

**MASTER SYLLABUS**

**ELET-287 Programmable Logic Controllers**

**Course Lecture-Lab-Credit and/ Contact Hours**: 3-3-4 / 6

**Course Maximum Enrollment:** 16

**Lab Fee**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Special Facility or Equipment Needs/Safety Rules and Issues**:

This course requires a controls equipment lab/environment. (Digital Lab/Controls equipment and ELET Safety Rules)

**Lab Fee:** None

**Course Title:** Programmable Logic Controllers

**Course Prefix and Number:** ELET-287

**Course Description**:

Study of the hardware, software, and communications pathways of Programmable Logic Controllers (PLC).  Analyze common industrial control schemes and implement them in a typical PLC control system.

**Pre- and/or Co-requisites**:

Pre-Requisites: None / Instructor Approval

**Course Goal**:

Upon successful completion of the course, the student should be able to recognize the parts of a PLC and understand function and usage.  The student should able to install troubleshoot and maintain this equipment as well as develop, download, and troubleshoot programs for a PLC.

**Student Learning Outcomes**: A student who successfully completes this course will be able to:

1. Differentiate basic components of PLC hardware.
2. Use college-wide resources to build projects.
3. Outline the basic components of various PLC interfacing devices.
4. Use the basic fundamentals of programming theory to select the best software option for the given application.
5. Select the proper measurement interfacing device and apply it to the given application.
6. Install and hookup interfacing instruments and controllers to build a complete control system.
7. Develop and build ladder logic programs.
8. Develop and build wiring programs.
9. Operate and program various PLC’s.
10. Program and use timers.
11. Program and use counters.
12. Integrate the memory aspects of various PLC’s.
13. Organize PLC projects and deliver a finished project.

**Course Content**:

1. Overview of PLC’S.
2. PLC hardware.
3. Proximity sensors, Process sensors, Control relays.
4. Motor control.
5. PLC memory structures.
6. Ladder logic & PLC programming.
7. Wiring Diagrams.
8. Timers & Counters.
9. Bit level programming.

**Texts and Readings**:

Programmable Logic Controllers, 4th E.; author: Petruzella; Publisher: McGraw-Hill;

ISBN: 978-0-07-351088-0.

Or similar textbook and lab manual

 **Assessment**:

Midterm test

Final Test

**ELET Student Outcomes Realized:**

1. Apply the knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve well-defined engineering problems appropriate to the discipline.
2. Design solutions for well-defined technical problems and assist with the engineering design of systems, components, or processes appropriate to the discipline.
3. Apply written, oral, and graphical communication in well-defined technical and non-technical environments; identify and use appropriate technical literature.
4. Conduct standard tests, measurements, and conduct, analyze, and interpret experiment results.
5. Function effectively as a member of a technical team.
6. Explain the need for and engage in self-directed continuing professional development.
7. Address professional and ethical responsibilities, including a respect for diversity.
8. Demonstrate a commitment to quality, timeliness, and continuous improvement.

This course contributes 4 (of 42) technical content credit hours.

**DISABILITY STATEMENT:** It is the general policy of Delgado Community College to provide an equal opportunity for academic success to all students. Reasonable accommodations for a student with a disability will be made provided the student has self-identified with the Office of Disability Services and has provided the required documentation. Instructors will appropriately modify their methods of instruction, course and examination requirements and general procedures to accommodate the special needs of the student provided the academic integrity of the course or examination is not violated and the accommodation does not jeopardize the health and welfare of all students. Accommodations will not be made without the letter of accommodation from the Office of Disability Services. {[Contact Information](http://www.dcc.edu/student-services/advising/disability-services/faculty-staff-resources/syllabi-statement.aspx) is included on Course Syllabus and is not listed on the Master Syllabus. The Master Syllabus statement ends prior to bracketed sentence.}

**Academic Honesty Statement:** Delgado Community College requires that students adhere to the highest standards of academic integrity. Students are entrusted to be honest in every phase of their academic life and to present as their own work only that which is genuinely theirs. Cheating, plagiarism, violation of test conditions, complicity in dishonest behavior, or other falsification of academic work is a serious breach of College standards.

Plagiarism is defined as any attempt to represent the work of another as one's own original work. More specifically, plagiarism is the direct appropriation of the language, thoughts, or ideas of another--either literally or in paraphrase--without appropriate notation on the source and in such fashion as to imply that the work is one's own original work.

Depending upon the nature of the case, a student guilty of academic dishonesty may receive penalties ranging from a grade of "F" for the work submitted to expulsion from the College. Such penalties may be of both an academic and disciplinary nature.  Please see the *College Catalog* for additional information.

**Title IX Statement:** Delgado Community College is committed to creating and maintaining an environment in which sexual violence against men and women is not tolerated. Intervening in such instances helps to foster a safe environment for all, while sending a message that this kind of behavior will not be tolerated and is unacceptable in our community. As part of its commitment to providing an educational environment free from discrimination, Delgado Community College complies with Title IX of the Education Amendments, which prohibits discrimination and harassment based upon sex in an institution’s education programs and activities. Title IX prohibits sexual harassment, including sexual violence, of students at Delgado Community College sponsored activities and programs whether occurring on-campus or off-campus. {[Contact Information](http://www.dcc.edu/title-ix/default.aspx) included on Course Syllabus and is not listed on the Master Syllabus. The Master Syllabus statement ends prior to bracketed sentence.}

 *Pending Approval of Curriculum Committee
AA-1503.1A Master Syllabus Format Approved:*

*Curriculum Committee 9/29/17, Vice Chancellor for Academic Affairs 11/20/17*