

Lesson Plan

Name of the Faculty : V.F. (Practical)
Discipline : I&C Engineering
Semester : 4th
Subject : INSTRUMENTATION DRAWING
Lesson Plan Duration : 16 weeks (From 6/03/2023 to 23/06/2023)

Work Load (Lecture/Practical) per week(in hours)P: Practicals-04

Week		Practicals
	Practical Day	Topic
1st	1st	Study of Symbols/ introduction of subject
	2nd	Electronic symbols
	3rd	Process instrumentation symbols
	4th	Graphical symbols for pipe fittings(valvesand piping)
2nd	5th	Graphical symbols and codes for pressure, temperature measuring instruments as per ANSI standard
	6th	Graphical symbols and codes for flow, level measuring instruments as per ANSI standard
	7th	Colour coding of lines: electric lines and fluid lines
	8th	Discussion/Revision
3rd	9th	Study of block diagram
	10th	”
	11th	Study of schematic diagram
	12th	”
4th	13th	Study of wiring diagrams
	14th	”
	15th	Study of graphical panel diagram
	16th	”
5th	17th	Study of P&I diagrams
	18th	Instrument Identification
	19th	”
	20th	”
6th	21st	Study of instrument installation procedure
	22nd	”
	23rd	”
	24th	Check list of good installation system
7th	25th	”
	26th	”
	27th	Instrumentation drawing of power plant
	28th	”

8th	29th	Instrumentation drawing of refinery plant
	30th	„
	31st	Block drawing of power plant
	32nd	„
9th	33rd	Block drawing of refinery plant
	34th	„
	35th	Flow diagram of power plant
	36th	„
10th	37th	Flow diagram of refinery plant
	38th	„
	39th	Instrumentation drawing of steel plant
	40th	„
11th	41st	Instrumentation drawing of cement plant
	42nd	„
	43rd	Block drawing of steel plant
	44th	„
12th	45th	Block drawing of cement plant
	46th	„
	47th	Flow diagram of steel plant
	48th	„
13th	49th	Flow diagram of cement plant
	50th	„
	51st	Schematic diagram of single acting cylinder
	52nd	„
14th	53rd	Schematic diagram of double acting cylinder
	54th	„
	55th	Schematic diagram of spring return cylinder
	56th	„
15th	57th	Schematic diagram of tandem valve and shuttle valve
	58th	„
	59th	Schematic diagram of SOL-Valve
	60th	„
16th	61th	Revision
	62th	Revision
	63th	Revision
	64th	Revision

Lesson Plan

Name of the Faculty : V.F.
Discipline : I&C Engineering
Semester : 4th
Subject : MICROCONTROLLER BASED EMBEDDED SYSTEMS
Lesson Plan Duration : 16 weeks (From 6/03/2023 to 23/06/2023)

Work Load (Lecture/Practical) per week(in hours)P: Lectures-04 Practicals-03

Week		Theory		Practical
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1 st	1 st	Introduction	1 st	Familiarization with Micro-controller Kit and its different sections
	2 nd	Difference between microprocessor and microcontroller	2 nd	
	3 rd	Microcontroller and their application	3 rd	
	4 th	Same topic revise		
2 nd	5 th	Notebook check	4 th	File check / viva voice
	6 th	Microcontroller for embedded system	5 th	
	7 th	Overview of 8051 family	6 th	
	8 th	Same topic revise		
3 rd	9 th	Block Diagram and Pin Diagram of 8051 microcontroller	7 th	Familiarization with Assembly Language Programming (PC Based)
	10 th	Same topic revise	8 th	
	11 th	The 8051 Oscillator & clock	9 th	
	12 th	Same topic revise		
4 th	13 th	A & B CPU registers	10 th	File check / viva voice
	14 th	Internal Memory	11 th	
	15 th	Program Counter and Data Pointer	12 th	
	16 th	Sessional test		

5 th	17 th	Notebook check	13 th	Familiarization with C Language Programming (PC Based)
	18 th	Input/output ports.	14 th	
	19 th	Counters and timers.	15 th	
	20 th	Same topic revise		
6 th	21 st	Assignment	16 th	File check / viva voice
	22 nd	Test	17 th	
	23 rd	The stack and the stackpointer	18 th	
	24 th	.....Do.....	
7 th	25 th	Serial Data input/output.	19 th	Program to add two hexadecimal number
	26 th	.....Do.....	20 th
	27 th	Interrupts	21 th	
	28 th	Same topic revise		
8 th	29 th	Instructions set of 8051	22 th	File check / viva voice
	30 th	Arithmetic instructions	23 rd	
	31 st	Sessional test	24 th	
	32 nd	Assignment		
9 th	33 rd	Notebook check	25 th	Program to add two decimal number.
	34 th	Loops and jump instructions.	26 th	
	35 th	.....Do.....	27 th
	36 th	Push and Pop Instructions.		
10 th	37 th	Call instructions	28 th	File check and viva voice
	38 th	.....Do.....	29 th
	39 th	Addressing mode of 8051.	30 th	
	40 th	Same topic revise		
11 th	41 st	Definition of embedded system	31 th	Program to check whether number is odd or even
	42 nd	Processor embedded into a system	32 nd	
	43 rd	RTOS	33 rd	
	44 th	Embedded operating system		

12 th	45 thDo.....	34 th	Programming to interface switches and LEDs
	46 th	Embedded hardware units and devices in a system	35 th	
	47 th	Examples of embedded system	36 th	
	48 th	.....Do.....	
13 th	49 th	Present trends in embedded system	37 th	File check / viva voice
	50 th	Design parameters of an embedded system and its importance	38 th	
	51 st	Application of embedded system.	39 th	
	52 nd	Same topic revise		
14 th	53 rd	Only brief general architecture of AVR	40 th	Programming and interface of Seven Segment and LCD.
	54 th	PIC and ARM microcontroller	41 th	
	55 th	Applications of advanced microcontroller in the instrumentation field.	42 th	
	56 th	Sessional test		
15 th	57 th	Previous paper solved	43 rd	File check/ viva voice
	58 th	Previous paper solved	44 th	
	59 th	Previous paper solved	45 th	
	60 th	Previous paper solved		
16 th	61 th	Revision	46 th	File check/ viva voice
	62 th	Revision	47 th	
	63 th	Revision	48 th	
	64 th	Revision		

Lesson Plan

Name of the Faculty : V.F. (Practical)
Discipline : I&C Engineering
Semester : 4th
Subject : IMIE
Lesson Plan Duration : 16 weeks (From 6/03/2023 to 23/06/2023)

Work Load (Lecture/Practical) per week(in hours)P: Practicals-03

Week	Practical Day	Practicals Topic
1st	1 st	Measure inner & outer diameter using vernier calipers & compare it with standards
	2 nd	"
	3 rd	Measure thickness of the metallic sheet with micrometer & compare it with standards
2nd	4 th	"
	5 th	Identify different electronic components viz. Resistor, Capacitor, Inductor, transformer, fuse, diode and transistor
	6 th	"
3rd	7 th	Identify various capacitors viz paper , silvered paper, mica, silvered mica, ceramic plastic foil, Electrolytic.
	8 th	"
	9 th	Identify various inductors viz fixed and variable inductors
4th	10 th	"
	11 th	Measure voltage, current & power using suitable instrument
	12 th	"
5th	13 th	Connect 3 phase power supply (star , delta) to suitable load
	14 th	"
	15 th	Identify terminals of diodes and transistors
6th	16 th	"
	17 th	Solder and de-solder electronic components on PCB as well solder earth connection.
	18 th	"
7th	19 th	Wire instrument panel with various accessories as per instrument hook-up diagram
	20 th	"
	21 st	"

8th	22 nd	Wire the MCB, ELCB to supply electrical power to instrument panel
	23 rd	”
	24 th	Prepare specifications for instrumentation tools, wires, cables, switches, electronic components for a given application
9th	25 th	”
	26 th	Identify tools, equipments & components required for installation of process control instruments.
	27 th	”
10th	28 th	Install any one instrument using screw type instrument
	29 th	”
	30 th	Install any one instrument using hange type instrument
11th	31 st	”
	32 nd	”
	33 rd	Test pressure/flow /level/temperature switch.
12th	34 th	”
	35 th	Identify & Test fuses & transformers
	36 th	”
13th	37 th	Install any one As per sketch with bill of materials (BOM)
	38 th	”
	39 th	Test assembled instrument loop wiring for various parameters and faults.
14th	40 th	”
	41 st	”
	42 nd	Troubleshoot instrument panel wiring for various parameters and faults.
15th	43 rd	”
	44 th	Dismantle & assemble recorder to identify it’s components.
	45 th	”
16th		Revision

Lesson Plan

Name of the Faculty : V.F.
Discipline : I&C Engineering
Semester : 4th
Subject : PRINCIPLES OF ENERGY MANAGEMENT
Lesson Plan Duration : 16 weeks (From 6/03/2023 to 23/06/2023)

Work Load (Lecture/Practical) per week(in hours)P: Lectures-04 Practicals-03

Week		Theory		Practical
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1st	1st	Introduction	1st	Realization of energy conservation by improving power factor.
	2nd	Energy and its sources.	2nd	
	3rd	Type of Energy Sources and there advantages and disadvantages	3rd	
	4th	Revision		
2nd	5th	Difference between renewable and non renewable energy sources	4th	Case study on energy audit (college/hostel building etc.).
	6th	Present energy scenario in India	5th	
	7th	Sector wise consumption i.e. Domestic, Industrial and Agriculture	6th	
	8 th	Renewable Energy		
3 rd	9 th	Type of renewable energies	7th	To demonstrate the I-V characteristics of PV module with varying radiation
	10 th	.....Do.....	8th
	11th	Methods of obtaining energy (Thermal and electricity) from solar	9th	
	12th	.....Do.....	

4th	13th	Methods for obtaining energy from bio mass	10th	To demonstrate the P-V characteristics of PV module with varying radiation and temperature level
	14th	-----Do-----	11th	
	15th	Principles of wind energy conversion.	12th	
	16th	-----Do-----		
5th	17th	Other Non-Conventional Energy Sources	13th	To show the effect of variation in tilt angle on PV module power
	18th	Magneto Hydro Dynamic Convertor (MHD)	14th	
	19th	Tidal	15th	
	20th	Geo-Thermal Ocean		
6th	21st	Revision	16th	(File Check and viva voice)
	22nd	Sessional Test	17th	
	23rd	Energy Conservation Definition.	18th	
	24th	Need and importance of energy conservation		
7th	25th	-----Do-----	19th	To demonstrate the effect of shading on module output power
	26th	Use f Energy efficient technology in Domestic and Industrial Sector	20th	
	27th	-----Do-----	21th	
	28th	-----Do-----		
8th	29th	Energy Conservation by Improving Load Factor Power Factor	22th	(File Check and viva voice)
	30th	-----Do-----	23th	
	31st	-----Do-----	24th	
	32nd	Type of tariff structure for electricity		
9th	33rd	-----Do-----	25th	To perform cost benefit analysis for installing solar photovoltaic roof top system
	34th	Use of Instrumentation & Control for energy conservation	26th	
	35th	-----Do-----	27th	
	36th	-----Do-----		
10th	37th	Sessional Test	28th	To demonstrate the effect of shading on PV module output power
	38th	Revision	29th	
	39th	Energy Storage	30th	
	40th	Need of energy storage		

11th	41st	Energy storage methods and their advantages and disadvantages	31th	Prepare a model of renewable and non- renewable sources of energy
	42nd	Working Principle and applications of Secondary batteries	32th	
	43rd	Working Principle and applications of Fuel cells	33th	
	44th	Working Principle and applications of Hydrogen energy system		
12th	45th	Revision	34th	Prepare projects on application of solar energy like solar water heaters, solar furnaces, solar cookers, solar lighting and solar pumping
	46th	Revision	35th	
	47th	Energy Audit	36th	
	48th	Definition		
13th	49th	Need for Energy Audit	37th	(File Check and viva voice)
	50th	-----Do-----	38th	
	51st	-----Do-----	39th	
	52nd	Methodology for preliminary and detailed energy audit		
14th	53rd	Methodology for preliminary and detailed energy audit	40th	Visit to solar power plants for understanding. a. Fixed tilt and seasonal tilt arrangement. b. Tracking System. c. Weather monitoring system.
	54th	Energy audit instruments	41th	
	55th	Energy audit instruments	42th	
	56th	Sessional Test		
15th	57th	Preparation For Board Exam	43th	(File Check and viva voice)
	58th	Preparation For Board Exam	44th	
	59th	Revision whole syllabus	45th	
	60th	Revision whole syllabus		
16th	61st	Revision whole syllabus	46th	(File Check and viva voice)
	62nd	Revision whole syllabus	47th	
	63rd	Revision whole syllabus	48th	
	64th	Revision whole syllabus		

Lesson Plan

Name of the Faculty : V.F.
Discipline : I&C Engineering
Semester : 4th
Subject : INDUSTRIAL COMMUNICATION
Lesson Plan Duration : 15 weeks (From 6/03/2023 to 23/06/2023)

Work Load (Lecture/Practical) per week(in hours)P: Lectures-03 Practicals-03

Week		Theory		Practical
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1 st	1 st	Introduction	1 st	Measurement of pressure using pneumatic transmitter
	2 nd	Introduction and applications of telemetry	2 nd	
	3 rd	Methods of data transmission	3 rd	
2 nd	4 th	Same topic revise	4 thDo.....
	5 th	Block Diagram of general Telemetry system	5 th	
	6 th	Voltage telemetry	6 th	
3 rd	7 th	Land Line Telemetry	7 th	Measurement of differential pressure using PDPT
	8 th	Current Telemetry	8 th	
	9 th	Sessional test	9 th	
4 th	10 th	Same topic revise	10 th	File check / viva voice
	11 th	Position Telemetry	11 th	
	12 th	Ratio Telemetry	12 th	
5 th	13 th	R.F. Telemetry	13 th	Realization of electric transmitter
	14 th	A.M., F.M.	14 th	
	15 th	Block diagram of P.A.M.	15 th	
6 th	16 th	Block diagram of P.C.M.	16 thDo....
	17 th	Same topic Revise	17 th	
	18 th	Pneumatic Transmitter	18 th	
7 th	19 th	PDPT bellow type	19 th	Study of hydraulic transmitter
	20 th	PDPT diaphragm type	20 th	
	21 th	Force balance type	21 th	

8 th	22 th	Sessional test	22 th	...Do.....
	23 rd	Hydraulic Transmitter	23 rd	
	24 th	Bellow type	24 th	
9 th	25 th	Electric transmitter	25 th	To observe AM & FM waves on CRO
	26 th	Resistive Transmitter	26 th	
	27 th	Inductive Transmitter	27 th	
10 th	28 th	Wire line channels	28 th	File check / viva voice
	29 th	Radio Channels	29 th	
	30 th	Same topic revise	30 th	
11 th	31 th	Assignment	31 th	To calculate modulation index m for AM & FM
	32 th	Multiplexing channels	32 th	
	33 rd	Time division multiplexing	33 th	
12 th	34 th	Frequency division multiplexing	34 th	File check / viva voice
	35 th	Introduction and block diagram of data communication	35 th	
	36 th	Modulation & demodulation of signals using	36 th	
13 th	37 th	Amplitude shift keying	37 th	Familiarization with Ethernet and LAN
	38 th	Frequency shift keying	38 th	
	39 th	Phase shift keying	39 th	
14 th	40 th	General view of instrumentation buses GPIB	40 thDo....
	41 th	Interbus and Profibus/Profinet	41 th	
	42 th	Ethernet	42 th	
15 th	43 th	HART Communication Protocol	43 rd	File check/ viva voice
	44 th	Fibre Optic Communication	44 th	
	45 th	Sessional test	45 th	
16 th		Revision		

Lesson Plan

Name of the Faculty : V.F.
Discipline : I&C Engineering
Semester : 4th
Subject : ADVANCED CONTROL SYSTEM
Lesson Plan Duration : 16 weeks (From 6/03/2023 to 23/06/2023)

Work Load (Lecture/Practical) per week(in hours)P: Lectures-03 Practicals-03

Week		Theory		Practicals
	Lecture Day	Topic (inculding assignment/test)	Practical Day	Topic
1st	1st	Subject Introduction	1st	To perform non-Linearity in relay
	2nd	Single and Multiloop Control System: Introduction to single and multiloop control system	2nd	
	3rd	Study of Feedback control system with a suitable example	3rd	
2nd	4th	Topic Contd..	4th	To perform cascade control system
	5th	Study of Cascade control system with a suitable example	5th	
	6th	Topic Contd..	6th	
3rd	7th	Study of Ratio control system with a suitable example	7th	File check and viva voice
	8th	Topic Contd..	8th	
	9th	Study of Feedforward control system with a suitable example	9th	
4th	10th	Topic Contd..	10th	To perform ratio control system
	11th	Study of Split Range control system with a suitable example	11th	
	12th	Topic Contd..	12th	
5th	13th	Advantages and disadvantages of each types mentioned above	13th	To perform feed forward control system
	14th	Assignment/Test	14th	
	15th	Non-Linear Control System: Introduction, behaviour of non-linear control system	15th	
6th	16th	Principle of superposition and homogeneity	16th	File check and viva voice
	17th	Classification of non-linearities- Inherent and Intentional	17th	
	18th	Different types of non-linearities	18th	

7th	19th	Saturation, backlash	19th	To perform split-range control system
	20th	hysteresis ,dead zone	20th	
	21st	relay, friction	21st	
8th	22nd	limit cycles	22nd	File check and viva voice
	23rd	jump resonance	23rd	
	24th	jump phenomenon	24th	
9th	25th	Difference between linear and non-linear control system.	25th	To study an application of Artificial Neural Network/Robotics
	26th	Revision	26th	
	27th	Assignment/Class Test	27th	
10th	28th	Introduction to Artificial Intelligence	28th	To study an application of Artificial Intelligence/ Fuzzy Logic
	29th	Fuzzy Logic & Neuro fuzzy logic in control system and application.	29th	
	30th	Topic Contd..	30th	
11th	31st	Topic Contd..	31st	To perform atleast two applications using LABVIEW
	32nd	Artificial Neural Networks	32nd	
	33rd	Introduction to Robotics	33rd	
12th	34th	Degree of freedom	34th	File check and viva voice
	35th	The robot arm configuration and its applications	35th	
	36th	Topic Contd..	36th	
13th	37th	Revision	37th	To get familiar with PLC Software
	38th	Assignment/Class Test	38th	
	39th	Introduction of various computational softwares related to instrumentation & control engineering	39th	
14th	40th	Lab VIEW	40th	To get familiar with SCADA Software
	41st	PLC Software	41st	
	42nd	SCADA Software	42nd	
15th	43rd	MATLAB	43rd	File check and viva voice
	44th	Students Feed- back and Problem Solve	44th	
	45th	Revision	45th	
16th		Revision		

Lesson Plan

Name of the Faculty : Sh. Ramanand
Discipline : I&C Engineering
Semester : 4th
Subject : Soft Skills
Lesson Plan Duration : 16 weeks (From 6/03/2023 to 23/06/2023)

Work Load (Lecture/Practical) per week(in hours)P: Practicals-02

Week		Practicals
	Practical Day	Topic
1st	1st	Concept of team building, behavior in a team.
	2nd	„
2nd	3rd	Developing Interpersonal Relations- empathy, sympathy.
	4th	„
3rd	5th	Communication skills-improving non-verbal communication.
	6th	„
4th	7th	Conflict Management.
	8th	„
5th	9th	Motivation.
	10th	„
6th	11th	Leadership.
	12th	„
7th	13th	Professional Ethics and Values
	14th	„
8th	15th	Health, Hygiene, Cleanliness and Safety
	16th	„
9th	17th	In addition, the students must participate in the following activities to be organized in the institute.
	18th	„
10th	19th	Sports
	20th	„
11th	21st	NCC/NSS.
	22nd	„

12th	23rd	Camp – Environment awareness.
	24th	„
13th	25th	Cultural Event.
	26th	„
14th	27th	„
	28th	Revision
15th	29th	Revision
	30th	Revision
16th	31st	Revision
	32nd	Revision