

G P Kangra		Department: EC.E.Subject : PROGRAMMABLE LOGIC CONTROLLERS AND SCADA				
		Course :Diploma      Duration : Three years				
SYLLABUS COVERAGE		Total Periods: 56 Practical:28      Theory : 56				
Sr. No	No. of Periods	Topic and details	Instruction Reference	Additional Study recommende	Remark	
1	1-8	<b>1. Introduction to PLC:</b> Relays based logic circuits, limitations of relays based logic circuit, Concept of PLC, Advantages of PLCs over electromagnetic relays based logic circuits, Different programming languages used in PLC, PLC specifications. Discussion,doubt,students feed-back session	PLC (Umesh Rathore )	Internet & Youtube		
2	9-16	<b>2. Architectural Detail and Working of PLC:</b>  2.1 Basic operation and principle of working of PLC 2.2 Architectural details of PLC 2.3 Input & Output Modules in PLC 2.4 Opto-isolation Circuit in PLC and its need 2.5 Memory structures in PLC, 2.6 HMI (Human Machine Interface) used in PLC system 2.7 Power supply requirements in PLC Discussion,doubt,students feed-back session		-do-		
3	17-31	<b>3. Instructions Set:</b> 3.1 Addressing in PLC: I/O Address 3.2 Basic instructions: Examine ON, Examine OFF, Latch/Unlatch, Output Energize, Hold ON. 3.3 Timer instructions: On delay timer, Off delay timer, retentive/non-retentive timers, resetting of timers. 3.4 Counter instructions: Up Counter, Down	I&PLC (Ishan Publication)	-do-		

4	32-46	<p>Counter, resetting of counters.</p> <p>3.5 Sequencers.</p> <p>3.6 Comparison instructions like equal, not equal, greater, greater than equal, less than, less than equal.</p> <p>Discussion,doubt,students feed-back session</p>	<p><b>4. Ladder Logic Programming:</b></p> <p>Introduction to Ladder Logic programming, Ladder logic programming examples based on basic instructions, timer and counter instructions. Simple Applications of PLCs:-</p> <p>4.1 Bottle filling Process</p> <p>4.2 Traffic Light Control</p> <p>4.3 Material handling</p> <p>4.4 Elevator</p> <p>4.5 Oven Control</p> <p>4.6 Stirred tank reactor (Process Control)</p> <p>4.7 Forward/reverse control of motor using PLC.</p> <p>Discussion,doubt,students feed-back session</p>	AK Sawhan ey	-do-	
5	47-56		<p><b>5. DCS &amp; SCADA:</b></p> <p>5.1 Introduction &amp; History of DCS</p> <p>5.2 Hierarchical Architecture of DCS</p> <p>5.3 System Elements of DCS(Field Station, Intermediate Station and Central Computer Station)</p> <p>5.4 Advantages and Disadvantages of DCS</p> <p>5.5 Definition of SCADA</p> <p>5.6 Major elements of SCADA</p> <p>5.7 Advantages and Disadvantages of SCADA</p> <p>5.8 Application areas of SCADA</p> <p>5.9 Comparison of PLC, SCADA and DCS</p> <p>Discussion,doubt,students feed-back session</p>	Industrial Instrumentatio(SK Sing)	-do-	

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Date	

<b>GP Kangra</b>	Department: <b>ECE</b>	Subject: <b>Wireless &amp; Mobile Communication</b>
	Course: <b>Diploma</b>	Duration : <b>03 Years</b>
<b>Syllabus Planned</b>	Total Periods: <b>52(T) + 26 (P)</b>	Theory: <b>52</b>

**SYLLABUS PLANNED**

<b>S. N.</b>	<b>Period No.</b>	<b>Topic Covered</b>	<b>Instruction Reference</b>	<b>Additional Study recommended</b>	<b>Remarks</b>	
1	1-8	<b>Wireless Communication</b> 1.1 Basics 1.2 Advantages of wireless communication 1.3 Electromagnetic waves 1.4 Frequency Spectrum used 1.5 Cellular Network Systems 1.6 Propagation considerations a) Range b) Atmospheric Effect c) Geographic Effect d) Fading e) Doppler Effect f) Multipath Effect	Wireless Communications, Principles and Practice, <b>by Theodore S. Rappaport.</b>	Wireless & Mobile Communication, <b>by Sanjeev Kumar</b>		
2	9-17	<b>Cellular Concept</b> 2.1 Cell area 2.2 Cell Site Structure 2.3 Capacity of cell 2.4 Frequency Response (ARFCN Concepts) 2.5 Interference (Co-channel, Adjacent channel) 2.6 Power Control for reducing Interference 2.7 Fundamentals of cellular network planning a) Coverage planning b) Capacity planning				
3	18-32	<b>Multiple Access Techniques for Wireless Communication</b> 3.1 Introduction to Multiple Access. 3.2 Frequency Division Multiple Access (FDMA) 3.3 Time Division Multiple Access (TDMA) 3.4 Code Division Multiple Access (CDMA), WCDMA 3.5 Spread Spectrum Techniques				

S. N.		Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks
4		33-45	<b>Mobile Communication Systems</b> 4.1 Introduction of Global Systems for Mobile Communication (GSM) and its architecture, Introduction of CDMA System, comparison of CDMA and GSM Systems 4.2 Introduction of GPRS and EDGE.			
5		46-52	<b>Introduction to 3G &amp; 4G</b> 5.1 Introduction to Architecture and Features of UMTS 5.2 HSPA (High Speed Packet Access) 5.3 4G/LTE Architecture			

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<b>GP Kangra</b>	Department: <b>ECE</b>	Subject: <b>Medical Electronics</b>
	Course: Diploma	Duration : <b>03 Years</b>
Syllabus Planned	Total Periods: <b>52(T)</b>	Theory: <b>52</b>

**SYLLABUS PLANNED**

S. N.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks
1	1-13	<b>Overview</b> Overview of Medical Electronics Equipment, classification, application and specifications of diagnostic, therapeutic and clinical laboratory equipment, method of operation of these instruments			
2	14-22	<b>Electrodes</b> Bioelectric signals, Bio electrodes, Electrode, Electrode tissue interface, contact impedance, Types of Electrodes, Electrodes used for ECG, EEG			
3	23-29	<b>Transducers</b> Typical signals from physiological parameters, pressure transducer, flow transducer, temperature transducer, pulse sensor, respiration sensor			
4	30-35	<b>Bio Medical Recorders</b> Block diagram description and application of following instruments • ECG Machine • EEG Machine • EMG Machine	Handbook of Biomedical Instrumentation by <b>RS Khandpur</b> , Tata McGraw Hill Education Pvt Ltd, New Delhi.		
5	36-46	<b>Patient Monitoring Systems</b> • Heart rate measurement • Pulse rate measurement • Respiration rate measurement • Blood pressure measurement • Principle of defibrillator and pace maker			
6	47-52	<b>Safety Aspects of Medical Instruments</b> • Gross current shock • Micro current shock • Special design from safety considerations. • Safety standards			

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**PLANNED SYLLABUS COVERAGE (Theory)**

<b>G P Kangra</b>		<b>Department: ELECTRONICS &amp; COMM. ENGG.</b>				
		<b>Subject: MICROCONTROLLERS AND EMBEDDED SYSTEM</b>				
		<b>Course : Diploma</b>		<b>Duration : Three years</b>		
<b>SYLLABUS COVERAGE</b>		<b>Total Periods: 64</b>		<b>Theory : 64</b>		
<b>Sr No</b>	<b>Period Nos</b>	<b>Topic</b>	<b>Details</b>	<b>Instruction Reference</b>	<b>Additional Study Recommendation</b>	<b>Remarks</b>
1.	1 to 13	Microcontroller series (MCS) – 51 Overview	<ul style="list-style-type: none"> <li>• Architecture of 8051 Microcontroller</li> <li>• Pin details</li> <li>• I/O Port structure</li> <li>• Memory Organization</li> <li>• Special Function Registers (SFRs)</li> <li>• External Memory</li> </ul>	<b>Microcontrollers by Deshmukh</b>		
2.	14		Discussion ,Doubt removal & Student feedback session			
3.	15 to 29	Assembler and addressing modes	<ul style="list-style-type: none"> <li>• Instruction types</li> <li>• Instruction set of 8051</li> <li>• Addressing modes</li> <li>• Assembler directives</li> <li>• Assembler operation</li> </ul>	-do-		
4.	30		Discussion ,Doubt removal & Student feedback session			
5.	31 to 41	Timer and interrupts	<ul style="list-style-type: none"> <li>• Timer operation</li> <li>• Serial Port operation</li> <li>• Interrupts</li> </ul>	-do-		
6.	42		Discussion ,Doubt removal & Student feedback session			
7.	43 to 53	<b>Design and Interface</b>	Keypad interface, 7- segment interface, LCD, stepper motor. A/D, D/A, RTC interface.	-do-		
8.	54		Discussion ,Doubt removal & Student feedback session			
		Block diagram and pin details:				



9.	55 to 57	ARDUINO	Block diagram and pin details: ARDUINO	Programmin g Arduino: Getting Started With Sketches		
10.	58		Discussion ,Doubt removal & Student feedback session			
11.	59 to 63	Application of Micro controllers in Communication System	Application of Micro controllers in Communication System	Embedded GSM Applications		
12.	64		Discussion ,Doubt removal & Student feedback session			

**Vivek Kumar**  
**Lecturer,ECE**

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Date	