Government of Pakistan

National Vocational and Technical Training Commission

Prime Minister's Hunarmand Pakistan Program

"Skills for All"

Course Contents / Lesson Plan

Course Title: PROGRAMMABLE LOGIC

CONTROLLER (PLC) **Duration:** 3 Months

Course Details / Description & Preliminaries

Course Title	PROGRAMMABLE LOGIC CONTROLLER (PLC)
Objectives and Expectations	**Employable skills for DAE in Electrical / Electronics through an intensive course on Programmable Logic Controller (PLC)** This is a special course designed to address unemployment in the youth. The course aims to achieve the above objective through hands on practical training delivery by a team of dedicated professionals having rich market/work experience. This course is therefore not just for developing a theoretical understanding/back ground of the trainees. Contrary to that it is primarily aimed at equipping the trainees to perform commercially in a market space in independent capacity or as a member of a team. The course therefore is designed to impart not only technical skills but also soft skills (i.e interpersonal/communication skills; personal grooming of the trainees etc) as well as entrepreneurial skills (i.e marketing skills; free lancing etc). The course also seeks to inculcate work ethics to foster better citizenship in general and improve the image of Pakistani work force in particular. **Main Expectations:** In short, the course under reference should be delivered by professional instructors in such a robust hands- on manner that the trainees are comfortably able to employ their skills for earning money (through wage/self-employment) at its conclusion. This course thus clearly goes beyond the domain of the traditional training practices in vogue and underscores an expectation that a market centric approach will be adopted as the main driving force while delivering it. The instructors should therefore be experienced enough to be able to identify the training needs for the possible market roles available out there. Moreover, they should also know the strengths and

	documentaries. Needless to say that if the training provider puts his heart and soul into these otherwise non-technical components, the image of Pakistani workforce would undergo a positive transformation in the local as well as international job markets.
	In order to maintain interest and motivation of the trainees throughout the course, modern techniques such as:
	• Motivational Lecture
	• Success Stories
	• Case Studies
	These techniques would be employed as an additional training tool wherever possible (these are explained in the subsequent section on Training Methodology).
	Lastly, evaluation of the competencies acquired by the trainees will be done objectively at various stages of the training and proper record of the same will be maintained. Suffice to say that for such evaluations, practical tasks would be designed by the training providers to gauge the problem solving abilities of the trainees.
Training Tools/ Methodology	**(i) Motivational Lectures**
	The proposed methodology for the training under reference employs motivation as a tool. Hence besides the purely technical content, a trainer is required to include elements of motivation in his/her lecture to inspire the trainees to utilize the training opportunity to the full and strive towards professional excellence. Motivational lectures may also include general topics such as the importance of moral values and civic role & responsibilities as a Pakistani. A motivational lecture should be delivered with enough zeal to produce a deep impact on the trainees. It may comprise of the following:
	• Clear Purpose to convey message to trainees effectively. • Personal Story to quote as an example to follow.

☐ Trainees Fit so that the situation is actionable by trainees and not represent a just idealism. ☐ Ending Points to persuade the trainees on changing themselves.

A good motivational lecture should help drive creativity, curiosity and spark the desire needed for trainees to want to learn more.

Impact of a successful motivational strategy is amongst others commonly visible in increased class participation ratios. It increases the trainees' willingness to be engaged on the practical tasks for longer time without boredom and loss of interest because they can clearly see in their mind's eye where their hard work would take them in short (1-3 years); medium (3 -10 years) and long term (more than 10 years).

As this tool is expected that the training providers would make arrangements for regular well planned motivational lectures as part of a coordinated strategy interspersed throughout the training period as suggested in the weekly lesson plans in this document.

(ii) Success Stories

Another effective way of motivating the trainees is by means of Success Stories. Its inclusion in the weekly lesson plan at regular intervals has been recommended till the end of the training.

A success story may be disseminated orally, through a presentation or by means of a video/documentary of someone that has risen to fortune, acclaim, or brilliant achievement. A success story shows how a person achieved his goal through hard work, dedication and devotion. An inspiring success story contains compelling and significant facts articulated clearly and easily comprehendible words. Moreover, it is helpful if it is assumed that the reader/listener knows nothing of what is being revealed. Optimum impact is created when the story is revealed in the form of:-

☐ Directly in person (At least 2-3 cases must be arranged by the training institute)

	☐ Through an audio/ videotaped message (2-3 high quality videos must be arranged by the training institute) It is expected that the training provider would collect relevant high quality success stories for inclusion in the training as suggested in the weekly lesson plan given in this document. Suggestive structure and sequence of a sample success story and its various shapes can be seen at annexure III. **(iii) Case Studies** Where a situation allows, case studies can also be presented to the trainees to widen their understanding of the real life specific problem/situation and to explore the solutions. In simple terms, the case study method of teaching uses a real life case example/a typical case to demonstrate a phenomenon in action and explain theoretical as well as practical aspects of the knowledge related to the same. It is an effective way to help the trainees comprehend in depth both the theoretical and practical aspects of the complex phenomenon in depth with ease. Case teaching can also stimulate the trainees to participate in discussions and thereby boost their confidence. It also makes class room atmosphere interesting thus maintaining the trainee interest in training till the end of the course. Depending on suitability to the trade, the weekly lesson plan in this document may suggest case studies to be presented to the trainees. The trainer may adopt a power point presentation or video format for such case studies whichever is deemed suitable but it's important that only those cases are selected that are relevant and of a learning value. The Trainees should be required and supervised to carefully analyze the cases. For the purpose they must be encouraged to inquire and collect specific information / data, actively participate in the discussions and intended solutions of the problem / situation. Case studies can be implemented in the following ways: -

	i. A good quality trade specific documentary (At least 2-3 documentaries must be arranged by the training institute) ii. Health &Safety case studies (2 cases regarding safety and industrial accidents must be arranged by the training institute) iii. Field visits(At least one visit to a trade specific major industry/ site must be arranged by the training institute)
Intake to the Training	Since intake level is DAE in Electrical / Electronic so expectations from the trainees are: • understanding of basics electrical wiring • Interpretation of basics of engineering drawing & standard symbols • Interpretation of basics of electrical measuring instruments & their uses • Should have concept of Basic Electronics • Should have concept of fundamentals of Digital & Industrial Electronics • Should have concept of Electrical machines & its applications • Should have concept of Computer system
Learning Outcome of the Course	After completion of this course, the trainees must be able to demonstrate their underpinning knowledge of: • Occupational Health & Safety. • Interpretation of number systems, logic gates & Boolean algebra. • Understanding the function & uses/applications of different types of switches, Push buttons, fuses/circuit breakers, Relays, Contactors, Timers, counters, sensors, Transducers etc. • To gain knowledge of basic concepts of control systems & automation. • Demonstration of different types of control systems like on/off Control • PLC, its components & Types. • Types of PLC based machines and their applications • Fundamentals of ladder logic diagram • Translate the logic implementation into PLC coding.

	- Translate relay ladder diagram into PLC coding.
	- Assign real I/O and internal addresses to inputs and outputs.
	- Review machine logic of operation and optimize when possible.
	- Understand the actual process or machine function.
	- Motor control switchgear and its applications with PLC
	- Should be able to interpret manufacturer's instructional manual in order to install and connect the PLC system according to the functional diagram
	- Knowledge & understanding to install, operate & repair PLC systems.
	- Interpretation of circuit diagrams, service manuals, technical sketches, graphic symbols, wiring diagrams and manufacturer's specifications etc.
	- Can locate/trace and repair/replace the faulty components of PLC system and also carry out the function tests.
	- Trouble shooting of the faults in the PLC system, input/output devices and PLC based machines
	- Common faults in industrial PLC based machines ▯ Knowledge of ADC, DAC and data acquisition systems.
	- Must be able to make HMI for industrial control room.
Course Execution Plan	Total Duration of Course: 3 Months (13 Weeks)
	Class Hours: 4 Hours per day (05 Days/Week)
	Theory: 20% Practical: 80%
	Weekly Hours: 20 Hours Per week
	Total Contact Hours: 260 Hours

Companies Offering Jobs in the respective trade	Most of Pakistani industries are moving their processes to automatic systems so a person having this knowledge& skill, will have all the industrial opportunities at his choice and can secure job with ease. It is expected that by acquiring sufficient knowledge and skills, the prospects of employability of passed out graduates increases many folds.
Job Opportunities	• PLC/SCADA Technician in industry (Textile, Leather, Pharmaceuticals, Food Processing, Automotive, Cement etc.) PLC/SCADA consultant for industry and commerce. • Automation trainer for workers and lower management of industries.
No of Students	25
Learning Place	Classroom / Lab / Workshop / Industry

WEEKLY SCHEDULE OF TRAINING

Scheduled Weeks	Module Title	Days	Learning Units	Home Assignment
Week 1	**Introduction Logic Gates & Boolean** **Algebra**	**Day 1**	Motivational Lecture (*For further detail please see Page No: 4*	
		Day 2	• Binary Number System • Review of Arithmetic Operation of Binary Numbers	
		Day 3	• Logic Gates (Symbol, Truth Table etc.) Flip flop and digital circuit	**Home Assignment No. 1** *Details may be seen at Annexure-II* **Task No. 1** *Details may be seen at Annexure-I* **Home Assignment No. 2**
		Day 4	Boolean Algebra Latches Circuit implementation	
		Day 5	K-Map Success story (*For further detail please see Page No: 5 and Annexure-IV at the end)*	

Week 2	Basic Components, their symbols and Applications Relays & Contactors	Day 1	• **Motivational Lecture(For further detail please see Page No: 4)** • **Control Transformer**	**Task No. 2** *Details may be seen at Annexure-I*
		Day 2	• Fuses& Circuit Breakers Switches Diode as switch	**Home Assignment No. 3** *Details may be seen at Annexure-II*
		Day 3	• Indicators Relay: Construction, Operation/working Principal, Types & Applications	**Task No. 3** *Details may be seen at Annexure-I* **Monthly Test 1**

		Day 4	• Contactors: Construction, Operation/working Principal, Types & Applications	
		Day 5	Introduction to micro controller Control Relay with micro controller Different basic program of micro controller	
Week 3	**Programmable Logic Controller**	**Day 1**	• Institute/Work ethics (For further detail, please see Annexure-III at the end) • Control System Introduction of PLC Use of PLC • Types of Programmable Logic Controller	**Home Assignment No. 4** *Details may be seen at Annexure-II*

		Day 2	• Advantages of Programmable Logic Controller • Role of PLC in Automation • Success story (For further detail please see Page No: 5 and AnnexureIV at the end)	
		Day 3	LC Hardware Components: Central Processing Unit (CPU) Input and Output Modules (I/O Modules) Power Supply Unit (PSU) Memory Modules	

		Day 4	I/O Addressing and Wiring:	
			Understanding I/O addressing schemes (e.g., discrete inputs, discrete outputs, analog inputs, analog outputs).	
			Practical wiring guidelines for connecting field devices to PLC.	
		Day 5	• Special Modules	
			• RS232 and 485	
			Communication Protocols	

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Week 4	Introduction to PLC PLC Hardware	Day 1	• Definition. • History. • Types. • Configuration.	**Home Assignmen t** **No. 5** *Details may be seen at Annexure-II* **Monthly Test 2**
		Day 2	• Sizes & Brands. • Applications. • Advantages. • Case Study-2 (*For further detail please see Page No: 6)* Motivational Lecture(*For further detail please see Page No: 4*	

		Day 3	• Block Diagram of PLC • Components of PLC • Analog & Digital I/O Modules	
		Day 4	Basic working of PLC And compare with micro controller Analyze the basic different	
		Day 5	Why are PLCs used in industrial automation? Advantages of PLCs over traditional relay-based systems.	

Week 5	PLC Software PLC Languages	Day 1	• System Requirement • Installation of PLC Software • Integrate the simulator in PLC Software	**Task No. 5** *Details may be seen at Annexure-I* **Home Assignment No. 5** *Details may be seen at Annexure-II* **Task No. 6** *Details may be seen at Annexure*
		Day 2	• Configure Software for Desired Task • Industrial Simulation (Online and Offline) • Success story (*For further detail please see Page No: 5 and Annexure-IV at the end*)	
		Day 3	• Introduction to PLC Languages • Types of PLC Languages Ladder Diagram (LD) Function Block Diagram (FBD) Sequential Function Chart (SFC) Instruction List (IL) Structured Text (ST) Ladder Logic (LL)	

		Day 4	Hand on experience with Ladder logic programing	
		Day 5	Basics of Ladder Logic Programming: Understanding ladder logic diagrams. Logic elements: contacts (normally open and normally closed), coils, timers, and counters. Programming examples using ladder logic.	
Week 6	Ladder Logic Programming	Day 1	• Master control reset. • Latching • Interlocking	Task No. 6 _Details may be seen at Annexure-1_ Task No. 7

		Day 2	Logic Gates Ladder Logic programing	Details may be seen at Annexure-I
		Day 3	• On-Delay Timer Ladder Logic Programming • Off-Delay Timer Ladder Logic Programming • Retentive On-Delay Timer Ladder Logic Programming • Retentive Off-Delay Timer Ladder Logic Programming • Pulse Timer Ladder Logic Programming • Online and Offline Simulation of Above tasks	
		Day 4	• Real Time Clock • Case Study-3 (*For further detail please see Page No: 6)*	

		Day 5	• Counters Ladder Logic Programming • Up Counter • Down Counter • Up down Counter • Special Instructions • Online and Offline Simulation of Above tasks • Practical industrial applications	
Week 7	**Overview of the previous weeks & Mid Term**	**Day 1**	**Overview of PLC hardware which are already read in previous weak**	
		Day 2	**Overview of PLC hardware which are already read in previous weak**	

		Day 3	Preparation of midterm exam	
		Day 4	**EXAM**	
		Day 5		
Week 8	**Comparators** **Programming** **Analog data**	**Day 1**	• Greater than and equal to Comparator Programming • Less than and equal to Comparator Programming • Equal to Comparator Programming • Online and Offline Simulation of Above tasks	**Task No. 9** *Details may be seen at Annexure-I* **Task No. 10** *Details may be seen at Annexure-I*

| | | Day 2 | • Timers Comparison Programming

• Counters Comparison Programming

• Data Registers Comparison Programming

• Online and Offline Simulation of

Above tasks | |
| | | Day 3 | • Demonstrate the basic function of Proximity sensors.
• Demonstrate the basic function of limit switch.
• Success story (*For further detail please see Page No: 5 and Annexure-IV at the end*) | |

		Day 4	• ADC and DAC • Analog Values Scaling ▯ Related Problems Case Study-4 (*For further detail please see Page No: 6)*	
		Day 5	Digital Flip flop and lathes programing	

Week 9	Analog Programming Analog Sensors II	Day 1	• Analog IOs Programming • Applications of Analog Programming in Industry • Online and Offline Simulation of Analog Programming	Task No. 11 _Details may be seen at Annexure-I_ Task No. 12 _Details may be seen at Annexure-I_
		Day 2	• Practical industrial scenarios for Analog I/Os • Motivational Lecture(For _further detail please see Page No: 4)_	

		Day 3	• Interfacing Load cell with PLC Automation of Load cell via PLCs
			     Programming for
			     Automation of
			  Load cell	

		Day 4	Interfacing Level Sensor with PLC Automation of Level Sensor via PLCs Programming for Automation Level Sensor	
		Day 5	Interface with sensor and hands on Experience	
Week 10	**HMI Programming**	**Day 1**	• Overview of HMIs • Types of HMIs	**Task No. 13** *Details may be seen at Annexure-I*

		Day 2	• Planning and designing of HMIs • Recipes of HMI Case Study-5 (*For further detail please see Page No: 6*)	
		Day 3	integration of HMI and PLC A. Purpose and benefits of integrating HMI and PLC B. Communication protocols between HMI and PLC C. Real-time monitoring and control capabilities	
		Day 4	Advantages and Challenges of HMI PLC A. Advantages of HMI PLC systems B. Challenges and considerations in implementing HMI PLC	

		Day 5	future Trends in HMI PLC	
			A. Advancements in HMI technology	
			B. Integration with IoT and cloud computing	
			C. Enhanced data analytics and predictive maintenance	
Week 11	Project Design Business Development & entrepreneurship	**Day 1**	• PLC based mini Projects • Idea generation and Planning for project etc. Discussions for selection of project and assessing requirements etc.	**Task No. 14** *Details may be seen at Annexure-I*
		Day 2	• Groups formation • Problems indented solution	**Task No. 15** *Details may be seen at Annexure-I*

		Day 3	• Commissioning testing etc ☐ Session on Self-Employment ☐ How to start a Business. • Requirements (Capital, Physical etc) Benefits/Advantages of self-employment	
		Day 4	Overview of previous weak course	
		Day 5	Overview of previous weak course	

Week 12	Employable Project/Assignment (6 weeks i.e. 21- 26) in addition of regular classes.	Day 1	• **Guidelines to the Trainees for selection of employable project like final year project (FYP**	project
		Day 2	• A project based on trainees acquired skills and interests. • Designed by keeping in view the emerging trends in the local market as well as across the globe. • The project idea may be based on Entrepreneurship. • Leading to the successful employment. • The duration of the project will be 6 weeks • The project will be presented in front of Industrialists for commercialization • The best business idea will be placed in NAVTTC business incubation center for commercialization	

		Day 3	Work on FYP	
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		Day 5	Work on FYP	

| Weak 13 | Entrepreneur ship and Final Assessment in project | Day1 To Day 5 | • Fundamentals of Business Development
• Entrepreneurship Startup Funding
• Business Incubation and Acceleration
• Business Value Statement
• Business Model Canvas
• Sales and Marketing Strategies
• How to Reach Customers and Engage CxOs
• Stakeholders Power Grid
• RACI Model, SWOT Analysis, PEST Analysis
• SMART Objectives
• OKRs
• Cost Management (OPEX, CAPEX, ROCE etc.)
• Final Project
  Final Assessment | • Project completion and testing/launching.

Final Assessment |

MODULES

Annexure-I

TASKS FOR PROGRAMMABLE LOGIC CONTROLLER
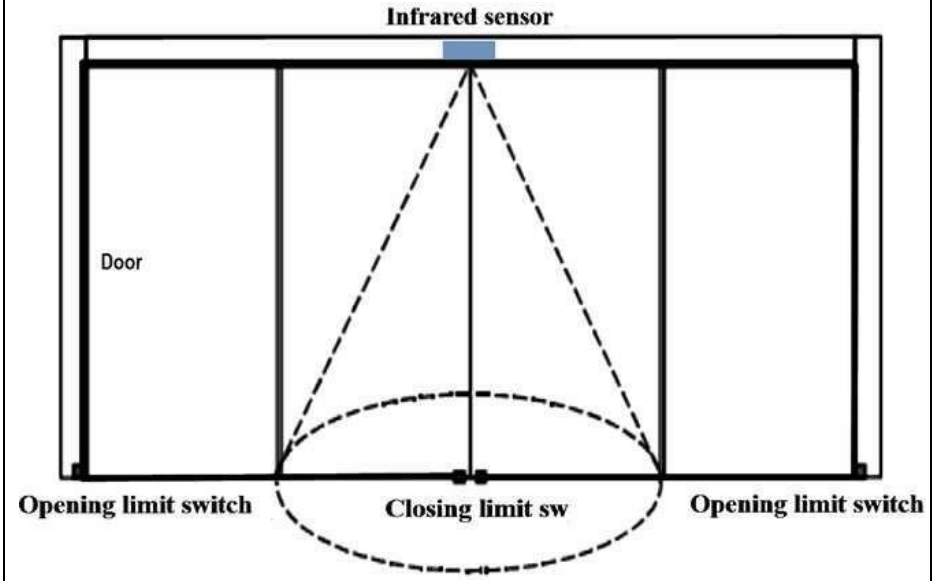## (PLC)

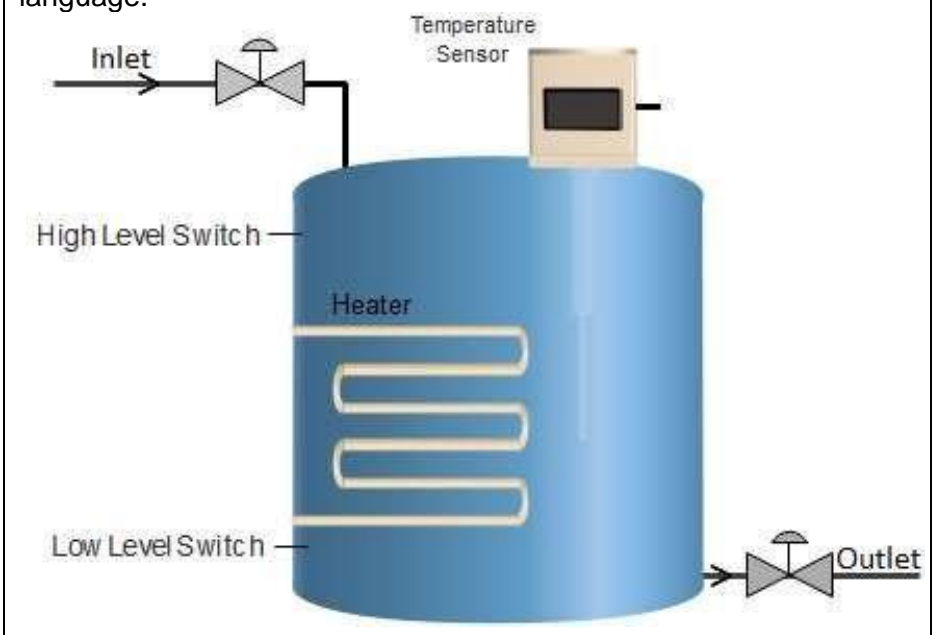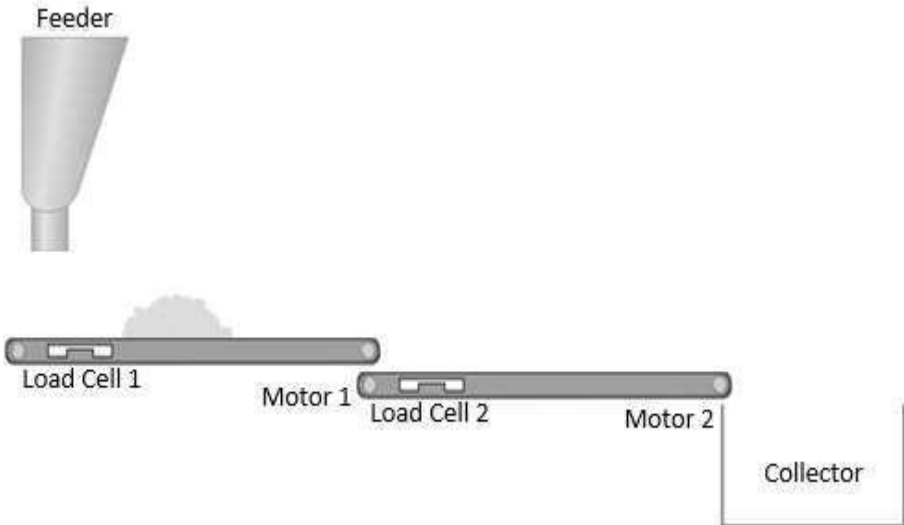| Task No.	Task	Description
1	Make an OR & AND circuits.	Make an OR & AND circuit, draw it logic and circuit diagrams, also draw the truth table for this circuit.
2	Controlling of a lamp/LED from two different places.	Make a circuit to control one lamp/LED from two different places using SPDT switch and also draw, Circuit diagram, logic diagram and truth table.
3	Operating lamp/LED & buzzer using Relay & Contactor logic.	Make a circuit using Relay & Contactor logic to control a lamp & buzzer in the following way, When the lamp is "ON" the buzzer remaining deactivated. When the lamp turned "OFF" the buzzer circuit is then activated automatically until the lamp is again operated. Draw logic, circuit diagrams and truth table.
4	Circuit to control 2 lamps automatically.	Make a circuit to control 2 lamps. First, L1 is "ON" for 7 sec then turned "OFF" automatically & at that instant L2 become energized and remained "ON" for 3 sec, this cycle is repeated until interrupted. Draw circuit, logic diagrams and truth table.
5	Implement given Boolean Functions with the help of PLC Program.	Simulate PLC Program to implement the following Boolean functions with Don't Care Condition. $F(A,B,C,D)=\sum m(0,1,5,9,13,14,15) + d(3,4,7,10,11)$
6	Using PLC Program to make Forward- Reverse Circuit (with limit switches) for a 3-Phase Motor.	Run a 3-phase motor in the Forward and Reverse direction with the help of PLC using Ladder Diagram programming language. This circuit is used to change the direction of rotation of a 3-Phase induction motor (i.e. forward &backward or upward & downward). Forward-Reverse movement of a 3- Phase motor can be obtained by changing its phase sequence. Also draw its electrical and Ladder Logic diagrams.
7	PLC Program to Latch and Unlatch Output With Time Delay.	Prepare, execute, and demonstrate a PLC Program to implement Latching and Unlatching of output with a particular time delay in PLC using Ladder Diagram.

Task No.	Task	Description
8	Operating Seven Segment Display using PLC Program.	Prepare, execute, and demonstrate a PLC Program to displaying 0-9 digits using 7 Segment LED Display interfacing with PLC using Ladder Diagram programming language.

Task No.	Task	Description
9	Using PLC Program to Drive two Motors Simultaneously with Interlocking.	Two Motors are running in a sequence one by one for a particular time. If the start button is pressed Motors run in sequence such that 1st Motor stays ON for 5secs and then 2nd Motor is turned ON and stays ON for 5secs. And the cycle is repeated until it is interrupted. While motors are running in the sequence, if one motor is running and the button of other motor is pressed, then the running Motor should stop and the other motor should run. Implement this logic in PLC using Ladder Diagram programming language. Also draw its electrical and Ladder Logic diagrams.
10	PLC Program for Burglar Alarm Security System	Prepare, execute, and demonstrate a PLC Program for Burglar Alarm Security System. Consider the design of a Burglar Alarm for a house. This alarm will be activated if an unauthorized person is detected by a Window Sensor or a Motion Detector. Implement this Alarm System in PLC using Ladder Diagram programming language.
11	PLC Program for a Car Parking System	A parking plot has total capacity of Cars. Number of empty spots are displayed on the display outside the Parking Plot and which spots are available is to be indicated by LEDs. Implement this in PLC using Ladder Diagram programming language.

12	Automatic Door Open Close Control System with the help of PLC Program.	Prepare, execute, and demonstrate a PLC Program to implement logic for the automatic door open & close system using ladder diagram programming language.
Task No.	Task	Description

13	PLC Program for Heating water in the Tank by Heater using RTD as temperature detector.	Implement the process to control Heating and maintaining high and low level of water in the tankusing PLC Ladder Diagram programming language.

14	PLC Program to Control the Sequence of Conveyors and Interlocking Them	A feeder drops material on the conveyor which sends the dropped material to collector through one more conveyor. Conveyor must start automatically.When material falls on conveyor belt 1, motor 1 should start, and when material in present on conveyor belt 2, motor 2 remain On.Implement automation of this in PLC using Ladder Diagram programming language.

Task No.	Task	Description
15	PLC Program to Maintain the Capacity of a Particular Classroom using HMI Interface.	A classroom has a capacity of maximum 25 students. There are two doors, one for Entry and the other for Exit. When number of students in the classroom is less than 25, Entry door has a Green light on it which remains ON. When number of students in the classroom is 25 or more than that, Red light goes ON turning OFF the Green light which indicates that the classroom has reached its maximum capacity and is full.

ASSIGNMENTS FOR PROGRAMMABLE LOGIC CONTROLLER

Assign. No. (PLC)	Assignment
1	Prepare safety charts. Showing general & Trade specific safety measure (text/pictorial). Each trainee will prepare different chart.
2	Simplify the following Boolean expression using K-Map, also draw logic diagrams (Before & after simplification) $f(W,X,Y,Z) = \sum (1,3,4,6,9,11,12,14)$
3	Draw neat & clean sketches (along with their symbols) of various components you have learnt in this week on drawing sheet(s)/Chart(s).
4	What is the difference between timers & counters? Explain function of Timer & Counter in PLC, enlist different types of timers and counters and draw their symbols, also write down its advantages.
5	What do you mean by automation? What are their types? Write down advantages of Programmable Logic Controller with examples.
6	What is PLC? Enlist different the different sizes & brands of PLC, also write down the uses and advantages of PLC.
7	What do you mean by physical protocol of communication? What is the difference between RS232 and 485? How & why we can convert RS232 to 485? Draw the Block diagram of PLC and Pinout of RS232 & 485 connector (both male, female) on drawing sheet(s)/Chart(s).
8	Enlist the complete step by step procedure to install PLC software. Also write the method to configure PLC software for desired task. Evident screenshots is mandatory.

Workplace/Institute Ethics Guide

Work Ethics is a standard of conduct and values for job performance. The modern definition of what constitutes good work ethics often varies. Different businesses have different expectations. Work ethic is a belief that hard work and diligence have a moral benefit and an inherent ability, virtue or value to strengthen character and individual abilities. It is a set of values centered on importance of work and manifested by determination or desire to work hard.

The following ten work ethics are defined as essential for employee's success:

1. **Attendance:**

   Be at work every day possible, plan your absences don't abuse leave time. Be punctual every day.

2. **Character:**

   Honesty is the single most important factor having a direct bearing on the final success of an individual, corporation, or product. Complete assigned tasks correctly and promptly. Look to improve your skills.

3. **Team Work:**

   The ability to get along with others including those you don't necessarily like. The ability to carry your own weight and help others who are struggling. Recognize when to speak up with an ideas and when to compromise by blend ideas together.

4. **Appearance:**

   Dress for success, set your best foot forward, personal hygiene, good manner, remember that the first impression of who you are, can last a life time

5. **Attitude:**

   Listen to suggestions and be positive, accept responsibility. If you make a mistake, admit it. Values workplace safety rules and precautions for personal and co-worker safety. Avoids

unnecessary risks. Willing to learn new processes, systems and procedures in light of changing responsibilities.

6. **<u>Productivity</u>:**

Do the work correctly, quality and timelines are prized. Get along with fellows, cooperation is the key to productivity. Help out whenever asked, do extra without being asked. Take pride in your work, do things the best you know how. Eagerly focuses energy on accomplishing tasks, also referred to as demonstrating ownership. Takes pride in work.

7. **<u>Organizational Skills</u>:**

Make an effort to improve, learn ways to better yourself. Time management; utilize time and resources to get the most out of both. Takes an appropriate approach to social interactions at work. Maintains focus on work responsibilities.

8. **<u>Communication</u>:**

Written communication, being able to correctly write reports and memos.

Verbal communications, being able to communicate one on one or to a group.

9. **<u>Cooperation</u>:**

Follow institute rules and regulations, learn and follow expectations. Get along with fellows, cooperation is the key to productivity. Able to welcome and adapt to changing workplace situations and the application of new or different skills.

10. **<u>Respect</u>:**

Work hard, work to the best of your ability. Carry out orders, do what's asked the first time.

Show respect, accept and acknowledge an individual's talents and knowledge. Respects diversity in the workplace, including showing due respect for different perspectives, opinions and suggestions.

Annexure-IV

SUGGESTIVE FORMAT AND SEQUENCE ORDER OF SUCCESS STORY

S. No	Key Information	Detail/Description
1.	**Self & Family background**	□ Self-introduction □ Family background and socio economic status, □ Education level and activities involved in □ Financial hardships etc
2.	**How he came on board NAVTTC Training/ or got trained through any other source**	□ Information about course, apply and selection □ Course duration, trade selection □ Attendance, active participation, monthly tests, interest in lab work
3.	**Post training activities**	□ How job / business (self-employment) was set up □ How capital was managed (loan (if any) etc). □ Detail of work to share i.e. where is job or business being done; how many people employed (in case of self-employment/ business) □ Monthly income or earnings and support to family □ Earning a happy life than before
4.	**Message to others (under training)**	□ Take the training opportunity seriously □ Impose self-discipline and ensure regularity □ Make Hard work pays in the end so be always ready for the same.

Note: Success story is a source of motivation for the trainees and can be presented in a number of ways/forms in a NAVTTC skill development course as under: -

1. **To call a passed out successful trainee of institute. He will narrate his success story to the trainees in his own words and meet trainees as well.**
2. **To see and listen to a recorded video/clip (5 to 7 minutes) showing a successful trainee Audio video recording that has to cover the above mentioned points.**
3. **The teacher displays the picture of a successful trainee (name, trade, institute, organization, job, earning etc) and narrates his/her story in teacher's own motivational words.**