MERI College of Engineering & Technology (MERI-CET)

Lesson plan

Name of the faculty   :   Er. Gaurav Kumar

Discipline   :   Electrical & Electronics Engineering

Semester   :   7th Semester

Subject   :   PLC SCADA

Lesson Plan Duration   :   20 weeks (From 4th AUG, 2020 to 20th Dec 2020)

Work Load (Lecture/ Practical) per week (in hours): Lecture-02, Practical-01

Week	Theory		Practical	
	Lecture day	Topic(Including assignment/test)	Practical Day	Topic
1st	1st	Need of SCADA system	1st	To study Ladder logic programming of an industrial PLC like SEIMENS/ FATEK/MICROLOGIX
	2nd	PLC and its advantage		
2nd	1st	Distributed control Systems (DCS)	2nd	To write program for control of Drinks
	2nd	Distributed control Systems (DCS)		
3rd	1st	Ladder Programming Basic	3rd	To write a Program for Car Parking.
	2nd	General definition and SCADA components		
4th	1st	General definition and SCADA components	4th	To study step step sequence in a PLC
	2nd	Hardware Architecture, Application & benefits, PLCs vs RTUs		
5th	1st	Software architecture	5th	To write a program & interface simulated hardware unit of Tank level control.
	2nd	Protocol detail		
6th	1st	Discrete control and Analog control	6th	To write a program & interface & control a traffic light using PLC.
	2nd	Internet based SCADA display system		

PLC SCADA

7th	1st	RTU Block diagram, MTU communication interface	7th	To write a program & interface & control a simulated elevator control using PLC
	2nd	Components of control systems in SCADA		
8th	1st	Ladder Programming	8th	To write a programme & interface & control a conveyer belt using PLC
	2nd	PLC programming language standards		
9th	1st	Functional block, Structural text, instruction	9th	To write a programme & interface & control speed of a DC motor using PLC
	2nd	SCADA in Power Systems		
10th	1st	Main task in power systems	10th	To write a programme & interface & temperature control system using analog outputs of a PLC.
	2nd	Planning, operation, accounting		
11th	1st	Tasks of national control Centre	11th	Generating station control room
	2nd	Regional control Centre, security analysis		
12th	1st	AGC-SCADA	12th	SCADA in generation, SCADA in Power Distribution
	2nd	SCADA in generation		
13th	1st	SCADA in Power Grid	13th	computer programs-generating planning
	2nd	**Supervisory Power Management**		
14th	1st	Energy Management System	14th	system studies, energy audit
	2nd	power system operation states		
15th	1st	transmission planning	15th	Distribution automation, DMS design
	2nd	state estimation, load forecasting		
16th	1st	Utility distribution system design	16th	Automatic mapping and facility management
	2nd	Layout and construction and commissioning of substations		
17th	1st	Substation Automation and Equipment condition monitoring.	17th	Distribution system design

PLC SCADA

	2nd	Automatic mapping and facility management		
18th	1st	Tracking, facility inventory, Facility mapping	18th	Trouble call management, Customer level intelligent automation system
	2nd	system and equipment maintenance		
19th	1st	computer level monitoring and control of distribution transformers	19th	Internal Practical Exam
	2nd	Substation and feeder level automation		
20th	1st	Previous year question paper	20th	External Practical Exam
	2nd	Previous year question paper		

Text Book

1   SCADA: by Stuart A. Boyer: IAS 1999
2   Switch Gear & Protection by S.S. Rao: Khanna Publication New Delhi
3   Power system Control Technology by Terson , Prentice Hall New Delhi

Reference Book

1.   Planning for demand side management in the electric sector by J. Parikh, B. Reddy & R. Benerjee: TMH
2.   Hand book of Telemetry of Remote control by Elliot L. Gruenberg MGH New Delhi
3.   Electronics Communication by Roddy & Coolen
4.   Optical fiber Communication by Gower: Eastern Publication, New Delhi
5.   Electric Power system by S.L. Uppal
6.   Power System Engineering by S K Gupta, Umesh Publication

PLC SCADA