Department of Electronics Engineering

LECTURE PLAN

Name of Course with Code: Instrumentation &Sensors (14251101)	Class: B. Tech. 1st Year	Session: July-December 2025

Teaching Session	Content to be Covered	CO's	Blooms Level (BL)	% Coverage	Mode
1.	Introduction and significance of measurement	CO1	L1	2%	Offline / Black Board Teaching
2.	Block diagram & methods of measurement	CO1	L2	2%	Offline / Black Board Teaching
3.	Elements & their functions	CO1	L2	2.5%	Offline / Black Board Teaching
4.	Applications of measurement systems	CO1	L2	2.5%	Offline / Black Board Teaching
5.	Static characteristics (accuracy, precision, sensitivity)	CO1	L3	3%	Offline / Black Board Teaching
6.	Static error, drift, resolution, hysteresis	CO1	L3	2.5%	Offline / Black Board Teaching
7.	Loading effects & dynamic characteristics overview, Speed of response	CO1	L3	2.5%	Offline / Black Board Teaching
8.	Calibration, fidelity, Numerical problems	CO1	L3	3%	Group based Learning/ Black Board Teaching
9.	Types of errors	CO2	L2	2.5%	Offline / Black Board Teaching
10.	Systematic errors (instrumental, observational)	CO2	L2	2.5%	Experimentation / Board Teaching
11.	Random errors & statistical treatment	CO2	L2	2.5%	Experimentation / Board Teaching

12.	Histogram & measurement tests	CO2	L3	2.5%	Experimentation
13.	Mean, range, deviation	CO2	L3	2.5%	Offline / Black Board Teaching
14.	Standard deviation, variance	CO2	L3	2.5%	Offline / Black Board Teaching
15.	Average deviation & data dispersion	CO2	L3	2.5%	Offline / Black Board Teaching
16.	Noise & signal-to-noise ratio, Numerical problems	CO2	L3	2.5%	Offline / Black Board Teaching
17.	Introduction to thermal sensors	CO3	L1	2%	Offline / Black Board Teaching
18.	RTD & thermistors	CO3	L2	2.5%	Offline / Black Board Teaching
19.	Thermocouples	CO3	L2	2.5%	Offline / Black Board Teaching
20.	Capacitive position sensors	CO3	L3	2.5%	Offline / Black Board Teaching
21.	Proximity and displacement sensors	CO3	L3	2.5%	Offline / Black Board Teaching
22.	LVDT and Applications of electric sensors	CO3	L3	2.5%	Offline / Black Board Teaching
23.	Numerical problems	CO3	L3	2.5%	Group based Learning/ Black Board Teaching
24.	Comparative study of thermal and electric sensors	CO3	L4	3%	Offline / Black Board Teaching
25.	Strain gauge (working & application)	CO4	L2	2.5%	Offline / Black Board Teaching
26.	Semiconductor strain gauge & accelerometers	CO4	L2	2.5%	Offline / Black Board Teaching
27.	Mechanical pressure sensors	CO4	L2	2.5%	Offline / Black Board Teaching
28.	Piezoresistive and capacitive pressure sensors	CO4	L3	2.5%	Offline / Black Board Teaching
29.	Resistive humidity sensors	CO4	L3	2.5%	Online / Interactive Learning
30.	Capacitive and thermal conduction moisture sensors	CO4	L3	2.5%	Offline / Black Board Teaching
31.	Applications and limitations Integration with systems	CO4	L3	2%	Offline / Black Board Teaching
32.	Numerical problems	CO4	L4	3%	Group based Learning
33.	Introduction to MEMS	CO5	L2	2%	Offline / Black Board Teaching

34.	MEMS sensors and actuators with applications	CO5	L3	2.5%	Offline / Black Board Teaching
35.	Nano-sensors and actuators	CO5	L3	2.5%	Experimentation / Board Teaching
36.	Smart sensors & actuators	CO5	L3	2.5%	Offline / Black Board Teaching
37.	Light-dependent resistor, embedded sensors	CO5	L2	2.5%	Offline / Black Board Teaching
38.	Wireless sensors and actuators	CO5	L3	2.5%	Offline / Black Board Teaching
39.	RFIDs: working and uses	CO5	L3	2%	Offline / Black Board Teaching
40.	Issues with smart/wireless sensors and Numerical problems	CO5	L4	3.5%	Group based Learning/ Activity based

Online	Offline				
	Black board teaching	Group based Learning	Learning through experimentation	Activity based Learning	Onsite/field-based learning
20%	55%	12%	10%	3%	0%

Dr. Baljinder Kaur

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Department of Electronics Engineering

Multiple Mode Teaching Learning Pattern

Name of Course with Code: Basic Electrical & Electronics Engineering (14251105)			Class: (EC A & B) I Semester		Session: July-Dec 2025	
Teaching Session	**Content to be Covered**	**CO's**	**Bloom's Level**	**% Coverage**	**Mode**	
1.	Voltage and Current Sources: Dependent and independent source	1	L2	3	Offline Teaching	
2.	Source conversion, Kirchhoff's Law	1	L3	3	Offline Teaching	
3.	Mesh and Nodal analysis	1	L4	3	Offline Teaching	
4.	Network theorems: Superposition theorem, Thevenin's theorem	1	L3	4	Offline Teaching	
5.	Network theorems: Norton's theorem and their applications	1	L3	4	Offline Teaching	
6.	Numerical solving/Discussion from Unit I		L4	2	Open discussion and Problem solving based learning	
7.	Generation of sinusoidal AC voltage, Definitions: Average value, R.M.S. value	2	L3	3	Offline Teaching	
8.	Definitions: Form factor and Peak factor of AC quantity, Concept of Phasor	2	L3	4	Offline Teaching	
9.	Analysis of R-L and R-C circuit	2	L3	3	Offline Teaching	
10.	Analysis R-L-C Series and Parallel circuit	2	L3	4	Offline Teaching	
11.	Power and importance of Power factor, Resonance in AC circuits.	2	L5	3	Offline Teaching	
12.	Numerical solving/Discussion from Unit II	2	L5	2	Open discussion and Problem solving based learning	
13.	Magnetic Circuits and Electromagnetism	3	L4	3	Offline Teaching	
14.	Transformers: Construction, principle, types	3	L2	3	Offline Teaching	
15.	Losses & efficiency, OC & SC test	3	L2	3	Offline Teaching	
16.	DC Machines: Motor, working Principles, Characteristics	3	L3	4	Offline Teaching	
17.	Generator, working Principles, Characteristics	3	L3	4	Offline Teaching	

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18.	Introduction to Induction Motors and Synchronous Machines	3	L2	3	Offline Teaching
19.	Numerical solving/Discussion from Unit III	3	L5	2	Open discussion and Problem solving based learning
20.	Number Systems and Logic Gates and Truth Tables	4	L2	4	Offline Teaching
21.	Logic Gates and Truth Tables	4	L2	3	Offline Teaching
22.	Diodes	4	L2	3	Offline Teaching
23.	Transistors (BJT),	4	L2	3	Offline Teaching
24.	Transistors (FET, MOSFET)	4	L2	3	Offline Teaching
25.	Multiplexers and Demultiplexers	4	L3	3	Offline Teaching
26.	Flip-Flops and Counters.	4	L3	3	Offline Teaching
27.	Numerical solving/Discussion from Unit IV	4	L5	2	Open discussion and Problem solving based learning
28.	Smart Grids and Smart Meters,	5	L3	3	Offline Teaching
29.	Application of Motors in Industrial Automation	5	L3	3	Offline Teaching
30.	Electric Vehicles and Renewable Systems	5	L2	3	Offline Teaching
31.	Sensors and Basic IoT Applications.	5	L3	3	Offline & Demonstration based learning
32.	**Add on Topics:** Circuit simulation on LTSPICE	5	L5	2	Demonstration based learning
33.	**Add on Topics:** Circuit simulation on LTSPICE	5	L5	2	Demonstration based learning

Online	Offline					
-	Offline Teaching	Group based Learning	Learning through Experimentation	Activity Based Learning	Activity /Problem based Learning	Onsite/ field-based learning/Open Discussion
	78.78%	-	-	9.09% -	12.12%	-

Dr. Kumar Gaurav
Assistant Professor
Department of Electronics Engineering

Department of Electronics Engineering

LECTURE PLAN

Name of Course with Code: Electronics Devices (14251103)	Class: B. Tech. Ist Year	Session: July-December 2025

Teaching Session	Content to be Covered	CO's	Blooms Level (BL)	% Coverage	Mode
1.	Basics of semiconductor	CO1	L2	3%	Offline / Black Board Teaching/ Interactive Learning
2.	PN junction properties and its formation	CO1	L3	3%	Offline / Black Board Teaching
3.	Equilibrium condition, Biased junction	CO1	L4	3%	Activity based learning
4.	PN junction diode characteristics	CO1	L3	3%	Offline / Black Board Teaching
5.	Derivation of diode current	CO1	L3	3%	Offline mode
6.	Breakdown mechanism, Capacitance of junction barrier	CO1	L3	3%	Offline / Black Board Teaching
7.	Diode Applications: Rectifiers	CO1	L3	3%	Offline / Black Board Teaching
8.	Clippers	CO1	L3	3%	Activity based learning
9.	Clampers and Voltage multiplier	CO1	L3	2%	Activity based learning
10	Operation of Zener diode	CO2	L3	2%	Offline / Black Board Teaching
11	Zener diode as a voltage regulator	CO2	L5	3%	Offline / Black Board Teaching
12	Numerical solving on zener diode	CO2	L5	3%	Activity based learning
13	Tunnel diode, Varactor diode	CO2	L2	3%	Activity based learning
14	Schottky diode, Light emitting diode	CO2	L2	2%	Offline / Black Board Teaching
15	Photo-diode and their applications	CO2	L2	3%	Activity based learning
16	Construction of BJT	CO3	L2	3%	Offline / Black Board Teaching

17	Working of BJT	CO3	L2	3%	Offline / Black Board Teaching
18	Input and output characteristics of CE configuration	CO3	L3	3%	Offline / Black Board Teaching
19	Input and output characteristics of CB and CC configuration	CO3	L3	3%	Offline / Black Board Teaching
20	Early effect, Regions of operation	CO3	L4	3%	Activity based learning
21	Transistor as an Amplifier	CO3	L3	3%	Activity based learning
22	Transistor as switch	CO3	L3	3%	Offline / Black Board Teaching
23	BJT Biasing and stability	CO3	L3	3%	Activity based learning
24	JFET construction and working	CO4	L3	3%	Offline / Black Board Teaching
25	Transfer and drain characteristics, parameters evaluation	CO4	L3	3%	Offline / Black Board Teaching
26	Equivalent model and voltage gain, CS configuration	CO4	L3	3%	Offline / Black Board Teaching
27	Voltage gain of CG and CD configuration	CO4	L3	3%	Offline / Black Board Teaching
28	Depletion MOSFET and its characteristics	CO4	L2	3%	Offline / Black Board Teaching
29	Enhancement MOSFET and its characteristics	CO4	L3	3%	Activity based learning
30	Introduction to Organic LED	CO5	L3	3%	Offline / Black Board Teaching
31	FinFET	CO4	L4	3%	Offline / Black Board Teaching
32	Tunnel FET	CO5	L4	3%	Offline / Black Board Teaching
33	High Electron Mobility Transistor (HEMT) and its applications	CO5	L4	2%	Activity based learning
34	Energy band variation of tunnel FET through TCAD tool	CO5	L2	2%	Learning through experimentation
35	Transfer characteristics plot of tunnel FET	CO5	L2	3%	Learning through experimentation

Online	Offline				
	Black board teaching	Group based Learning	Learning through experimentation	Activity based Learning	Onsite/field-based learning
-	63%	-	6%	31%	-

Dr. Varun Mishra
Assistant Professor
Department of Electronics Engineering

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DEPARTMENT OF ELECTRONICS ENGINEERING

Multiple Mode Teaching Learning Pattern

Name of Course with Code: Network Theory (14251104)	Class: B. Tech. 1ˢᵗ Year	Session: July-December 2025

Teaching Session	Content to be Covered	CO's	Blooms Level	% Coverage	Mode
1.	Node analysis	CO1	L2	3%	Offline / Black Board Teaching/ Interactive Learning
2.	Node analysis	CO1	L3	2%	Offline / Black Board Teaching/ Interactive Learning
3.	Node analysis using Supernode	CO1	L4	3%	Offline / Black Board Teaching/ Interactive Learning
4.	Mesh analysis	CO1	L3	3%	Offline & learning through experimentation
5.	Mesh analysis using supermesh	CO1	L4	3%	Offline / Black Board Teaching/ Interactive Learning
6.	Graph theory	CO1	L3	3%	Offline / Black Board Teaching/ Interactive Learning
7.	Graph theory	CO1	L3	3%	Offline / Black Board Teaching/ Interactive Learning
8.	Graph theory	CO1	L3	2%	Offline / Black Board Teaching/ Interactive Learning
9.	Superposition theorem	CO2	L3	3%	Offline / Black Board Teaching/ Interactive Learning
10.	Thevenin Theorem	CO2	L3	3%	Offline / Black Board Teaching/ Interactive Learning
11.	Norton Theorem	CO2	L3	3%	Offline / Black Board Teaching/ Interactive Learning
12.	Maximum power transfer theorem	CO2	L3	3%	Offline & learning through experimentation
13.	Reciprocity Theorem	CO2	L3	3%	Offline & learning through experimentation
14.	Duality theorem	CO2	L4	3%	Offline / Black Board Teaching/ Interactive Learning
15.	Substitution theorem	CO2	L3	3%	Offline / Black Board Teaching/ Interactive Learning
16.	First order circuits	CO3	L2	2%	Offline / Black Board Teaching/ Interactive Learning
17.	Transients in RL, RC and RLC circuits	CO3	L4	3%	Offline / Black Board Teaching/ Interactive Learning
18.	initial conditions, time constants	CO3	L3	3%	Offline / Black Board Teaching/ Interactive Learning
19.	Steady state analysis, Source free RC circuit, Source free RL circuit	CO3	L4	3%	Online & demonstration based learning

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20.	Step response of an RL, RC, RLC circuit	CO3	L3	3%	Offline & Learning through activity
21.	Transient and Steady State analysis using Laplace transform	CO3	L4	3%	Group based Learning
22.	Transient and Steady State analysis using Laplace transform	CO3	L4	3%	Offline / Black Board Teaching/ Interactive Learning
23.	Concept of Ports	CO4	L2	2%	Online / Interactive Learning
24.	Calculation of network functions for one port	CO4	L2	3%	Online / Interactive Learning
25.	Calculation of network functions for two port	CO4	L3	3%	Offline / Black Board Teaching/ Interactive Learning
26.	Two port parameters – Z& Y Parameters	CO4	L3	3%	Offline / Black Board Teaching/ Interactive Learning
27.	Two port parameters –hybrid and chain Parameters	CO4	L3	3%	Offline / Black Board Teaching/ Interactive Learning
28.	Relationship between two port network parameters	CO4	L4	3%	Offline / Black Board Teaching/ Interactive Learning
29.	Relationship between two port network parameters	CO4	L4	3%	Group based Learning
30.	T and π networks	CO4	L4	3%	Online &demonstration based learning
31.	Characteristics impedance & propagation constant	CO4	L3	2%	Online &demonstration based learning
32.	Impedance matching techniques	CO5	L3	3%	Offline / Black Board Teaching/ Interactive Learning
33.	Lumped Element matching (L, C networks)	CO5	L4	3%	Offline & Learning through activity
34.	Equalizer	CO5	L4	3%	Offline / Black Board Teaching/ Interactive Learning
35.	attenuator	CO5	L4	3%	Offline / Black Board Teaching/ Interactive Learning

Online	Offline				
	Black board teaching	**Group based Learning**	**Learning through experimentation**	**Activity based Learning**	**Onsite/field-based learning**
11.4%	68.5%	5.7%	8.5%	5.7%	0 %

Dr. R. P. Narwaria

Department of Electronics Engineering

Name of Course with Code: Computer Programming (14251102)	Class: Electronics (EL) I Sem.		Session: July-December 2025
S. No.	**Unit**	**Content to be Covered**	**Teaching Session**	**Mode**
1.	Unit 1	Overview of Programming Languages – Offline.	1	Offline & Open discussions
2.		Execution Process, Algorithms and Flowcharts.	2	Black Board Teaching
3.		Introduction to C++.	3	Black Board Teaching
4.		Operators & Expressions.	4	Black Board Teaching
5.		Input/Output, Operators & Expressions, Precedence of operators	5	Black Board Teaching & problem solving based learning
6.	Unit 2	Conditional Statements: if, if-else, nested if, switch statement with break and default	6	Online & demonstration based learning
7.		Loops: while, do-while, for, nested for	7-8	Black Board Teaching & Group based Learning
8.		Loop Control: break, continue, return	9	Online & demonstration based learning
9.		Decision making using logical operators	10-11	Online & demonstration based learning
10.	Unit 3	C++ Function Basics – Application and Syntax	12-13	Black Board Teaching & problem solving based learning
11.		Function Declaration and Definition, Function syntax	14-15	Black Board Teaching & Learning through projects
12.		Parameter types and names, Return types and values, Function Types	16-17	Online & demonstration based learning
13.		Function Scope and Lifetime, Function Templates	18-19	Black Board Teaching & problem solving based learning
14.		Real-world Problem Solving using functions	20-21	Black Board Teaching & problem solving based learning
15.		Recursion, Recursive function definition.	22	Black Board Teaching & Learning through experimentation
16.	Unit 4	C-style strings and C++ string class	23	Black Board Teaching & Open discussions
17.		Declaring and initializing strings	24-25	Black Board Teaching & problem solving based learning
18.		String functions	26-27	Black Board Teaching / Slides & Group based Learning

19.		One-dimensional and multi-dimensional arrays	28-29	Black Board Teaching / Slides + Learning through experimentation
20.		Basics of Pointers, Reference Variables	30	Black Board Teaching / Slides + Activity based Learning
21.		Advanced Programming Concepts in C++: Basics of graphics libraries	31-32	Black Board Teaching / Slides
22.		Event-driven programming and game loops.	33-35	Black Board Teaching / Slides
23.		Using C++ for performance-critical parts of ML/DL applications.	36	Learning through projects + Learning through experimentation
24.	Unit 5	Interfacing with system APIs	37-38	Learning through projects + Learning through experimentation
25.		APIs such as Linux syscalls, Windows API.	39-40	Black Board Teaching / Slides + Learning through experimentation

Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field based learning
7.89%	65.75%	5.26%	2.66%	10.52%	5.26%	2.66%	--