

A FOUR DAYS WORKSHOP
On
PLC & SCADA

Organized by
Department of EEE

Netaji Subhas Institute of Technology
Approved by AICTE and Affiliated to AKU, Patna



August 22-25, 2022

Cheif Patron

Mr. M. M. Singh, Founder Secretary, NSIT

Patron

Mr. Krishna Murari, Registrar, NSIT

Convenor

Dr. J. Dalei, HOD,EEE,NSIT

Coordinators

Mr. Nishant Kumar, NSIT Patna

Mr. Deepak Kumar, NSIT Patna

Resource Person

Md Safdar Jaiil, Deputy Manger, MIEPL

ABOUT NSIT BIHAR PATNA

Netaji Subhas Institute of Technology established in 2007, with first batch started in 2008 has its magnificent campus at Amhara in the district of Patna, Bihar, The nearest railway station is Bihta about 2 kilometres from the institute campus and about 25 KM from Patna A railway junction the state capital and major business and Educational hub of the state. Bihta is the industrial hub and blessings nerve centre of the entire state of Bihar. NSIT, A Degree level Engineering Institute has become a "An effective source of Technocrats to the nation". with its unique infrastructural facilities of 4,00,000 Sq.Ft. of built up area on approximately 18 acres of green lustre land at Amhara, Bihta, Patna, Ambience at the campus serve and Ashram like. The college offers 4 yaers B.Tech courses in CSE, ECE, EEE, ME and CE.

ABOUT DEPARTMENT OF EEE

The Department of EEE has a team of well qualified, experienced and dedicated faculty members with rich academic, industrial and research background. The department is fully equipped with modern electronics equipment systems with latest software. . The EEE has the intake of 120 students and approved by AICTE and affiliated to AKU, Patna

DEPARTMENT VISION

To produce Electrical Engineers with energetic well rounded personalities flexible to cope escalating demands of budding technologies concerning analytical and practical skills.

DEPARTMENT MISSION

To extend the department as a prominent academic centre of learning in the discipline of electrical engineering.
To set up research and development hub of status so as to promote active participation with industry by staff and students to take on practical problems of industry and to provide feasible solutions.
To develop simple, suitable technologies, this will be helpful in the up-liftment of rural society.

OBJECTIVE

This is a basic course for designing of PCB using software. PCB (Printed Circuit Board) designing is an integral part of each electronics products and this program is designed to make students capable to design their own projects PCB up to industrial grade.

WORKSHOP CONTENTS

- ❖ Industrial Automation
- ❖ Overview of PLCs
- ❖ Central Processing Unit and I/O System
- ❖ Programming Terminal and Peripherals
- ❖ Ladder Logic and NO/NC Logic
- ❖ Force Instructions and Timers
- ❖ Counters

Registration Fee

The participation fees Rs 350/- only

Mode of registration :- Spot

For More Information Contact us on :-

7781020349, 7781020361, 9102403261

Registration Form

Name:.....
Designation:.....
Organization:.....
Gender:.....
Edu. Qualification:.....
Address:.....
Mobile Number:.....
E-Mail:.....

Signature of applicant

Date:

Place:



NETAJI SUBHAS INSTITUTE OF TECHNOLOGY, BIHTA

Department of Electrical & Electronics Engineering

Session 2021-22

Add on Course on "PLC & SCADA"

Course details:

Module 1-Industrial Automation

The objective of this module is to provide an overview of automation concepts and their constituents, as well as discuss the history of automation, its various types in the market, and its advantages and disadvantages.

Learning Outcomes:

Upon completion of this module the participant will be able to:

- Importance of Automation
- Its various modules/aspects
- Need of automation in today market
- Understand the benefits.

Module 2-Overview of PLCs

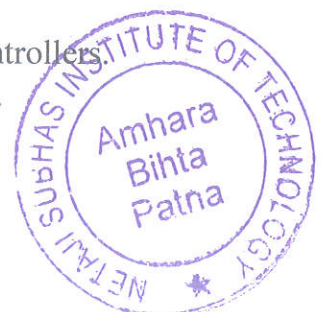
This module gives a general overview of PLCs and their use in industry, along with their origins and evolution.

The advantages of PLC systems and their main components are outlined and explored. An overview of ladder logic is provided, with an emphasis on practical application of the most common types of PLC signals.

Learning Outcomes:

Upon completion of this module the participant will be able to:

- Describe the purpose of a control panel.
- Define a programmable controller.
- List six factors affecting the original design of programmable controllers.
- Name three advantages of PLCs compared to relay logic systems.
- List the three main components in a PLC system.



- Understand the term ladder logic.
- Describe the application of PLC signals.
- Explain the difference between a bit and a word.

Module 3-Central Processing Unit

The aim of this course is to familiarize participants with the fundamental features of the PLC's central processing unit. The subject matter covered in the course is memory devices and storage, as well as an introduction to data storage and processing.

The course not only covers memory utilization and mapping, but also offers detailed information on CPU types and PLC scan functions.

Learning Outcomes:

Upon completion of this module the participant will be able to:

- Define the term CPU.
- Explain the purpose of the executive program.
- Understand the application of buses in a CPU.
- Explain the advantage of multiprocessing.
- Describe the two general classes of memory devices.
- Name four types of memory.
- Explain the purpose of memory utilization and how it applies to PLC systems.
- Describe the scan function.

Module 4-I/O System

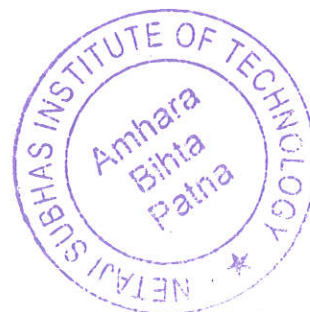
This course is dedicated to covering all aspects of PLCs' input/output system, which includes discrete, analog, and data I/O. Also included in the course are the principles of remote I/O and an introduction to scaling and resolution of analog devices and signals.

Learning Outcomes:

Upon completion of this module the participant will be able to:

- Explain the purpose of the I/O system
- Describe how I/O addressing is accomplished.
- Define discrete inputs.
- List four tasks performed by an input module.
- Describe the basic operation of a discrete output.
- Explain the purpose of data I/O interfaces.
- Define analog I/O.
- Explain the purpose of remote I/O.

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Module 5-Programming Terminals and Peripherals

This course is intended to provide participants with an overview of the wide range of programming terminals currently in use and to outline some of the key differences between them. In addition, the course covers topics such as hand-held programming terminals and computer-based software packages. The operation of host computer-based systems is also covered as well as the application of peripheral devices in a PLC network.

Learning Outcomes:

Upon completion of this module the Participant will be able to

- Define the term programming terminal.
- Describe the application of dedicated programming terminals
- Differentiate between programming software and documentation software.
- Describe the function of a host computer-based PLC system.
- Explain the purpose of peripheral devices.

Module 6- Ladder Logic

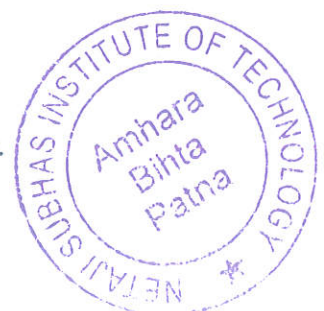
Laboratory simulation software is used to provide an introduction to ladder logic programming techniques in this course.

Through PLC simulation, the participant can write ladder logic programs and simulate their operation through the lab component of the course. The course covers instructions, safety circuitry, programming restrictions, and I/O addressing.

Learning Outcomes:

Upon completion of this module the participant will be able to:

- Define ladder logic.
- Explain the purpose of I/O addresses.
- Describe the function of soft wiring, branches, and rungs.
- Write a ladder logic program.
- Run a ladder logic program using lab simulator. Define the terms examine on and examine off
- Explain the purpose of a latching relay instruction.
- Differentiate between an internal output and an actual I/O output
- Describe the operation controller scan.
- Name two programming restrictions.
- Define nesting.
- Explain why safety circuitry is important in ladder logic systems.
- List three types of I/O addressing.



Module 7-NO/NC Logic

This course focuses on logic and its applications in PLC programming and control in a comprehensive manner.

Furthermore, the participant will become skilled in transforming control logic to ladder logic.

Learning Outcomes:

Upon completion of this module the participant will be able to

- Apply NO/NC to troubleshooting
- List five logic gates
- Describe the basic operation of an inverter.
- Explain the purpose of NO/NC diagrams
- Apply logic gate combinations to PLC control.
- Convert digital logic to ladder logic.

Module 8 -FORCE instructions

The aim of this course is to give a general overview of force control techniques.

The use of lab simulation software presents and demonstrates force instructions.

The simulation software also allows the participant to program and observe branching operations.

Learning Outcomes:

Upon completion of this module the participant will be able to:

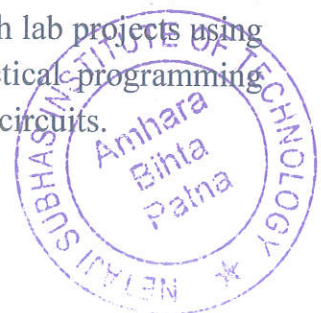
- Describe the purpose of first failure annunciators.
- Explain the advantage of using forcing.
- How to manage output energizing through software.
- Use the FORCE instruction for troubleshooting

Module 9-Timers

This course is intended to provide participants with an overview of PLC timers and their application in industrial control circuits, Timing functions such as TON, TOF, and RTO are discussed in detail and the theory is reinforced through lab projects using lab simulation software. In addition, participants will learn practical programming techniques for timers including cascading and reciprocating timing circuits.

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Learning Outcomes:

Upon completion of this module the participant will be able to:

- Name two types of relay logic timers.
- List the four basic types of PLC timers.
- Describe the function of a time-driven circuit.
- Differentiate between an ON-delay and an OFF-delay instruction.
- Write a ladder logic program using timers.
- Describe the operating principle of retentive timers
- Explain the purpose of cascading timers.

Module 10- Counters

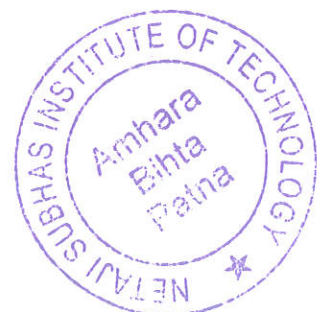
This course provides participants with a broad overview of PLC counters and their application in control systems. Counting functions such as CTU and CTD are presented in detail and the theory is reinforced through lab projects using lab simulation software. In addition, participants will learn practical programming techniques for counters including cascading counters and combining counting and timing circuits.

Learning Outcomes:

Upon completion of this module the participant will be able to:

- Define the two basic types of PLC counters.
- Write a ladder logic program using CTU, CTD, and RES.
- Design an up/down counter.
- Define cascading counters.
- Explain the advantages of combining timers and counters.
- Comparing the counter values.


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Department of Electrical & Electronics Engineering

Session 2021-22

Date:-

Notice

The interested students of 4th and 6th Semester Electrical and Electronics Engineering are hereby informed that a “**Workshop on PLC & SCADA** ” is going to be organized which is commencing from 22th August 2022. Therefore the students are instructed to attend the workshop. The details of the Workshop are as follows

Name: Workshop on PLC & SCADA

Starting Date: 22th August 2022

Duration: 16 Hours

Time:

Session 1 10 AM to 12 PM

Session 1 2 PM to 4 PM

Venue: EEE Lab

Resource Person:


Director
Netaji Subhas Institute of Technology
Amhara, Bihta, Patna, Bihar
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HOD, EEE, NSIT
Head of Department
Department of Electrical & Electronics Engineering
Netaji Subhas Institute of Technology



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Department of Electrical & Electronics Engineering

Session 2021-22

Date:- 22/08/2022

Attendance sheet

Sr.No	Name	Session-1	Session-2
1	TARA KANT MANI	P	P
2	KHUSHI	P	P
3	ANUP KUMAR	P	P
4	ASHISH RAJ	P	P
5	RAJA KUMAR	P	P
6	SURYANSH VERMA	P	P
7	SURYANSH VERMA	P	P
8	GAURAV KUMAR	P	P
9	SHIVAM KUMAR	P	P
10	HIMANSHU KUMAR	P	P
11	KUMARI AKANKSHA	P	P
12	MD TAUSIF MALLICK	P	P
13	KANIKA KUMARI	P	P
14	LAVANYA SINGH	P	P
15	RISHI PRAKASH PANDEY	P	P


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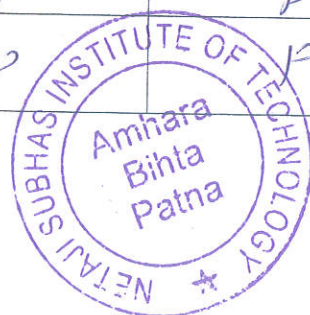
Department of Electrical & Electronics Engineering

Session 2021-22

Date:- 23/08/2022

Attendance sheet

Sr.No	Name	Session-1	Session-2
1	TARA KANT MANI	P	P
2	KHUSHI	P	P
3	ANUP KUMAR	P	P
4	ASHISH RAJ	P	P
5	RAJA KUMAR	P	P
6	SURYANSH VERMA	P	P
7	GAURAV KUMAR	P	P
8	SHIVAM KUMAR	P	P
9	HIMANSHU KUMAR	P	P
10	KUMARI AKANKSHA	P	P
11	MD TAUSIF MALLICK	A	A
12	KANIKA KUMARI	P	P
13	LAVANYA SINGH	P	P
14	RISHI PRAKASH PANDEY	P	P
15			




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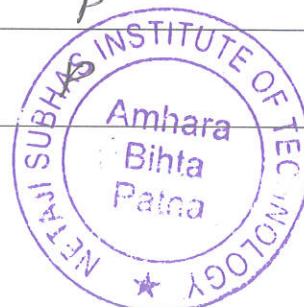
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Session 2021-22

Date:- 24/08/2022

Attendance sheet

Sr.No	Name	Session-1	Session-2
1	TARA KANT MANI	P	P
2	KHUSHI	P	P
3	ANUP KUMAR	P	P
4	ASHISH RAJ	A	A
5	RAJA KUMAR	P	P
6	SURYANSH VERMA	P	P
7			
8	GAURAV KUMAR	P	P
9	SHIVAM KUMAR	P	P
10	HIMANSHU KUMAR	P	P
11	KUMARI AKANKSHA	P	P
12	MD TAUSIF MALLICK	P	P
13	KANIKA KUMARI	P	P
14	LAVANYA SINGH	P	P
15	RISHI PRAKASH PANDEY	P	




Director

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Department of Electrical & Electronics Engineering

Session 2021-22

Date:- 25/08/2022

Attendance sheet

Sr.No	Name	Session-1	Session-2
1	TARA KANT MANI	P	P
2	KHUSHI	P	P
3	ANUP KUMAR	P	P
4	ASHISH RAJ	P	P
5	RAJA KUMAR	P	P
6	SURYANSH VERMA	P	P
7			
8	GAURAV KUMAR	P	P
9	SHIVAM KUMAR	P	P
10	HIMANSHU KUMAR	P	P
11	KUMARI AKANKSHA	P	P
12	MD TAUSIF MALLICK	P	P
13	KANIKA KUMARI	P	P
14	LAVANYA SINGH	P	P
15	RISHI PRAKASH PANDEY	P	P


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