

# Programmable Controllers (RBTC 1401) 1B1

## CREDIT

4 Semester Credit Hours (3 hours lecture, 4 hours lab)

## MODE OF INSTRUCTION

Hybrid

## PREREQUISITE/CO-REQUISITE:

CETT 1403 & CETT 1405

## COURSE DESCRIPTION

A study in programmable logic controllers (PLC). Topics include processor units, numbering systems, memory organization, relay type devices, timers, counters, data manipulators, and programming.

## COURSE OBJECTIVES

Upon completion of this course, the student will be able to

1. Write working programs using ladder logic
2. Install and troubleshoot the program
3. Integrate PLCs into electro-mechanical systems
4. Identify the main parts of a PLC and describe their function
5. Convert relay ladder schematics to ladder logic programs and program instructions that perform logical operations
6. Apply combinations of counter and timers to control systems

## INSTRUCTOR CONTACT INFORMATION

Instructor: Patrick Reindel  
Email: [ptreindel@lit.edu](mailto:ptreindel@lit.edu)  
Office Hours: Monday 30 minutes before/after class

## REQUIRED TEXTBOOK AND MATERIALS

1. *Programmable Controllers, 5<sup>th</sup> OR 6<sup>th</sup> Edition*, by Frank Petruzella, McGraw-Hill
2. Notebook.

## ATTENDANCE POLICY

Students must be in class in order to complete lab activities for that day. Missing 20%, or more of classes will result in an automatic "F" for the course.



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## DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

## COURSE CALENDAR (subject to change)

DATE	TOPIC	READINGS (Due on this Date)	ASSIGNMENTS (Due on this Date)
Week 1	Course introduction, policies, and practice		Practice Assignments
Week 2	PLCs: An Overview	Chapter 1	Blackboard exercises & labs
Week 3	PLC Hardware	Chapter 2	Blackboard exercises & labs
Week 4	Unit 1 Review	Chapters 1 & 2	<b>Quiz 1 &amp; EXAM 1</b>
Week 5	Number Systems & Codes	Chapter 3	Blackboard exercises & labs
Week 6	Fundamentals of Logic	Chapter 4	Blackboard exercises & labs
Week 7	Unit 2 Review	Chapters 3 & 4	<b>Quiz 2 &amp; EXAM 2</b>
Week 8	Basics of PLC Programming	Chapter 5	Blackboard exercises & labs
Week 9	Wiring Diagrams & Programs	Chapter 6	Blackboard exercises & labs
Week 10	Unit 3 Review	Chapters 5 & 6	<b>Quiz 3 &amp; EXAM 3</b>
Week 11	Programming Timers	Chapter 7	Blackboard exercises & labs
Week 12	Programming Counters	Chapter 8	Blackboard exercises & labs
Week 13	Timer/Counter Combination	Chapters 7 & 8	Blackboard exercises & labs
Week 14	Unit 4 Review	Chapters 7 & 8	<b>Quiz 4 &amp; EXAM 4</b>
Week 15	Final Exam Review		<b>Final Exam</b>

## COURSE EVALUATION

Final grades will be calculated according to the following criteria:

Labs- 50%

EXAMS\*- 30%

Quizzes/Assignments- 20%

\*There will be 4 major EXAMS and a FINAL EXAM. If you choose to *not* take the FINAL, your Exam Avg will be used as your FINAL EXAM grade.

## GRADE SCALE

- 90-100 A
- 80-89 B
- 70-79 C
- 60-69 D
- 0-59 F

## **TECHNICAL REQUIREMENTS**

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at <https://lit.edu/online-learning/online-learning-minimum-computer-requirements>. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

## **DISABILITIES STATEMENT**

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email [specialpopulations@lit.edu](mailto:specialpopulations@lit.edu). You may also visit the online resource at [Special Populations - Lamar Institute of Technology \(lit.edu\)](#).

## **STUDENT CODE OF CONDUCT STATEMENT**

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at [www.lit.edu](http://www.lit.edu). Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

## **STARFISH**

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

## **ADDITIONAL COURSE POLICIES/INFORMATION**

1. No food, drinks, or use of tobacco products in class.
2. No foul or harsh language will be tolerated
3. Turn off all Cell Phones during lectures, unless otherwise instructed by me
4. Take care of tools and equipment used during class
5. Headphones may be worn only upon Instructor approval
6. Do not bring children to class.
7. No Cheating of any kind will be tolerated. Students caught cheating or helping someone to cheat can and will be removed from the class for the semester. Cheating can result from expulsion from LIT.
8. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an 'F' in the course.
9. Students must have access to, and knowledge of basic computer functions (including Blackboard)
10. Students should check Blackboard daily.
11. Internet Usage
  - a. Classroom computers have access to the internet.
  - b. Student usage of the internet will be monitored.
  - c. Proper usage of the internet will be allowed for classroom research, classwork, tests, and assignments as directed.
  - d. Any unauthorized usage of the Internet will not be tolerated.
  - e. Improper usage of the Internet, such as profanity, nudity, gambling, etc. will result in disciplinary action.
- 12. There will be a 20 point penalty for each day deducted from late work on Blackboard assignments. There will be NO make-up labs. Lab assignments turned in after the due date will NOT be graded.**
- 13. There will be NO make-up Exams. If you miss an Exam for any reason, you automatically forfeit your possible exemption from the Final.**