

Course Outcome



Session 2024-25 (Odd) Department of Electrical & Electronics Engineering

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- ❖ The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- ❖ The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

Department of Electrical & Electronics Engineering

3rd Semester			
S No.	Subject Code	Subject Name	Page No.
1	BAS-301	Technical Communication	1
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7	BEE-351	Circuit Simulation Lab	7
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10	BCC-351	Mini Project or Internship Assessment	10

5th Semester			
S No.	Subject Code	Subject Name	Page No.
1	BEE-501	Power System-I	11
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4	BEE-052	Sensors and Transducers	14
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9	BEE-551	Power System-I Lab	19
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11	BEE-553	Electrical Machines-II Lab	21



Dean (EEE)

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Department of Electrical & Electronics Engineering

7th Semester			
S No.	Subject Code	Subject Name	Page No.
1	KHU-701	Rural Development: Administration and Planning	22
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4	KEE-079	Utilization of Electrical Energy & Electric Traction	25
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6	KEN-751	Industrial Automation & PLC Lab	28
7	KEN-753	Project-I	29



Dean (EEE)

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 3rd Odd Semester
Course Name: Technical Communication	Course Code: BAS-301	Faculty: Dr. Babita Tyagi

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand the significance of value inputs in a classroom, process of value education, meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society.	Understand	Conceptual
CO2	Apply the meaning of Harmony in the Self the Co-existence of Self and Body.	Understand	Procedural
CO3	Apply the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships.	Understand	Procedural
CO4	Analyze the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.	Understand	Procedural
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.	Understand	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	-	-	-	-	-	1	1	1	2	3	2	2	-	-
CO2	-	-	-	-	-	-	-	1	1	3	2	2	-	-
CO3	-	-	-	-	-	-	-	1	2	3	2	2	-	-
CO4	-	-	-	-	-	1	1	-	1	3	2	3	-	-
CO5	-	-	-	-	-	-	-	-	2	3	2	1	-	-
PO Target	-	-	-	-	-	1	1	1	1.6	3	2	2	-	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 3rd Odd Semester
Course Name: Math-IV	Course Code: BAS-303	Faculty: Dr. Deepti Goel

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Identify the application of partial differential equations and apply for solving Linear and non- linear partial differential equations	Understand	Procedural
CO2	Understand the classification of second order partial differential equations	Understand	Procedural
CO3	Evaluate general solution of Heat, Wave, Laplace equations and Transmission lines.	Analyze	Procedural
CO4	Analyze the concept of moments, skewness, kurtosis and moment generating function and the linear and non-linear regression.	Analyze	Procedural
CO5	Apply the concept of probability, random variable and for solving the problem related to discrete and continuous probability distribution	Analyze	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	3	2	2	2	-	-	-	-	-	-	2	-	-
CO2	2	1	1	1	-	-	-	-	-	-	-	1	-	-
CO3	3	3	2	2	3	-	-	-	-	-	-	3	-	-
CO4	1	1	1	-	-	-	-	-	-	-	-	1	-	-
CO5	1	1	1	-	-	-	-	-	-	-	-	1	-	-
PO Target	2	1.8	1.4	1.66	2.5							1.6		



Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 3rd Odd Semester
Course Name: Python Programming	Course Code: BCC-302	Faculty: Prof. Nikita Sinha

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
	After completion of the course, the student will be able to		
CO1	Understand the fundamentals of Python syntax, semantics and Programming.	Understand	Factual, Conceptual
CO2	Acquire proficiency in handling strings and functions and be fluent in using Python control flow statements.	Apply	Conceptual, Procedural,
CO3	Determine the methods for ease of user to write python programs by utilizing the data structures like lists, dictionaries, tuples and sets.	Apply	Conceptual, Procedural
CO4	Apply the commonly used operations involved in file handling.	Apply	Conceptual, Procedural,
CO5	Explain and use different in-built functions of packages and connect with GUI programming.	Apply	Conceptual, Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	2	1	2	-	-	-	-	1	-	-	1	-	-
CO2	3	3	2	3	-	-	-	-	1	-	-	2	-	-
CO3	3	3	2	3	-	-	-	-	1	-	-	2	-	-
CO4	3	3	2	2	-	-	-	-	1	-	-	2	-	-
CO5	3	3	2	3	2	-	-	-	1	-	-	3	2	-
PO Target	3	2.8	1.8	2.6	2	-	-	-	1	-	-	2	2	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 3rd Odd Semester
Course Name: Electromagnetic Field Theory	Course Code: BEE-301	Faculty: Dr. Snigdha Chaturvedi

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Apply different coordinate systems and their application in electromagnetic field theory.	Apply	Conceptual
CO2	Analyze the concept of static electric field, current, properties of conductors and boundary conditions.	Analyze	Procedural
CO3	Analyze the concept of static magnetic field, magnetic scalar and vector potential.	Analyze	Procedural
CO4	Analyze the forces due to magnetic field, magnetization, magnetic boundary conditions and inductors.	Analyze	Procedural
CO5	Analyze displacement current, time varying fields, propagation and reflection of EM waves and transmission lines.	Metacognitive	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	2	1	2	-	-	-	-	1	-	-	1	-	-
CO2	3	3	2	3	-	-	-	-	1	-	-	2	-	-
CO3	3	3	2	3	-	-	-	-	1	-	-	2	-	-
CO4	3	3	2	2	-	-	-	-	1	-	-	2	-	-
CO5	3	3	2	3	2	-	-	-	1	-	-	3	2	-
PO Target	3	2.8	1.8	2.6	2	-	-	-	1	-	-	2	2	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 3rd Odd Semester
Course Name: Electrical Measurements & Instruments	Course Code: BEE-302	Faculty: Dr. Natwar Singh Rathore

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Analyze different types of instruments for measuring voltage, current, power and energy.	Analyze	Procedural
CO2	Understand measurement of electrical quantities resistance, inductance and capacitance with the help of bridges	Understand	Conceptual
CO3	Analyze the working of instrument transformers and find the errors in current and potential transformers	Analyze	Procedural
CO4	Understand the working of electronic instruments like voltmeter, multi-meter, frequency meter and CRO.	Understand	Conceptual
CO5	Apply the knowledge of transducers, their classifications and their applications for the measurement of physical quantities like motion, force, pressure, temperature, flow and liquid level.	Apply	Conceptual

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	3	3	2	-	-	-	-	-	-	-	2	3	-
CO2	2	2	1	1	-	-	-	-	-	-	-	2	2	-
CO3	2	3	3	3	-	-	-	-	-	-	-	2	2	-
CO4	2	2	1	1	-	-	-	-	-	-	-	2	1	-
CO5	3	3	3	3	-	-	-	-	-	-	-	2	2	-
PO Target	2.4	2.6	2.2	2	-	-	-	-	-	-	-	2	2	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 3rd Odd Semester
Course Name: Basics Signal Systems	Course Code: BEE-303	Faculty: Dr. Sumit Sharma

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
	After completion of the course, the student will be able to		
CO1	Draw the various types of signals & systems and perform mathematical operations on them.	Remember	Conceptual
CO2	Analyze Fourier series and Fourier transform and its applications to network analysis.	Analyze	Procedural
CO3	Analyze the properties of continuous time signals and system through Laplace transform to get the response of linear system to known inputs.	Analyze	Procedural
CO4	Construct the state-space models of SISO & MIMO system using the concept of state-space.	Apply	Procedural
CO5	Solve complex engineering problems using difference equations using the concepts of Z transform.	Apply	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	2	2	1	1	-	-	-	-	-	-	-	3	1	-
CO2	3	3	2	2	-	-	-	-	-	-	-	3	2	-
CO3	3	3	2	2	-	-	-	-	-	-	-	3	2	-
CO4	3	2	1	1	1	-	-	-	-	-	-	3	2	-
CO5	3	2	1	1	-	-	-	-	-	-	-	3	1	-
PO Target	2.8	2.4	1.4	1.4	1	-	-	-	-	-	-	3	1.6	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 3rd Odd Semester
Course Name: Circuit Simulation Lab	Course Code: BEE-351	Faculty: Dr. Rahat U Khan

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Apply the knowledge of basic circuit law, nodal and mesh analysis for given circuit.	Apply	Procedural
CO2	Analyze AC and DC circuits using simulation techniques.	Analyze	Procedural
CO3	Analyze the transient response of AC circuits.	Analyze	Procedural
CO4	Evaluate the two-port network parameters.	Evaluate	Procedural
CO5	Estimate the parameters of different filters.	Evaluate	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	2	-	-	3	-	-	-	1	1	-	1	1	1
CO2	3	2	-	-	3	-	-	-	1	1	-	1	1	1
CO3	3	2	-	-	3	-	-	-	1	1	-	1	1	1
CO4	3	2	-	-	3	-	-	-	1	1	-	1	1	1
CO5	3	2	-	-	3	-	-	-	1	1	-	1	1	1
PO Target	3	2	-	-	3	-	-	-	1	1	-	1	1	1

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 3rd Odd Semester
Course Name: Electrical Measurements & Instrumentation Lab	Course Code: BEE-352	Faculty: Dr. Natwar Singh Rathore

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand the importance of calibration of measuring instruments.	Understand	Conceptual
CO2	Demonstrate the construction and working of different measuring instruments.	Apply	Procedural
CO3	Apply the knowledge of AC and DC bridges in different measuring applications	Apply	Procedural
CO4	Determine electrical engineering parameters like voltage, current, power & phase difference in industry as well as in power generation, transmission and distribution sectors.	Evaluate	Conceptual
CO5	Analyze and solve the variety of problems in the field of electrical measurements.	Analyze	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	2	1	1	1	-	-	-	-	-	-	-	1	-	-
CO2	2	1	1	1	-	-	-	-	-	-	-	-	-	-
CO3	3	3	2	2	-	-	-	-	-	-	-	2	1	-
CO4	2	2	2	1	-	-	-	-	-	-	-	3	1	-
CO5	2	2	2	1	-	-	-	-	-	-	-	3	-	-
PO Target	2.2	1.8	1.6	1.2								2.25	1	

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 3rd Odd Semester
Course Name: Electrical Workshop	Course Code: BEE 353	Faculty: Dr. Masood Rizvi

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
	After completion of the course, the student will be able to		
CO1	Understand various types of electrical connections.	Understand	Factual
CO2	Analyze the difference between various electrical wires, cables and accessories.	Analyze	Conceptual
CO3	Understand the layout of electrical substation & various safety measures.	Understand	Conceptual
CO4	Understand the construction, working and application of various workshop tools.	Understand	Conceptual
CO5	Develop small circuits on printed circuit boards.	Apply	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	3	2	2	-	-	-	-	-	2	1	2	-	-
CO2	3	3	3	2	-	-	-	-	-	2	2	2	-	-
CO3	3	2	3	2	-	-	-	-	-	2	2	2	-	-
CO4	3	2	2	2	-	-	-	-	-	2	2	2	-	-
CO5	3	2	2	2	-	-	-	-	-	2	2	3	-	-
PO Target	3	2.4	2.4	2	-	-	-	-	-	2	1.8	2.2	-	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 3rd Odd Semester
Course Name: Mini Project & Internship Assessment	Course Code: BCC-351	Faculty: Dr. S.K Tripathi

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
	After completion of the course, the student will be able to		
CO1	Understand research papers for exploring new fields and review reporting.	Understand	Conceptual
CO2	Evaluate new directions of various cutting-edge technologies.	Create	Procedural
CO3	Create various skills by preparing detailed project report including all the findings.	Create	Conceptual Procedural
CO4	Effective communication by making an oral presentation to show the findings.	Apply	Procedural
CO5	Create facts related knowledge by preparing detailed report including outcomes.	Evaluate	Conceptual Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	2	-	2	-	1	-	-	-	-	2	2	-	-
CO2	3	3	-	2	2	1	2	-	2	-	2	2	-	-
CO3	3	2	-	3	2	1	2	-	2	-	2	2	-	-
CO4	-	1	-	1	-	-	-	-	-	3	-	1	-	-
CO5	-	2	-	1	1	1	2	-	2	-	2	2	-	-
PO Target	3	2		1.8	1.66	1	2		2	3	2	1.8	-	-



Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Power System-I	Course Code: BEE-501	Faculty: Dr. S.K Tripathi

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Describe the working principle and basic components of conventional and nonconventional power plants as well as the other aspects of power generation.	Understand	Factual, Conceptual
CO2	Analyze the role and functioning of different types of supply systems, conductors and performance of transmission lines.	Analyze	Conceptual Procedural
CO3	Calculate the sag and tension in overhead lines with wind & ice loading, potential distribution over a string of insulators, string efficiency and its improvement.	Apply	Conceptual Procedural
CO4	Calculate the inductance and capacitance of single phase, three phase lines with symmetrical and unsymmetrical spacing including effect of earth on capacitance of transmission lines.	Apply	Conceptual Procedural
CO5	Calculate the resistance and capacitance parameters of different types of cables including grading of cables.	Apply	Conceptual Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	2	2	1	1	-	-	1	-	-	-	-	1	2	1
CO2	3	3	2	1	-	-	-	-	-	-	-	1	2	1
CO3	3	3	1	1	-	-	-	-	-	-	-	1	2	1
CO4	3	3	1	2	-	-	-	-	-	-	-	1	2	1
CO5	3	3	1	1	-	-	-	-	-	-	-	1	2	1
PO Target	2.8	2.8	1.2	1.2			1					1	2	1

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Control System	Course Code: BEE-502	Faculty: Dr. Mohd. Shariz Ansari

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
	After completion of the course, the student will be able to		
CO1	Calculate the transfer function for the operation of open loop and closed loop control systems.	Apply	Procedural
CO2	Analyze the performance of basic control systems in the time domain.	Analyze	Procedural
CO3	Examine the stability of linear time-invariant systems in time domain using Routh Hurwitz criterion and root locus technique.	Apply	Procedural
CO4	Examine the stability of linear time-invariant systems in frequency domain using Nyquist criterion and Bode plot.	Apply	Procedural
CO5	Understand the different types of compensators to achieve the desired performance of control System by root locus and Bode plot method.	Understand	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	-	-	-	-	-	-	-	-	1	-	3	-	2
CO2	3	2	-	2	2	-	-	-	-	1	-	3	-	1
CO3	3	2	-	2	3	-	-	-	-	1	-	3	-	1
CO4	3	2	-	2	3	-	-	-	-	1	-	3	-	1
CO5	3	1	-	1	2	-	-	-	-	1	-	2	-	1
PO Target	3	1.75		1.75	2.5					1		2.8		1.2

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Electrical Machine-II	Course Code: BEE-503	Faculty: Dr. Vanya Goel

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Analyze the performance of the synchronous machines using voltage regulation methods, voltage and frequency control, load sharing and parallel operation	Analyze	Procedural
CO2	Analyze the performance of salient pole synchronous machine using two reaction theory and effect of varying field current at different loads	Analyze	Procedural
CO3	Analyze the performance of induction machine using phasor diagram and torque slip characteristics	Analyze	Procedural
CO4	Analyze the performance of induction machine using different speed control methods	Analyze	Procedural
CO5	Analyze the performance of single-phase induction machine using no-load and block rotor test and different starting methods	Analyze	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	2	2	1	-	-	-	-	-	1	1	3	-	-
CO2	3	1	3	-	-	-	-	-	-	-	2	1	-	-
CO3	3	2	3	-	-	-	-	-	-	-	1	2	-	-
CO4	3	2	3	1	-	-	-	-	-	1	1	3	1	-
CO5	2	2	2	-	-	-	-	-	-	-	1	3	-	-
PO Target	2.8	1.8	2.6	1	-	-	-	-	-	1	1.2	2.4	1	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Sensors & Transducer	Course Code: BEE-052	Faculty: Prof. Ameer Faisal

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
	After completion of the course, the student will be able to		
CO1	Understand sensors used in industry for measurement of displacement, force and pressure.	Understand	Conceptual
CO2	Understand sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.	Understand	Conceptual
CO3	Analysis of image processing and machine vision system in a pick and place robot.	Apply	Procedural
CO4	Analyze data acquisition systems.	Analyze	Procedural
CO5	Apply the concept of smart sensors in recent technologies like e Vehicle, and Industrial robots.	Apply	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	2	1	2	1	1	-	-	-	-	-	-	2	-	-
CO2	2	1	2	1	1	-	-	-	-	-	-	1	-	-
CO3	3	2	2	2	1	-	-	-	-	-	-	2	-	-
CO4	3	2	2	2	2	-	-	-	-	-	-	1	-	-
CO5	3	2	2	1	1	-	-	-	-	-	-	1	-	2
PO Target	2.6	1.6	2	1.4	1.2	-	-	-	-	-	-	1.4		2

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Industrial Automation & Control	Course Code: BEE-053	Faculty: Prof. Salim

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand the concept of automation, its terminology and basic communication protocols	Understand	Conceptual
CO2	Understand the working and applications of relay	Apply	Procedural
CO3	Learn the basics of PLC, its operation and applications in automation.	Apply	Procedural
CO4	Study the basics of industrial sensors and its interfacing	Apply	Procedural
CO5	Understand the basics of pneumatic systems and its applications	Apply	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	2	-	1	1	3				2			2		1
CO2	2	-	3	2	3				-			2		2
CO3	2	-	3	2	3				-			2		2
CO4	2	-	2	1	1				-			2		-
CO5	2	-	1	1	1				-			2		-
PO Target	2.00		2.0	1.40	2.20				2.0			2		1.66

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Neural Network & Fuzzy System	Course Code: BEE-056	Faculty: Dr. Neeraj Kumar Gupta

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Analyze the concepts of learning in neural network.	Analyze	Conceptual
CO2	Apply neural network for designing linear and non-linear type problems.	Apply	Procedural
CO3	Analyze the concepts of fuzzy logic.	Analyze	Procedural
CO4	Apply fuzzy logic for designing control systems.	Apply	Procedural
CO5	Apply the concepts of neuro-fuzzy networks and neuro-fuzzy systems for solving conventional problems.	Apply	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	2	1	2	1	1	-	-	-	-	-	-	2	2	1
CO2	2	1	2	2	1	-	-	-	-	-	-	1	2	2
CO3	2	1	1	1	1	-	-	-	-	-	-	2	1	1
CO4	1	2	1	1	2	-	-	-	-	-	-	1	2	2
CO5	2	1	1	1	1	-	-	-	-	-	-	1	2	2
PO Target	1.80	1.20	1.4	1.20	1.20	-	-	-	-	-	-	1.40	1.80	1.60

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Analog & Digital Communication	Course Code: BEE-058	Faculty: Dr. Ruchika Singh

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Apply the concept of Amplitude Modulation in communication system.	Understand	Conceptual
CO2	Apply the concept of Frequency & Phase modulation in communication system	Apply	Procedural
CO3	Explore the concept of different Pulse Modulation Techniques.	Understand	Conceptual
CO4	Analyze the concept of Digital Modulation Techniques and their use in communication system.	Understand	Conceptual
CO5	Analyze the concept of Information Theory in Communication Engineering	Analyze	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	2	2	2	3	1	1	-	-	-	-	-	2	2	2
CO2	3	3	2	3	2	1	-	-	-	-	-	3	2	2
CO3	3	3	3	3	3	2	-	-	-	-	-	3	2	3
CO4	3	3	3	3	3	2	-	-	-	-	-	3	2	3
CO5	2	2	2	2	1	2	-	-	-	-	-	2	2	1
PO Target	2.6	2.6	2.4	2.8	2.0	1.6	-	-	-	-	-	2.6	2.0	2.2

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Constitution of India	Course Code: BNC-501	Faculty: Dr. Yaduvir Singh

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Identify the basic features and modalities about Indian constitution.	Remember	Factual
CO2	Differentiate the functioning of Indian parliamentary system at the center and state level.	Understand	Conceptual
CO3	Demonstrate different aspects of Indian Legal System and its related bodies.	Apply	Factual
CO4	Apply different laws and regulations related to engineering practices.	Apply	Factual
CO5	Interpret the role of engineers with different organizations and governance models	Evaluate	Conceptual

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	-	-	-	-	-	-	-	2	2	-	-	2	-	-
CO3	-	-	-	-	-	-	-	2	2	-	-	2	-	-
CO4	-	-	-	-	-	2	3	2	2	-	-	2	-	-
CO5	-	-	-	-	-	3	2	2	2	-	-	2	-	-
PO Target	-	-	-	-	-	2.5	2.5	2	2	-	-	2	-	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Power System-I Lab	Course Code: BEE 551	Faculty: Dr. S.K Tripathi

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Simulation of power system model for various parameters of transmission line	Apply	Procedural
CO2	Simulation of power system model for ABCD constant of transmission line	Apply	Procedural
CO3	Simulation of power system model for the Ferranti effect in transmission line	Apply	Procedural
CO4	Simulation of power system model for the sag & tension and string efficiency of insulator of transmission line	Apply	Procedural
CO5	Simulation of power system model for the skin effect, and ground clearance of transmission line.	Apply	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	2	-	1	3	-	-	-	1	1	-	1	1	-
CO2	3	2	-	1	3	-	-	-	1	1	-	1	1	-
CO3	3	2	-	1	3	-	-	-	1	1	-	1	1	-
CO4	3	2	-	1	3	-	-	-	1	1	-	1	1	-
CO5	3	2	-	1	3	-	-	-	1	1	-	1	1	-
PO Target	3	2	-	1	3	-	-	-	1	1	-	1	1	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Control System Lab	Course Code: BEE 552	Faculty: Dr. Satish Kumar

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
	After completion of the course, the student will be able to		
CO1	Analyze the characteristics of control system components like ac servo motor, synchro, potentiometer, servo voltage stabilizer.	Analyze	Procedural
CO2	Analyze the performance of control systems with different controllers / compensators.	Analyze	Procedural
CO3	Analyze the behavior of dc motor in open loop and closed loop.	Analyze	Procedural
CO4	Analyze the system's stability with different methods of time & frequency domain using MATLAB software.	Analyze	Procedural
CO5	Apply the conversion of transfer functions into state space & vice versa and check the performance parameters in time domain response of a second order system for step input via MATLAB software.	Analyze	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	2	-	1	2	-	-	-	-	2	-	2	2	-
CO2	3	2	-	1	2	-	-	-	-	2	-	2	2	-
CO3	3	2	-	1	2	-	-	-	-	2	-	2	-	-
CO4	2	1	-	2	3	-	-	-	-	1	-	3	-	-
CO5	2	1	-	2	3	-	-	-	-	1	-	3	-	-
PO Target	2.6	1.6		1.4	1.4	-	-	-	-	1.6		2.4	2	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Electrical Machine-II Lab	Course Code: BEE 553	Faculty: Dr. Masood Rizvi

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Calculate the parameters of the synchronous machines.	Analyze	Procedural
CO2	Understand parallel operation of two alternators.	Analyze	Procedural
CO3	Determine the parameters of the three phase induction motors.	Analyze	Procedural
CO4	Evaluate the performance of single-phase induction motor under different operating conditions	Analyze	Procedural
CO5	Evaluate the performance of synchronous motor	Analyze	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	-	2	2	-	-	-	-	-	1	-	2	-	-
CO2	2	-	2	-	-	-	-	-	-	-	-	3	-	-
CO3	3	-	2	2	-	-	-	-	-	1	-	2	1	-
CO4	3	-	2	2	-	-	-	-	-	1	-	2	1	-
CO5	3	-	1	1	-	-	-	-	-	1	-	3	-	-
PO Target	2.8	-	1.8	1.4	-	-	-	-	-	1	-	2.6	1	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 5th Odd Semester
Course Name: Rural Development: Administration & Planning	Course Code: KHU 701	Faculty: Dr. Ruchika Singh

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand the concepts , basics and importance of rural development	Understand	Conceptual
CO2	Explain pre and post-independence rural development programs.	Understand	Procedural
CO3	Understand the importance, structure, significance of Panchayati raj and rural administration.	Understand	Conceptual
CO4	Acquire the knowledge about the need and importance of human resource development in rural sector.	Understand	Conceptual
CO5	Examine the importance of rural industrialization and entrepreneurship	Apply	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO- 2
CO1	-	-	-	-	-	2	2	2	-	-	-	2	-	-
CO2	-	-	-	-	-	1	1	1	-	-	-	1	-	-
CO3	-	-	-	-	-	1	1	1	-	-	-	1	-	-
CO4	-	-	-	-	-	2	3	2	2	-	-	2	-	-
CO5	-	-	-	-	-	2	3	2	2	-	1	2	-	-
PO Target	-	-	-	-	-	1.6	2	1.6	2	-	1	1.6	-	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 7th Odd Semester
Course Name: Energy Conservation & Auditing	Course Code: KEE 071	Faculty: Dr. S.K Tripathi

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Analyze the energy conservation/saving opportunities in different electric system and understand related legislations.	Analyze	Factual, Procedural
CO2	Evaluate the energy saving behavior of utilities through implementation of demand side management (DSM).	Evaluate	Procedural
CO3	Analyze energy audit & management and preparation of energy audit report for different energy conservation instances.	Analyze	Procedural
CO4	Apply the energy audit for Mechanical Utilities.	Apply	Procedural
CO5	Evaluate cost-effective measures towards improving energy efficiency and energy conservation by implementation of energy efficient technologies	Evaluate	Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	3	2	1	-	1	2	-	-	-	-	2	-	1
CO2	3	3	-	2	-	1	2	1	-	-	-	2	-	1
CO3	3	3	2	2	-	1	2	-	2	1	1	3	-	1
CO4	3	3	2	2	-	-	1	-	2	1	-	2	-	1
CO5	3	3	1	2	-	1	2	-	-	-	-	2	-	1
PO Target	3	3	1.75	1.8	-	1	1.8	1	2	1	1	2.2	-	1

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 7th Odd Semester
Course Name: Power System Protection	Course Code: KEN-077	Faculty: Dr. Brijesh Singh

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand the need for the power system protection devices.	Understand	Conceptual
CO2	Explain Relay types, basic terminology and its application.	Understand	Conceptual
CO3	Examine types of faults and protection scheme for major power system components	Apply	Conceptual
CO4	Describe the circuit breaker operation, testing and types.	Apply	Conceptual
CO5	Explain the electronic relay, microprocessor and computer-based protection schemes	Understand	Conceptual

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	1	-	1	1	-	-	1	-	-	-	-	2	-	-
CO2	1	2	1	1	-	-	1	-	-	-	-	2	-	-
CO3	2	2	2	2	-	-	1	-	-	-	-	2	-	-
CO4	2	2	2	2	-	-	1	-	-	-	-	2	-	-
CO5	2	-	1	1	-	-	1	-	-	-	-	2	-	-
PO Target	1.60	1.20	1.40	1.40	-	-	1.00	-	-	-	-	2.00	-	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 7th Odd Semester
Course Name: Utilization of Electrical Energy & Electric Traction	Course Code: KEE-079	Faculty: Dr. Ankur Maheshwari

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
	After completion of the course, the student will be able to		
CO1	Understand different types of electric heating.	Understand	Conceptual
CO2	Apply concept of electric welding and electrolyte process.	Apply	Procedural
CO3	Design of interior and exterior lighting systems, illumination levels for various purposes light fittings, factory lighting, floodlighting, street lighting.	Apply	Procedural
CO4	Apply the fundamental concepts of electric traction.	Apply	Procedural
CO5	Apply the knowledge of power electronics converters in Electric Traction.	Apply	Conceptual

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	1	1	-	-	-	-	-	-	-	-	-	2	-	-
CO2	3	1	-	1	-	-	-	-	-	-	-	2	-	-
CO3	3	3	3	3	2	2	-	-	1	-	1	3	-	-
CO4	3	2	1	2	1	1	1	-	-	-	-	2	-	-
CO5	3	3	1	2	1	1	1	-	-	-	-	2	-	-
PO Target	2.6	2	1.66	2	1.33	1.33	1	-	1	-	1	2.2	-	-

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 7th Odd Semester
Course Name: Renewable Energy Resources	Course Code: KOE-074	Faculty: Dr. Arvind Kumar Sharma

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand various non-conventional energy resources and their availability along with knowledge on solar cells.	Understand	Factual
CO2	Apply the concept of solar radiation on flat plate and focusing type collectors to convert solar energy into electrical energy.	Apply	Conceptual
CO3	Understand the concept of electrical energy generation from geothermal energy, magneto-hydro dynamics and fuel cells.	Understand	Conceptual
CO4	Understand the concept of electrical energy generation from thermo-electrical thermionic and wind energy conversions.	Understand	Conceptual
CO5	Understand biomass, ocean thermal, wave and tidal wave energy conversions.	Understand	Conceptual

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	1			1		2	3			1		1		
CO2	3			2		3	3			1		2		
CO3	1			2		2	3			1		2		
CO4	1			2		2	3			1		2		
CO5	1			2		2	3			1		2		
PO Target	1.4			1.8		2.2	3			1		1.8		

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 7th Odd Semester
Course Name: Industrial Automation & PLC Lab	Course Code: KEN-751	Faculty: Prof. Sheetal

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
	After completion of the course, the student will be able to		
CO1	Understand automation, PLC, I/O modules of PLC, Programming languages and instructions of PLC	Understand	Conceptual
CO2	Analyze Ladder diagram concept to test digital logic gates, Boolean expression, Demorgan's theorem."	Apply	Procedural
CO3	Understand the Ladder program for DOL starter, timers, and counters	Understand	Conceptual
CO4	Understand evolution and architecture of DCS, hierarchical control in DCS, programming DCS	Understand	Conceptual
CO5	Explain the concept of basic digital electronics and data manipulation, basic PLC circuits for entry-level PLC applications.	Understand	Conceptual

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	2	1	1	-	1	-	1	-	1	-	-	2	-	1
CO2	3	2	2	1	1	-	1	-	1	-	-	2	-	2
CO3	2	1	1	-	1	-	1	-	1	-	-	2	-	-
CO4	2	1	2	2	2	-	2	-	1	-	-	3	-	-
CO5	2	1	1	-	1	-	1	-	1	-	-	2	-	1
PO Target	2.2	1.2	1.4	1.5	1.2	-	1.2	-	1.00	-	-	2.2	-	1.33

Department of Electrical & Electronics Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 7th Odd Semester
Course Name: Project-I	Course Code: KEN-753	Faculty: Dr. Ruchika Singh

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
	After completion of the course, the student will be able to		
CO1	Demonstrate a sound technical knowledge of their selected project topic.	Understand	Conceptual
CO2	Identification of problem, interpretation and solution.	Apply	Procedural
CO3	Formulate engineering solutions to complex problems utilizing a systems approach.	Analyze	Conceptual Procedural
CO4	Develop an engineering project and communicate with engineers and the community at large in written and oral forms.	Apply	Procedural
CO5	Demonstrate the knowledge, skills and attitudes of a professional engineer as a team.	Evaluate	Conceptual Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
POs	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	1	-	2	-	1	1	1	1	2	2	2	2	1
CO2	3	2	1	2	-	2	2	-	2	2	3	2	2	2
CO3	3	2	3	3	-	1	2	2	3	2	3	2	3	3
CO4	3	2	2	3	3	1	1	-	3	3	3	3	3	3
CO5	2	1	1	2	-	1	1	-	2	2	2	2	2	2
PO Target	2.8	1.6	1.75	2.4	3.0	1.20	1.40	1.50	2.2	2.2	2.6	2.2	2.4	2.2

Department of Electrical & Electronics Engineering

THE END



Dean (EEE)