CERTIFICATE COURSE

Designed By,

Rajarambapu college of Sugar Technology,Islampur

Approved By,

Shivaji University, Kolhapur

(DEPARTMENT OF LIFELONG LEARNING AND EXTENSION)

1	Name of Course	**Certificate course in DCS Operator**				
2	Max. No's of Student	20 Students				
3	Duration	1 Year(6 Months Theory+ 6 Months In plant Training)				
4	Type	**Part Time**				
5	No's Of Days / Week	5 Days				
6	No Of Hours Per Day	3 Hrs				
7	Space Required	Class Room = 200 Sq. Feet				
8	Admission Eligibility	12th Pass				
9	Objective Of Course	To Provide the Training to the Operators. Regarding the DCS System in Sugar Industry.				
10	Employment Opportunity	**Sugar and Allied industry**				
11	Teacher's Qualification	**BE(Instrumentation)/BE(Electronics and Instrumentation)**				

12	Training System	**Training System Per Week**			

Theory	In-Plant Visit	Total
15 hrs	6 hrs	21 hrs

13	Exam. System					

Sr.no	Subject	Th/Pr	Hours	Max.Marks	Min.Marks
1	**PLC(Programmable Logic Control) and DCS(Distributed Control system)**	**TH**	**3**	**100**	**35**

		2	PLC/ DCS Systems In Milling and Boiler of Sugar Industry	TH	3	100	35
		3	PLC/DCS System in Boiling House of Sugar	TH	3	100	35
		4	Inplant Training a)Project b)Seminar c)Viva	DPR		200 50 50	100 20 20
			Total			600	255

Subject:1 PLC(Programmable Logic Control) and DCS(Distributed Control system)

Chapter 1:Introduction to Automation, Need of Automation, Applications of Automation, Role of Automation in Industry.

PLC- Introduction, Need, Architecture, Block Diagram, Ladder Diagram, I/O modules, I/O Systems, Programming Systems of PLC, Applications of PLC in Sugar Industry.(12)

Chapter 2:DCS

Introduction, Need, Architecture, Block Diagram, Programming of DCS system, Function block diagram, Applications in Industry.

Computer System, Role of Computer in Automation, HMI system, Operting Consol.

Chapter 3:SCADA

Introduction, Need, Applications, Comparisons between PLC,DCS, and SCADA systems.

Programming Basics, How to Develop the Programming system for Different applications of Physical Measurements in industry.

Chapter 4: Programming

Introduction, Logic Systems to develop the Programming, Programming for-Liquid Level, Flow, Pressure ,Speed, Density, Vacuum, Viscosity Measurement.

References: 1)Programmable Logic Controllers and Industrial Automation: An Introduction by

Mitra   2) Industrial Automation by R.G.Jamkar

          3) Plcs & Scada - Theory and Practice by Vikrant

Subject: 2 PLC/ DCS Systems In Milling and Boiler of Sugar Industry

Chapter 1:Auto Cane Feeding System

1)Introduction

2)Need

3)Block Diagram

4)Programming Systems

5)Applications

6)Advantages

Chapter:2Auto Imbibitions System

1)Introduction

2)Need

3)Block Diagram

4)Programming Systems

5)Applications

6)Advantages

Chapter 3: Auto Feed Water Control System (Boiler)

1)Introduction

2)Need

3)Block Diagram

4)Programming Systems

5)Applications

6)Advantages

Chapter 4: Auto DCS Based Distillation Column

1)Introduction

2)Need

3)Block Diagram

4)Programming Systems

5)Applications

6)Advantages

References:1)Handbook Of Sugar Automation by AVM

2)Practical Solutions for Automation by Yutech.

3)www.yutechtechnologies.com

Subject 3:PLC/DCS System in Boiling House of Sugar

Chapter 1:Auto Juice measurement and Stabilisation System

1)Introduction

2)Need

3)Block Diagram

4)Programming Systems

5)Applications

6)Advantages

Chapter 2:Auto Pan Control System

1)Introduction

2)Need

3)Block Diagram

4)Programming Systems

5)Applications

6)Advantages

Chapter 3:Auto Centrifugal System

1)Introduction

2)Need

3)Block Diagram

4)Programming Systems

5)Applications

6)Advantages

Chapter 4:Auto Effluent Treatment Plant(Refe.)

1)Introduction

2)Need

3)Block Diagram

4)Programming Systems

5)Applications

6)Advantages

References:1)Handbook Of Sugar Automation by AVM

2)Practical Solutions for Automation by Yutech.

3)www.yutechtechnologies.com

Subject: 4 Industrial In-Plant Training

4. In-Plant Training: In sugar factories during season (Engineering section)

 A] PROJECT.

a)Introduction:

Factory- Organization structure, Function of all Departments, No of employees in each department, Detail flow chart of Sugar Factory.

b) Milling:

Technical Specifications Of cane handling and Cane Preparing device, Working and Operation of Cane handling and cane Preparing Device, Working of Mills, Size of Mill, RPM of Mill, Hydraulic Load Of Mill, Roller Grooving, Mill Setting, Lubricant System etc..Imbibition's System, Brix Curve and its significance, Pumping of juice, Piping Details. Juice Screening arrangement, Juice Weighing arrangement.

c)Boiler:

Technical Details Of Boiler ,Fuel Management, Boiler Operation, Water level and control, Boiler Pressure, Make Up Water, Working of DM and RO Plant, Blow Down System, Economizer, Preheated, Air heater, ID and FD fan, SA fan, RBC working.

Starting of Boiler, Slow Firing, Rising to the Pressure, Pressure maintenance, Low boiler Pressure, Back Fedding, Water High/Low Level, Operational Problem, Instrumentation For Water Level, Boiler Pressure and Temperatures.

d)Power House:

Turbine, Alternator, AVR Load Distributor, Turbine Heating, Turbine change Over, Power Factor Maintenance, Steam Consumption, Solving the Problem like Priming, Low Boiler Pressure, Power Production and Distribution, Co Generation station.

e) Student Need to Visit all above sections and Prepared the Detail Project report of Factory which consist of Milling Station, Boiler and Turbine Sections. This report may include various process carried out in boiling house right from juice weightment to sugar packing.

B) Workshop/seminar :Group of students shall arrange workshop/seminar any topic of above 3 sections.

C) VIVA : Students have appeared for VIVA at the time of submitting the Project.

Nature Of Question Paper:

 Each subject Carries 100 Marks Theory Paper and Their Nature is as Follows:

Q.1)a)Fill In the Blanks   05 Marks

     b)Define The Terms   05 Marks

     c)State True Or False   10 Marks

     d)Multiple Choice Question   10Marks

     e)Match the Pairs   10Marks

Q.2)Long Question Each Carry 15 Marks any 2 out Of 3   30Marks

Q.3)Short Note Each Carry 6 Marks Any 5 Out OF 6   30 Marks