



National Productivity Council

(under Ministry of Commerce & Industry, Govt. of India)



Weekend E-Certification Training Course on Industrial Automation 21st February 2021 to 7th March 2021

Course Fee :- Rs. 1888/- per participant (including GST)
Last Date for Registration:- 18th February 2021

TOPICS TO BE COVERED	DATES
PROGRAMMABLE LOGIC CONTROLLER (PLC)	21 st FEBRUARY 2021 (SUNDAY) (3hrs.)
DSITRIBUTED CONTROL SYSTEM (DCS)	21 st FEBRUARY 2021 (SUNDAY) (3hrs.)
SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)	28 th FEBRUARY 2021 (SUNDAY) (3hrs.)
VARIABLE FREQUENCY DRIVE (VFD)	28 th FEBRUARY 2021 (SUNDAY) (3hrs.)
HUMAN-MACHINE INTERFACE (HMI)	7 th MARCH 2021 (SUNDAY) (3hrs.)

Eligibility Criteria

- Graduation/Post Graduation in Science Stream
- B. Tech. in any branch
- Diploma holder in any stream

Students pursuing these degrees in any semester or any year may also apply.

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“Participants will be given E-Certificate for participation”

Limited Participation



Training on Industrial Automation from 21st February to 7th March 2021

Sr. No.	Topic	Dates of Sessions	Timings of Sessions
1	PROGRAMMABLE LOGIC CONTROLLER (PLC)- 1st Session	21st February 2021 (Sunday)	10:00 am to 11:30 am
2	PROGRAMMABLE LOGIC CONTROLLER (PLC)- 2nd Session	21st February 2021 (Sunday)	12:00 pm to 1:30 pm
3	DSITRIBUTED CONTROL SYSTEM (DCS) - 1st Session	21st February 2021 (Sunday)	2:00 pm to 3:30 pm
4	DSITRIBUTED CONTROL SYSTEM (DCS) - 2nd Session	21st February 2021 (Sunday)	4:00 pm to 5:30 pm
5	SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)- 1st Session	28th February 2021 (Sunday)	10:00 am to 11:30 am
6	SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)- 2nd Session	28th February 2021 (Sunday)	12:00 pm to 1:30 pm
7	VARIABLE FREQUENCY DRIVE (VFD)- 1st Session	28th February 2021 (Sunday)	2:00 pm to 3:30 pm
8	VARIABLE FREQUENCY DRIVE (VFD)- 2nd Session	28th February 2021 (Sunday)	4:00 pm to 5:30 pm
9	HUMAN-MACHINE INTERFACE (HMI)- 1st Session	7th March 2021 (Sunday)	10:00 am to 11:30 am
10	HUMAN-MACHINE INTERFACE (HMI)- 1st Session	7th March 2021 (Sunday)	12:00 pm to 1:30 pm

TOPICS TO BE COVERED IN PROGRAMMABLE LOGIC CONTROLLER (PLC)

SESSION -1

INTRODUCTION TO INDUSTRIAL AUTOMATION
ROLE OF PLC IN AUTOMATION
VARIOUS SYSTEMS USED IN AUTOMATION
COMPARISON BETWEEN VARIOUS AUTOMATION SYSTEM
INTRODUCTION TO PLC HARDWARE,
ARCHITECTURAL EVOLUTION OF PLC,
PLC FUNDAMENTALS - (BLOCK DIAGRAM OF PLC'S),
INFORMATION ABOUT VARIOUS PLC COMPONENTS

POWER SUPPLY, CPU, I/O MODULES AND
COMMUNICATION BUS
INTRODUCTION TO PLC SYSTEM
VARIOUS RANGES AVAILABLE PLC SYSTEM
DETAILED INFORMATION ABOUT THE CPUS, I/O MODULES
AND COMMUNICATION TECHNIQUES USED IN PLC
CONNECTION OF FIELD INPUTS TO PLCS
SOURCE AND SINK CONCEPTS IN PLCS

SESSION -2

INTRODUCTION TO PLC PROGRAMMING S/W
ADDRESSING CONCEPTS IN AB PLC
INTRODUCTION TO BIT BYTE AND WORD CONCEPT
CONCEPT OF FLAGS,
SCAN CYCLE EXECUTION
VARIOUS COMMANDS USED IN PLC PROGRAMMING
PROGRAMMING INSTRUCTIONS ARITHMETIC AND LOGICAL
LOGICAL GATES IN LADDER DIAGRAM.
PROGRAMMING INSTRUCTIONS ARITHMETIC AND LOGICAL

TIMER BLOCKS PROGRAMMING
COUNTER BLOCK PROGRAMMING
UPLOAD, DOWNLOAD, MONITORING OF PROGRAMS
TROUBLESHOOTING AND FAULT DIAGNOSTICS OF PLC
HARDWARE FAULT DETECTION
REPLACING THE FAULTY MODULES
COMMUNICATION TECHNIQUES IN PLC
QUESTION AND ANSWER SESSION

TOPICS TO BE COVERED IN TOPICS TO BE COVERED IN DISTRIBUTED CONTROL SYSTEM (DCS)

SESSION -1

WHAT IS PROCESS?

NEED FOR PROCESS CONTROL

HISTORICAL DEVELOPMENT OF PROCESS CONTROL

PNEUMATIC CONTROL SYSTEM AND ITS DISADVANTAGE

DEVELOPMENT OF MODERN PROCESS CONTROL SYSTEM

DCS SYSTEM

CENTRALIZED COMPUTER CONTROL

DISTRIBUTED COMPUTER CONTROL

HIERARCHICAL COMPUTER CONTROL FUNCTIONALITY OF DCS

SESSION -2

FIELD DEVICES

INPUT/ OUTPUT MODULES

CONTROLLERS

PID CONTROLLERS

HUMAN MACHINE INTERFACE STATION

DCS OPERATION

ALARMS

SAFETY BARRIER

INTERLOCK

RELIABILITY

TOPICS TO BE COVERED IN SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)

SESSION -1

WHAT IS SCADA?
APPLICATIONS OF SCADA.
INFO ABOUT LEADING SCADA COMPANIES
INVENSYS WONDERWARE INTOUCH
SIEMENS WINCC (EARLIER COROS)
ALLEN BRADLEY RS VIEW (EARLIER CONTROL VIEW)
INTELLUTION IFIX (EARLIER FIX DMACS)
GE FANUC CIMPLICITY
TYPES OF SCADA PACKAGES
NO. OF I/OS
DEVELOPMENT + RUNTIME + NETWORK (DRN) / RUNTIME + NETWORK
+N) AND VIEW NODE
CREATING A NEW SCADA APPLICATION DEVELOPMENT

CREATING DATABASE OF TAGS
WHAT IS TAG?
TYPES OF TAGS AND THEIR USE
GLOBAL TAG
LOCAL TAG
SYSTEM DEFINED TAGS AND THEIR USE
TAG GROUPING
INITIAL VALUE AND LIMITS
INDEXED AND INDIRECT ADDRESSING
CONFIGURATION TAGS FOR HISTORICAL LOGGING AND ALARMS
CREATING WINDOWS
TYPES OF WINDOW
WINDOW PROPERTIES

SESSION -2

CREATING AND EDITING GRAPHIC DISPLAY
DRAWING OBJECTS IN WINDOW
USING STANDARD OBJECT FROM SYMBOL FACTORY
GROUPING / UNGROUPING OBJECT
USER INPUT
DISCRETE, ANALOG, STRING/MESSAGE
COMMAND BUTTONS
VALUE DISPLAY
DISCRETE, ANALOG, STRING/MESSAGE
ANIMATION
COLOR FILL, % FILL, BLINKING, SIZE CONTROL, LOCATION, ORIENTATION,
VISIBILITY, ACTION, HIDE
SHOW WINDOW
CREATING REAL-TIME AND HISTORICAL TRENDS
USAGE OF TRENDS

TAGS PROPERTIES
SETTINGS
CONFIGURATION OF TRENDS
SIMULATION OF TRENDS
ZOOMING IN & OUT
RETRIEVING OLD DATA
SYSTEM FILES GENERATED THROUGH TRENDS
PRINTING OF TRENDS
CREATING ALARM AND EVENTS
SCRIPTS
WHAT IS SCRIPT?
USE OF SCRIPTS
APPLICATION SCRIPT
WINDOW SCRIPTS
STANDARD FUNCTIONS

TOPICS TO BE COVERED IN HUMAN MACHINE INTERFACE (HMI)

SESSION -1

INTRODUCTION TO HMI ARCHITECTURE

HMI APPLICATION FIELD

HMI VERSUS SCADA COMPARISON FROM IMPLEMENTATION POINT OF VIEW.

HMI HARDWARE INFORMATION

DIFFERENT HMIs AVAILABLE IN THE MARKET

INTRODUCTION TO GENREAL PURPOSE WECON HMI

SESSION -2

PROTOCOLS USED FOR COMMUNICATION BY DIFFERENTPLCs.

CONFIGURATION AND DEMO WITH PI SOFTWARE (SOFTWARE FOR WECON)

DEMO ONALLEN BRADLEY PLC COMMUNCATION WITH HMI.

APPLICATION DEVELOPMENT COVERING GUI, SYMBOLS, TAGGING, COMMUNICATION OF HMI.

QUESTION AND ANSWERS