

## **EE 512 – AUTOMATED INDUSTRIAL SYSTEMS**

### **CREDIT HOURS**

3 Hours

### **CONTACT HOURS (Hours/week)**

Lecture: 2; Tutorial: 2; Lab: 2

### **TEXT BOOK**

J. Hackworth, "Programmable Logic Controllers: Programming Methods and Applications", Pearson Education, latest edition

### **COURSE DESCRIPTION**

Automated hierarchical levels and components. Detecting sensors and actuating elements, relay logic and their applications. Introduction to PLC.S. Types of PLCs and construction. Hardware configuration and descriptions. Programming and testing basic functions. Programming and testing advanced functions. Industrial Applications using PLCs

### **PREREQUISITE:**

EE 411 OR EE 418

### **RELATION OF COURSE TO PROGRAM**

### **COURSE INSTRUCTION OUTCOMES**

The student will be able to:

Get updated on objectives , structures and behaviour of automated systems , programmable logic controllers and applications in industrial systems

### **TOPICS COVERED**

- Automated hierarchical and components.
- Building blocks of automation.
- Data acquisition system.
- Multiplexing/De-multiplexing.
- Computers and industrial control.
- Introduction to PLC.S.
- 7th week + Methods of representation.
- Programming or testing of basic function.
- Programming of advanced functions.
- PLC in industrial Applications.
- Industrial applications.
- 12th week + Control applications.
- Industrial control applications.
- Industrial control applications (2).

- PLCs applications.

**CONTRIBUTION OF COURSE TO MEET THE REQUIREMENTS OF CRITERION 5:**

<b>Professional component Content</b>			
<b>Math and Basic Sciences</b>	<b>Engineering Topics</b>	<b>General Education</b>	<b>Other</b>
	✓		

**RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:**

<b>Student Outcomes</b>		<b>Course aspects</b>
A	An ability to apply knowledge of mathematics, science, and engineering	
B	An ability to design and conduct experiments, analyze and interpret data.	b <sub>1</sub> b <sub>2</sub> b <sub>3</sub> b <sub>4</sub>
C	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economics, environmental, social, political, ethical, health, and safety, manufacturability, and sustainability	c <sub>1</sub> c <sub>2</sub> c <sub>3</sub>
D	An ability to function on multi-disciplinary teams.	d <sub>1</sub> d <sub>2</sub> d <sub>3</sub> d <sub>4</sub>
E	An ability to identify, formulate, and solve engineering problems	e <sub>1</sub> e <sub>2</sub> e <sub>3</sub>
F	An understanding of professional and ethical responsibility	
G	An ability to communicate effectively	
H	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and social content	
I	A recognition of the need for, and an ability to engage in life-long learning.	
J	A knowledge of contemporary issues within and outside the electrical engineering profession.	j <sub>1</sub> j <sub>2</sub>
k	An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.	k