - Categories

Formative Assessment Cognitive
Formative Assessment Performance-Based
Summative Assessment Cognitive

Summative Assessment Performance-Based

Items

Theory/Quizzes Weight

25%

Skills Based Hands-on Weight

25%

Theory/Quizzes/Exams Weight

25%

Skills Based Hands-on Weight

25%

100%

Criteria

100% of course work @ minimum grade of 77% for each assignment.

100% of course work @ minimum grade of 77% for each assignment.

100% of course work @ minimum grade of 77% for each assignment.

100% of course work @ minimum grade of 77% for each assignment.

Any 3 - Categories Courses - Where there are only a SAC or SAP - but not both. Or not a FAC and/or

FAP. Weight 33.33%

Formative Assessment Cognitive

Formative Assessment Performance-Based

Summative Assessment Cognitive or Summative

Assessment Performance- Based

Items

Theory/Quizzes

Skills Based Hands-on

Theory/Quizzes/Exams Skills Based Hands-on

100%

Criteria

100% of course work @ minimum grade of 77% for each assignment.

100% of course work @ minimum grade of 77% for each assignment.

100% of course work @ minimum grade of 77% for each assignment.

2 - Categories assessments/assignments each will carry 50% of total weight for a total of 100%.

Formative Assessment – During the Learning Cycle

- Formative assessment is a term for any type of assessment or assignment used to gather student feedback and improve instruction. Formative assessments occur during the learning process, often while students are engaged in other activities. Anecdotal records, periodic quizzes or essays, diagnostic tests and in-class or homework assignments are all types of formative assessment because they provide information about a student's progress. Any Formative Assessment serves in most cases as the determining tool that “says” you as a student are ready and able to “Demonstrate Proficiency” of the required course outcomes/objectives.

Therefore, any weakness or missed objectives that need addressing during the Formative cycle will require some level of remediation before any Summative Assessments are allowed.

You are encouraged to ask for assistance with concepts that are challenging.

Summative Assessment – Demonstration of Proficiency

- Summative assessment occurs at various points in a course and may include both cognitive and performance-based assessments.
- This is a time that you as a student should be able to complete the assignments and meet the criteria listed for the assessment.
- Objectives must be performed to the level that would meet industry requirements.

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Module 1 Introduction to PLC Troubleshooting - FAC	Assignment	100
	Module 2 PLC Systems Troubleshooting - FAC	Assignment	100
	Module 2 PLC Systems Troubleshooting - Skills Mastery - LAPs - SAP	Assignment	100
	Module 3 Analog Input/Output Troubleshooting -- Skills Mastery - LAPs - SAP	Assignment	100
	Module 4 Analog Application Troubleshooting - FAC	Assignment	100
	Module 4 Analog Application Troubleshooting - Skills Mastery - LAPs - SAP	Assignment	100
	Introduce Yourself	Discussion	0

Due Date	Assignment Name	Assignment Type	Points
	Module 1 Introduction to PLC Troubleshooting - LAPs - FAP	Assignment	100
	Module 1 Introduction to PLC Troubleshooting - Skills Mastery - LAPs - SAP	Assignment	100
	Module 2 PLC Systems Troubleshooting - LAPs - FAP	Assignment	100
	Module 3 -Analog Input/Output Troubleshooting - FAC	Assignment	100
	Module 3 Analog Input/Output Troubleshooting - LAPs - FAP	Assignment	100
	Module 4 Analog Application Troubleshooting - LAPs - FAP	Assignment	100
	Summative Assessment - Modules 1 - 4 SAC	Quiz	20

Grading Scale

Grade	Grade Range	Competency Level
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A	92-100%	Highly Competent
B	77-91%	Competent
F	0 to 76%	Fail

How to Navigate to Canvas

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, and grading policies, Title IX and other important acknowledgements. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

For more information, navigate to the Institutional Policies tab on the [Institutional Syllabus](#) page.

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, visit the [Institutional Syllabus](#) page under the Tutoring and Learning Support tab. We encourage you to take advantage of these resources to help you succeed in your studies. If you have any questions or would like to schedule a tutoring session, please don't hesitate to reach out to us. We are here to support you in any way we can.

Advising and Counseling Support Services

At our institution, we are committed to supporting your academic and personal growth. That's why we offer a range of advising and counseling services to help you navigate the

challenges of college life. To learn more about the resources available to you and how to access them, visit the [Institutional Syllabus](#) page under the Advising and Counseling Support Services tab. Our advising team and the support centers across campus are here to support you in achieving your goals and overcoming any obstacles you may face.

Student Academic Calendar

As students you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw. To learn more about those dates, navigate to the Student Academic Calendar below:

[SLCC Student Academic Calendar](#)

Additional Policies

As listed on SLTC/SLCC web sites as it applies to SLTC students.

Course Work

All course work is to be submitted by mid-night of the last day of the semester.

Any courses not completed within a semester will require the student to begin a fresh, with no credit for previous course work.

The exception to the above is for students that qualify for an "I" incomplete.

All NIDA and Amatriol and similar cloud based work must be completed during the registered semester and all submissions are required to have that respective semester date stamp.

Conditional Procedures. The student in any respective course.

1. If they have started but did not complete the course - due to non-attendance or lack of work. Grade earned at that point should be entered. B,C,D, E. etc.
2. They registered - but did not start or complete any work - after 10 days (including weekends), please use non-attendance drop

