**EE 3373**  
Introduction to Programmable Controllers

**Curricular Designation:** EE: elective  
CpE: elective

**Catalog Description:**  
EE 3373 - Introduction to Programmable Controllers  
The design of discreet sequential controls using programmable logic controllers (PLCs). Relay logic is used to introduce ladder logic and ladder logic is used to program the PLC. Introduces a structured approach to sequential control design. Data acquisition is introduced using BridgeVIEW software.

_Credits:_ 3.0 Lec-Rec-Lab: (0-2-3)  
_Semesters Offered:_ Fall, Summer  
_Pre-Requisite(s):_ EE 2110 or EE 2112 or EE 3010

**Textbooks(s) and/or Other Required Materials:**  

**Press Prerequisites by Topic:**  
1. Familiarity with electric circuits.

**Course Objectives:**

1. Understand PLC hardware architecture and its component operation.

2. Understand fundamentals of logic.

3. Perform basic PLC programming.

4. Develop a fundamental understanding for PLC wiring and interpreting ladder logic diagrams.

5. Program timers, counters and utilize program control and data manipulation instructions.

6. Program Human Machine Interface and use it to control PLC.

**Topics Covered:**

1. PLC Hardware Components  
2. Number Systems and Codes  
3. Fundamentals of Logic  
4. PLC Programming  
5. PLC Wiring Diagrams and Ladder Logic Programs  
6. Programming Times  
7. Programming Counters  
8. Program Control Instruction
## Relationship of the Course Content to Program Outcomes:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Important</th>
<th>Moderately</th>
<th>Minimally</th>
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<tbody>
<tr>
<td><strong>a</strong> an ability to apply knowledge of mathematics, science and engineering</td>
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<td><strong>b</strong> an ability to design and conduct experiments, as well as to analyze and interpret data</td>
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<td><strong>c</strong> an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, health and safety, manufacturability and sustainability</td>
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<td><strong>d</strong> an ability to function on multi-disciplinary teams</td>
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<td><strong>e</strong> an ability to identify, formulate and solve engineering problems</td>
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<td><strong>f</strong> an understanding of professional and ethical responsibility</td>
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<td><strong>g</strong> an ability to communicate effectively</td>
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<td><strong>h</strong> the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context</td>
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<td><strong>i</strong> a recognition of the need for, and an ability to engage in life-long learning</td>
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<td><strong>j</strong> a knowledge of contemporary issues</td>
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<td><strong>k</strong> the ability to use the techniques, skills, and modern engineering tools necessary for the practice of electrical engineering</td>
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## Contribution of Course to Meeting Degree Requirements:

3 Credit Hours – Engineering Topics

## Class/Laboratory Schedule (note: 1 hour = 50 minutes):

- Lecture: 28 hours = 2 hours/week for 14 weeks
- Lab: 42 hours = 3 hours/week for 14 weeks

## Prepared by:

Aleksandr Sergeyev, Associate Professor, June 5, 2017