

METROPOLITAN STATE UNIVERSITY OF DENVER  
Office of Academic and Student Affairs

**REGULAR COURSE SYLLABUS**

School of: Professional Studies

Department: Engineering Technology

Prefix & Course Number: EET 3740 Crosslisted With\*:       

Course Title: Programmable Logic Controllers

Banner course title (30 characters): Programmable Logic Controllers

Check All That Apply: Required for Major:  Required for Minor:  Specified Elective:

Required for Concentration:  Elective:  Service Course:

To receive Title IV financial aid funds, all institutions of higher education must comply with the federal definition of a credit hour. The Higher Learning Commission requires institutions to maintain policies and procedures for verifying compliance with this definition.

*Federal Credit Hour Definition: A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:*

*(1) one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or (2) at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward to the award of credit hours. 34CFR 600.2 (11/1/2010)*

Credit Hours: 2 (1.5 + 1)

Face-to-Face or Equivalent Hours per course:

Lecture 22.5 Lab15 Internship        Practicum        Other (please specify type and hours):

Additional Student Work Hours per course: 60

Schedule Type: B Grade Mode: L

Variable topics umbrella course: No  Yes  If Yes, number of credit hours allowed       

Specified repeatable course: No  Yes

Prerequisite(s): EET 1150 or EET 2000, with a grade of "C" or better

Corequisite(s):       

Prerequisite(s) or Corequisite(s):       

APPROVED:

Fuzza Balogh for Dr. He 01/29/2014  
Department Chair OR Program Director Date

[Signature] 1-30-14  
Dean OR Associate Dean Date

[Signature] 03/13/14  
Associate VP, Academic and Student Affairs Date

\*If crosslisted, attach completed Course Crosslisting Agreement Form

Prefix and Course Number: EET 3740

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**Banner Enforced:**

**Prerequisite(s):** EET 1150 or EET 2000, with a grade of "C" or better

**Corequisite(s):** \_\_\_\_\_

**Prerequisite(s) or Corequisite(s):** \_\_\_\_\_

**Registration restrictions:** Level \_\_\_\_\_ Class \_\_\_\_\_ Program/Major \_\_\_\_\_ Student attribute \_\_\_\_\_

**Catalog Course Description:**

This course is an introduction to the applications of Programmable Logic Controllers (PLC) and their programming using ladder diagrams. Topics include: PLC usage, types, advantages and disadvantages, system overview, ladder logic programming command language and applications, networking PLC systems, and installation and troubleshooting techniques.

**Specific Variable Topics Course Description (if applicable, umbrella course description included above):**

**Required Reading and Other Materials will be equivalent to:**

Rabiee, Max (2012). *Programmable Logic Controllers: Hardware and Programming* or current edition. Tinley Park, IL: Goodheart-Wilcox

**Specific, Measurable Student Behavioral Learning Objectives:**

Upon completion of this course the student should be able to:

1. Define the physical and logical components of a Programmable Logic Controller (PLC).
2. Design programs for PLCs using ladder logic diagrams.
3. Build a working, scaled to classroom size, assembly line operation using PLCs for defined applications.

**Detailed Outline of Course Content:**

- I. Introduction to PLC
  - A. History of PLC
  - B. Advantages
  - C. Disadvantages
  - D. Brands
- II. System Description
  - A. CPU
  - B. Monitor
  - C. I/O (Input / Output)
- III. Ladder Logic Diagram
  - A. General Procedures
  - B. Elementary Commands
  - C. Times
  - D. Counters
  - E. Software Simulation
  - F. Documentation
- IV. Installing and Troubleshooting
- V. Automation Software
- VI. Arithmetic commands
- VII. Networking PLCs

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**Evaluation of Student Performance:**

1. Written Exams
2. Assignments
3. Lab Reports
4. Presentation