Integral University, Lucknow

Effective from Session:							
Course Code	DEC-501	**Title of the Course**	Microprocessor Application & Interfacing	**L**	**T**	**P**	**C**
Year	3rd	**Semester**	5th	**3**	**1**	**0**	
Pre-Requisite	None	**Co-requisite**	None				
Course Objectives	To understand the basics of Microprocessor. To understand the Assembly Programming. Study how to interfacing devices. To understand the Embedded Technology.						

Course Outcomes	
CO1	Study the concept of memory mapping with the use of address line and explain the Microprocessor's internal architecture and its operation within the area of performance.
CO2	Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the Microprocessor.
CO3	Compare accepted standards and guidelines to select appropriate Microprocessor (8085 &8086) and Microcontroller to meet specified performance requirements.
CO4	Analyze assembly language programs; select appropriate assemble into machine a cross-Assembler utility of a Microprocessor.
CO5	Design Electronic circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.

Unit No.	**Title of the Unit**		**Contact Hrs.**	**Mapped CO**
I	Introduction to Microprocessor	Introduction to Microprocessor, Evolution of Microprocessors, Memory map & Addresses, Address bus, Data Bus, Control Bus, Bus Structure, Memory Word Size, The 8085 Microprocessor Unit, Architecture & Description.	8	1
II	Instructions Set	Pin Diagram of 8085, Addressing Modes of 8085, Data Transfer operations (MOV, MVI, OUT, IN), Arithmetic operations (ADD, ADI, SUB, SUI, INR, DCR), Logic Operations (ANA, ANI, ORA, ORI, XRA, XRI), Branch operation (JMP, CALL, RESTART), Writing assembly language programs	8	2
III	Programming techniques:	Programming techniques: looping, counting and indexing, Additional data transfer and 16-bit arithmetic instruction (LXI, LDAX, STAX, INX, DCX), Arithmetic operations related to memory, Logic operation: rotate, compare, counter and time delays.	8	3
IV	Timing Diagram	Timing Diagram: Opcode Fetch, Memory Read Cycle, Memory Write Cycle, I/O Read & I/O Write. 8085 Interrupts: 8085 Vectored interrupts, Restart as Software instructions, RIM, SIM.	8	4
V	Programs	Programs: 8-bit Addition, 16-bit Addition, 8-bit Subtraction, 16-bit subtraction, Subtraction with carry, Multiplication & Division. 8255 Programmable peripheral Interface: Block Diagram, Control Word, BSR Mode, Zero Mode.	8	5

References Books:

1. Microprocessor Architecture Programming & Application with 8085: R.S. Gaonkar, Penram Publication.
2. Microprocessor 8085 And Its Interfacing: Mathur, PHI Learning
3. The 8085 Microprocessor: K.Uday Kumar, Pearson Education

e-Learning Source:

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1		2	3	1					1				1		2	2	2
CO2		2	3										2		2	2	2
CO3		2	2						1				2		2	1	2
CO4			3						1		2		2			1	2
CO5			2	2									2		1	2	2

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session: 2013-14							
Course Code	DEC-502	**Title of the Course**	Electronics Instrument & Measurement	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**3**	**1**	**0**	**-**
Pre-Requisite	-	**Co-requisite**	-				
Course Objectives	To introduce the fundamentals of the measurement system, covering transducers, bridges, analog and digital meters, CRO, display devices, signal generators, and analyzers.						

Course Outcomes	
CO1	Recognize the evolution and history of units and standards in measurements.
CO2	Innovate ideas to improve the existing technology in the field of measurements in terms of accuracy, cost, durability and user friendliness.
CO3	Analyze and solve the varieties of problems and issues coming up in the vast field of measurement system.
CO4	Test and troubleshoot electronic circuits using various measuring instruments.
CO5	Apply signal generator, frequency counter, CRO and digital IC tester for appropriate measurement.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
1	**Measurement**	General Measurement System, Performance characteristic of measurement system, basic idea of loading effect, Standard of measurement, Types and Sources of Error (Simple Numerical).	8	1
2	**Transducers & Bridges**	Transducers: Introduction, basic requirement, classification, Study of different types of Transducers. Bridges: Wheatstone bridge, Kelvin Double Bridge, A.C. Bridge, Maxwell Bridge, Anderson Bridge, Schering Bridge.	8	2
3	**Analog and Digital Meter**	Analog Meter: General Study of PMMC, Rectifier type meters, Moving Iron type meter, Thermo-Couple Meters. Their Advantages and Disadvantages. Digital Meter: Difference between analog and digital meter, A/D and D/A converter.	8	3
4	**Display Devices and CRO**	Display Devices: Basic Idea of CRT, LED, LCD, and Incandescent Display. CRO: Basic idea of CRO and DSO. Measurement of Voltage, Current, Phase Difference, frequency and various other parameters.	8	4
5	**Generator and Signal Analyzer**	Generator: Basic type of signal generator like Triangular, Saw tooth, Square Pulse. Schmitt Trigger, Multi-vibrator. RF: Measurement of Power, Impedance, Vector Impedance Meter. Signal Analyzers: Harmonic Analyzer, Wave Analyzers (Basic Characteristic only).	8	5

References Books:

1. Modern Electronic Instrumentation and Measurement Technique: Albert D Helfrik, William D. Cooper, PHI Publication
2. Electronic and Instrumentation: J. B. Gupta, Dhanpat Rai Publication.
3. Electronics Instrumentation: Kalsi H S, TMH Publication.

e-Learning Source:

1. Electrical and Electronics Measurement by NPTEL
2. Electronic Instrumentation & Measurement Techniques

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1		2		2												
CO2				2					1		3		3			
CO3		2		2					1							
CO4		2		3					1						2	
CO5		1		3	2											

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session:							
Course Code	DEC-503	**Title of the Course**	Television & Video Engineering	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**3**	**1**	**0**	
Pre-Requisite		**Co-requisite**					
Course Objectives	After completation of the course student know the type of picture tube and different types of cable TV system.Understand the DTH technology.						

Course Outcomes	
CO1	Identify and select the suitable microphone or loudspeaker according to the application
CO2	Understand the monochrome TV transmission and reception
CO3	Understand the complex process of TV signal transmission.
CO4	Understand the different picture tubes and the different cable TV system.
CO5	Understand the DTH technology.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
1	Electro Acoustic Transducer	Electro Acoustic Transducer:Microphones:- Carbon, condenser, moving coil, crystal, ribbon and lavaliere microphones their Construction and working principles, frequency response, impedance sensitivity and application of different microphones. Loudspeaker: - Direct radiating and horn loader type their construction, working principles characteristics and application. Baffles and Enclosures	8	1
2	Elements of a Television System	Elements of a Television System:- Picture transmission, sound transmission, picture reception, sound reception, synchronization, receiver controls, color TV.Analysis & Synthesis of TV Pictures:- Gross structure, image continuity, Number of scanning lines, flicker, fine structure, tonal gradation.	8	2
3	Composite Video Signal	Composite Video Signal:-Video signal dimensions, Horizontal Sync Details, Vertical Sync Details, scanning sequence details, Functions of Vertical Pulse train, sync details of 525 line system.Signal Transmission & channel Bandwidth:- channel bandwidth, VSB transmission, VSB Reception, FN channel Bandwidth, channel bandwidth for color TV, Allocation of frequency bands for TV signal transmission, Television standards.	8	3
4	The Picture Tube	The Picture Tube:- Monochrome picture tube, beam deflection, screen phosphor, face plate, picture tube characteristics, Picture tube circuit control.Television camera tubes: -Basic principle, image orthicon, vidicon, the plumbicon.Television Application: - Television broadcasting, cable TV, CCTV, theater TV, picture phone & facsimile, TV via satellite.	8	4
5	DTH	DTH: Introduction, overview, content licensing, video encoding, multiplexing, encryption and conditional access system, modulation, dedicated	8	5

References Books:

1. Television & Audio Handbook: Binson& Whitaker, McGraw Hill Publication

2. Monochrome & Color Television: R. R. Gulati, New Age Publication.

3. TV &Video Engineering: A M Dhake, Tata McGraw Hill.

e-Learning Source:

www.nptel.com

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	-	-	-	-	-	1	-	-
CO2	1	-	-	-	3	-	-	-	-	-	2
CO3	-	-	-	-	3	-	-	-		2	
CO4	-	-	-	-	-	-	3	-	-	-	-
CO5	-	-	-	-	-	-	3	-	-	-	-

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	Sign & Seal of HoD

Integral University, Lucknow

Effective from Session:							
Course Code	DEC-504	**Title of the Course**	Communication System	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**3**	**1**	**0**	
Pre-Requisite		**Co-requisite**					
Course Objectives	After completation of the course student will eb able to define the bus topology, difference between wired and wireless communication, differentiate between different types of routing.						

Course Outcomes

CO1	Study the working of specialized microwave component such as magic tee, directional coupler.
CO2	Identify and characterize different components of an Optical Fiber Communication link.
CO3	Study the architecture of satellite communication system
CO4	Understand the ISO/OSI seven layers in a network
CO5	Realize protocols at different layers of a network hierarchy.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
1	Satellite Communication	Microwave frequency range, Introduction to wave guides, dominant mode in Rectangular and circular wave guide, phase velocity, Group velocity, Cut-off wavelength (basic Numerical). Ferrite Device Magic tee, Directional Couplers, Circulators and Isolators. Block diagram and brief explanation of satellite communication system, its Advantage and Disadvantage, Active and Passive Satellite. Geo stationery and Geo synchronous. Satellite Channel and Link Design: General Link Equation, RF uplink and down link, Effect of interference and rain on Link.	8	1
2	Optical Communication	Optical Emitters: LASER: Introduction, Basic concept like Absorption and emission, Population inversion, optical feedback, threshold condition for laser.LED: Introduction, Efficiency, LED characteristic (basic only). Optical detectors (PIN diode & APD) – Noise (only Types),P-I-N and Avalanche Photodiode Receiver(Basic only).	8	2
3	OSI Model	ISO/OSI reference model: Layers in the OSI model, TCP/IP Protocol Suite, Difference between them, Introduction to Switching: Circuit Switching Network (only three phase), Datagram Network, Virtual Network (only basic idea).	8	34
4	IPv4 Addressing	Introduction to Wired LAN: Brief description of different types of LAN Connection IP Address- Introduction to IPv4, Class A, B, C, D, E. Class-full and Classless Addressing Device: Switch, Hub, Bridges, Routers, Gateway	8	
5	Routing	Routing Protocol: Inter and Intradomain routing, Distance Vector Routing, Link State Routing, Path Vectoring Routing. WWW and HTTP:Architecture, Client, Server, URL, Cookies, Proxy Server. Congestion Control: Open loop and Closed loop Congestion control and technique to improve quality of service.	8	5

References Books:

1. Data Communications and Networking:Behrouz A. Forouzan ,TMH Publication
2. Computer Networks: Tanenbaun, Prentice Hall Publication
3. Microwave and Device Circuit: S.Y Liao, Pearson Publication

e-Learning Source:

www.nptel.com

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	2	-	-
CO2	**1**	**-**	**-**	**-**	**2**	**1**	**-**	**-**	-	-	
CO3	**1**	**-**	**-**	**1**	**2**	**2**	**2**	**-**	-	2	1
CO4	**-**	**2**	**-**	**-**	**-**	**-**	**2**	**-**	-	-	-
CO5	**-**	**2**	**-**	**-**	**-**	**1**	**-**	**-**	-	-	

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session: 2024-25							
Course Code	DCS-506	**Title of the Course**	Computer Programming Using Python	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**3**	**1**	**0**	
Pre-Requisite		**Co-requisite**					
Course Objectives	After undergoing the course, the students will be able to execute Python code in a variety of environments, use correct Python syntax in Python programs, use the correct Python control flow construct.						

Course Outcomes	
CO1	Obtain knowledge of programming concepts and languages especially python language.
CO2	lustrate the basic information of python programming likes Data Types, variables, input output functions, control statements etc.
CO3	pply programming concepts and techniques to build the basic programs of python languages as well as develop the practical approach on programming.
CO4	Illustrate the other advance programming concepts like Array, Pointer, Union, Structure and Functions.
CO5	Trap various errors via the Python Exception Handling model

Unit No.	**Title of the Unit**		**Contact Hrs.**	**Mapped CO**
1	Introduction to OOP	Introduction to Object Oriented Programming: Features of Object-Oriented Programming, Merits and demerits of object-oriented programming languages, applications of object-oriented programming, comparison between commonly used programming languages. Basics of Python Programming: Features, future of python, writing and executing first python program, Literal constants, variables and identifiers, data types, input operation, comments, reserved words, indentation, operators and expressions, expressions, Type conversion	8	1
2	Decision control statements	Decision control statements: Introduction, Selection/conditional branching statements, Basic loop structures/iterative statements, Nested loops, break, continue and pass statements. Functions and Modules: Introduction, function declaration and definition, function definition, function call, variable scope and lifetime, the return statement, recursive functions, modules, packages in python.	8	2
3	Strings	Strings: Concatenating, appending and multiplying strings, immutability, String formatting operator, building string methods and function, slice operation. Lists: access and update values in lists, nested and cloning lists, basic list operations, List methods using lists as Stack and Queues, list comprehensions, loping in lists. Tuple: Creating tuple, utility of tuples, accessing values in a tuple, updating tuple, deleting elements in tuple, basic tuple operations.	8	3
4	Sets and Dictionary	Sets: Creating a Set and set operations Dictionaries: Creating a dictionary, accessing values, add, modify, delete, sort items in a dictionary, looping over a dictionary. Classes and Objects: Introduction, classes and objects, class method and self-argument, init() method, class and object variables, del() method, other special methods, public and private data members, private methods, calling a class method from another class method, built-in class attributes, garbage collection, class and static methods.	8	4
5	Operator Overloading	Operator Overloading: Introduction, implementing operator overloading, reverse adding, overriding getitem() and setitem() methods, overriding the in operator, overriding miscellaneous functions, overriding the _call() method. Error and Exception Handling: Introduction to errors and exceptions, handling exceptions, multiple except blocks, multiple exceptions in a single block, except block without exception, the else clause, raising exceptions, built-in and user-defined exceptions, the finally block.	8	5

References Books:

1. Python Programming Using Problem Solving Approach-Reema Thareja, Oxford University Press, 2019
2. Python for Informatics- Exploring Information-Charles Severance 1st edition Shroff Publishers,
3. Introduction to Computation and Programming Using Python-John V. Guttag The MIT Press, 2013

e-Learning Source:

Integral University, Lucknow

www.nptel.com											
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	-	-	-	-	-	1	-	-
CO2	1	-	-	-	3	-	-	-	-	-	2
CO3	-	-	-	-	3	-	-	-		2	
CO4	-	-	-	-	-	-	3	-	-	-	-
CO5	-	-	-	-	-	-	3	-	-	-	-

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Effective from Session: 2012							
Course Code	DEV-501	**Title of the Course**	ENVIRONMENTAL EDUCATION AND DISASTER MANAGEMENT	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**3**	**1**	**0**	
Pre-Requisite	DEV-501	**Co-requisite**	NA				
Course Objectives	1.The course objective is to provide a comprehensive understanding of ecology, environmental impacts of human activities such as urbanization and industrialization, pollution control, waste management, and the legal framework governing environmental protection. Additionally, it introduces disaster management, environmental impact assessment (EIA), and strategies for mitigation and prevention, emphasizing sustainable development and environmental preservation.						

Course Outcomes	
CO1	Understand the natural environment and its relationships with human activities.
CO2	Characterize and analyze human impacts on the environment.
CO3	Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems.
CO4	Capacity to integrate knowledge and to analyze, evaluate and manage the different public health aspects of disaster events at a local and global levels.
CO5	Capacity to obtain, analyze, and communicate information on risks, relief needs and lessons learned from earlier disasters in order to formulate strategies for mitigation in future scenarios.

UnitNo.	**Title of the Unit**		**Contact Hrs.**	**Mapped CO**
UNIT-I	**Ecology & Ecosystem**	Basics of ecology, Ecosystem, Biodiversity Human activities and its effect on ecology and eco system, different development i.e. irrigation, urbanization, road development and other engineering activities and their effects on ecology and eco system, Mining and deforestation and their effects. Lowering of water level, Urbanization. Biodegradation and Biodegradability, composting, bioremediation, Microbes. Use of biopesticides and bio fungicides. Global warning concerns, Ozone layer depletion, Greenh ouse effect, Acid rain etc. Sources of pollution, natural and man-made, their effects on living environments and related legislation.	8	CO-1
UNIT-II	**Water & Noise Pollution**	Factors contributing water pollution and their effect. Domestic wastewater and industrial wastewater. Heavy metals, microbes and leaching metal. Physical, Chemical and Biological Characteristics of wastewater. Indian Standards for quality of drinking water. Indian Standards for quality of treated wastewater. Treatment methods of effluent (domestic wastewater and industrial/ mining wastewater), its reuse/safe disposal Sources of noise pollution, its effect and control.	8	CO-2
UNIT-III	**Air Pollution & Radioactive Pollution**	Definition of Air pollution, types of air pollutants i.e. SPM, NOX, SOX, GO, CO2, NH3, F, CL, causes and its effects on the environment. Monitoring and control of air pollutants, Control measures techniques. Introductory Idea of control equipment in industries i.e. Settling chambers Cyclones Scrubbers (Dry and Wet) Multi Clones Electrostatic Precipitations Bog Fillers. Ambient air quality measurement and their standards. Process and domestic emission control Vehicular Pollution and Its control with special emphasis of Euro-I, Euro-II, Euro-III and Euro IV. Sources and its effect on human, animal, plant and material, means to control and preventive measures.	8	CO-3
UNIT-IV	**Solid Waste Management & Legislations**	Municipal solid waste, Biomedical waste, Industrial and Hazardous waste, Plastic waste and its management. Preliminary knowledge of the following Acts and rules made there under- The Water (Prevention and Control of Pollution) Act - 1974. The Air (Prevention and Control of Pollution) Act - 1981. The Environmental Protection (Prevention and Control of Pollution) Act -1986. Rules notified under EP Act - 1986 Viz. The Manufacture, Storage and Import of Hazardous Chemical (Amendment) Rules, 2000. The Hazardous Wastes (Management and Handling) Amendment Rules, 2003. Bio-Medical Waste (Management and Handling) (Amendment) Rules, 2003. The Noise Pollution (Regulation and Control) (Amendment) Rules, 2002. Municipal Solid Wastes (Management and Handling) Rules, 2000. The Recycled Plastics Manufacture and Usage (Amendment) rules, 2003.	8	CO-4
UNIT-V	**Environmental Impact Assessment (EIA) & Disaster Management**	Basic concepts, objective and methodology of EIA. Objectives and requirement of Environmental Management System (ISO-14000) (An Introduction). Definition of disaster - Natural and Manmade, Type of disaster management, How disaster forms, Destructive power, Causes and Hazards, Case study of Tsunami Disaster, National policy- Its objective and main features, National Environment Policy, Need for central intervention, State Disaster Authority- Duties and powers, Case studies of various Disaster in the country, Meaning and benefit of vulnerability reduction, Factor promoting vulnerability reduction and mitigation, Emergency support function plan. Main feature and function of National Disaster Management Framework, Disaster mitigation and prevention, Legal Policy Framework, Early warning system, Human Resource Development and Function, Information dissemination and communication.	8	CO-5

References Books:

1. "Environmental Education and Disaster Management" – Dr. Sameer Rastogi, Dr. Praveen Kumar Gaur, Ms. Nidhi Srivastava.

e-Learning Source:
1. https://www.youtube.com/watch?v=k_sYIs8C-IQ&t=10s&pp=ygUURWNvbG9neSBhbmQgRWNvc3R5ZW0%3D
2. https://www.youtube.com/watch?v=76snt7DG57U&pp=ygUXV2F0ZXIgYW5kIGFpciBwb2xsdXRpb24%3D
3. https://www.youtube.com/watch?v=t6wKiSyhmtE&list=PLfYetoC-zFdCM1v0OvvqcQJsmcuKLmRET

PO-PSO CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PS O6
CO 1	3								2						2					1
CO 2	3								2							2				
CO 3	3								2							2				
CO 4	3								1									2		
CO 5	3								2									2		

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	Sign & Seal of HoD

Integral University, Lucknow

Effective from Session:							
Course Code	DEC-551	**Title of the Course**	Microprocessor Lab	**L**	**T**	**P**	**C**
Year	3rd	**Semester**	5th	**0**	**0**	**3**	
Pre-Requisite	None	**Co-requisite**	None				
Course Objectives	1. To give a basic understanding about Microprocessor and microcontrollers. 2. To make them learn how to code 3. To make the students learn basic programming. 4. To make them aware about Embedded systems.						

Course Outcomes	
CO1	Identify relevant information for programming with the Microprocessor
CO2	Set up programming strategies and select proper mnemonics and run their program on the training boards.
CO3	Practice different types of programming keeping in mind technical issues and evaluate possible causes of discrepancy in practical experimental observations.
CO4	Develop testing and experimental procedures on Microprocessor and analyze their operation under different cases.

Exp No.	Title of the Experiment	Content of the Unit	Contact Hrs.	Mapped CO
1	8-Bit Addition	To perform addition of two 8-bit numbers using 8085.	3	3
2	16-Bit Addition	To perform addition of two 16-bit numbers using 8085.	3	4
3	Uses of 16-bit Instructions	To perform addition of two 16-bit numbers using 16-bit instruction.	3	3
4	8-Bit Subtraction	To perform subtraction of two 8-bit numbers using 8085.	3	1
5	8-Bit Multiplication	To perform multiplication of two 8-bit numbers using 8085.	3	2
6	Basic gate Operation	To perform logic AND operation of two 8-bit numbers.	3	1
7	Basic gate Operation	To perform logic NAND operation of two 8-bit numbers.	3	1
8	Basic gate Operation	To perform logic OR operation of two 8-bit numbers.	3	1
9	Basic gate Operation	To perform logic NOR operation of two 8-bit numbers	3	2
10	8-Bit Division	To perform the division of two 8-bit numbers using 8085.	3	2

References Books:

1.
2.
3.

e-Learning Source:

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1		2	2										2		1		2
CO2	1	2	3										3		2		2
CO3			3								2		2		2		2
CO4			3	2							2		2		3		2

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session:							
Course Code	DEC-552	**Title of the Course**	Electronics Instrument & Measurement Lab	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**0**	**0**	**3**	**-**
Pre-Requisite	-	**Co-requisite**	-				
Course Objectives	Acquire skills to measure and analyze electrical parameters using bridge networks, potentiometers, and oscilloscopes, applying fundamental principles of electrical measurements and instrumentation.						

Course Outcomes	
CO1	Estimate accurately the values of R, L and C employing suitable DC and AC bridges.
CO2	Understand and estimate errors in a measurement system.
CO3	Evaluation and determination of basic signal parameters using CRO.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
1	Experiment-1	Self-inductance measurements: Ammeter and Voltmeter method, Self-Inductance.	03	1
2	Experiment-2	Measurement by General four-arm' bridge network method.	03	2
3	Experiment-3	Measurement of the unknown inductance by using Hay's bridge method.	03	3
4	Experiment-4	To measure self-inductance of two coils, mutual inductance between these and the coefficient of coupling.	03	4
5	Experiment-5	Measurement of the unknown inductance by using Maxwell bridge method.	03	
6	Experiment-6	Measurement of medium resister by the voltmeter and ammeter method.	03	5
7	Experiment-7	Measurement of the medium resistance by using whetstone bridge method.	03	
8	Experiment-8	Measurement of the low resistance by using Kelvin Double bridge method.	03	
9	Experiment-9	Measurement of the unknown capacitance sharing bridge method.	03	
10	Experiment-10	To study of DC potentiometer.	03	
11	Experiment-11	To study the different waveforms, to measure peak and R.M.S voltages and the frequency of A.C.	03	

References Books:

e-Learning Source:

1. https://www.vlab.co.in/
2. https://phet.colorado.edu/

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	2	1														
CO2	2															
CO3	2	1														
CO4																
CO5																

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session: 2024-25							
Course Code	DCS-556	**Title of the Course**	Computer Programming Using Python Lab	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**0**	**0**	**3**	
Pre-Requisite		**Co-requisite**					
Course Objectives	After undergoing the course, the students will be able to execute Python code in a variety of environments, use correct Python syntax in Python programs, use the correct Python control flow construct.						

Course Outcomes	
CO1	Develop practical approach using input and output function.
CO2	Develop practical approach using various python operators.
CO3	Knowledge of Control Statements like if, else if, switch case, While, Do While and For loop.
CO4	Develop practical approach using Array, List, Strings etc.

Unit No.	**Title of the Unit**		**Contact Hrs.**	**Mapped CO**
1	Experiment-1	Write a menu driven program using functions to convert a decimal number toits binary, octal and hexadecimal equivalents: DecimalToBinary(), DecimalToOctal(), DecimalToHex()	3	1
2	Experiment-2	Write a program to check whether a given number is Armstrong number, automorphic and palindrome	3	3
3	Experiment-3	Write a program to display Floyd's Triangle	3	3
4	Experiment-4	Write a python program to perform a Binary search on a 1-D array	3	1
5	Experiment-5	Write a python program to perform Insertion sort on a 1-D array	3	1
6	Experiment-6	Write a python program to perform Matrix Multiplication of two array	3	2
7	Experiment-7	Write a python program to convert a given number into equivalent Roman Number.	3	2
8	Experiment-8	Write a python program that takes any two lists L and M of the same size and adds their elements together to form a new list Whose elements are sum of the corresponding elements in L and M.	3	3
9	Experiment-9	Write a python program that rotates the elements of a list so that the element atthe first index moves to the second index and the element in the last indexmoves to the first index.	3	4
10	Experiment-10	To write a python program simulate bouncing ball in Pygame.	3	4

References Books:

1. Python Programming Using Problem Solving Approach-Reema Thareja, Oxford University Press, 2019
2. Python for Informatics- Exploring Information-Charles Severance 1st edition Shroff Publishers,
3. Introduction to Computation and Programming Using Python-John V. Guttag The MIT Press, 2013

e-Learning Source:

www.nptel.com

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	-	-	-	-	-	1	-	-
CO2	1	-	-	-	3	-	-	-	-	-	2
CO3	-	-	-	-	3	-	-	-		2	
CO4	-	-	-	-	-	-	3	-	-	-	-
CO5	-	-	-	-	-	-	3	-	-	-	-

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**