Course Outcome

AUTONOMOUS

Session 2024-25 (Odd)

Department of Electrical & Computer 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.

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1ˢᵗ Semester

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Dean (ELCE)

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

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❖ 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.

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 1st Odd Semester
Course Name: Calculus for Engineers	Course Code: K24AS11	Faculty: Dr. Ritu 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	Apply the concept of partial differentiation in application of homogeneous and composite functions.	Apply	Procedural
CO2	Apply knowledge of partial differentiation in extrema, series expansion of functions and Jacobians.	Apply	Procedural
CO3	Construct the transformations using the concept of analyticity and harmonicity of complex functions.	Apply	Procedural
CO4	Employ the concept of multiple integration to find the area of bounded region.	Apply	Procedural
CO5	Apply the concept of vector differentials to study the properties of point functions.	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	-	-	-	-	1	-	-	-	2	2	2
CO2	2	2	2	-	-	-	-	1	-	-	-	2	2	2
CO3	3	2	2	-	-	-	-	1	-	-	-	1	3	2
CO4	3	2	2	-	-	-	-	1	-	-	-	1	3	2
CO5	3	2	2	-	-	-	-	1	-	-	-	1	3	2
PO Target	2.6	2	2					1				1.4	2.6	2

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 1st Odd Semester
Course Name: Semiconductor Physics and Devices	Course Code: K24AS12	Faculty: Dr. Vipin 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	Illustrate the basic concept of crystalline materials and their appropriate use.	Apply	Procedural
CO2	Apply the fundamentals of basic semiconductor Physics on transistor and MOSFET.	Apply	Procedural
CO3	Apply the concepts of semiconductor Physics in aspect of solar cell and Zener diode.	Apply	Procedural
CO4	Implementing of semiconductor Physics to study various characteristics of optoelectronic devices.	Apply	Procedural
CO5	Apply the concept of Quantum Physics to study various phenomenon.	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	2	-	-	2	-	3	2	1
CO2	3	2	-	-	-	2	2	-	-	2	-	3	3	2
CO3	3	2	-	-	-	2	2	-	-	2	-	3	3	2
CO4	3	2	-	-	-	2	2	-	-	2	-	3	3	2
CO5	2	1	-	-	-	-	-	-	-	1	-	2	2	1
PO Target	2.6	1.6	-	-	-	2	2	-	-	1.8	-	-	2.6	1.6

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 1st Odd Semester
Course Name: Programming for Problem Solving	Course Code: K24IT11	Faculty: Prof. Shivam

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	Given a computational problem, identify and abstract the programming task involved.	Apply	Conceptual
CO2	Approach the programming tasks using techniques learned and write pseudo-code.	Apply	Procedural
CO3	Choose the right data representation formats based on the requirements of the problem.	Apply	Conceptual
CO4	Use comparisons and limitations of the various programming constructs and choose the right one for the task in hand.	Apply	Conceptual
CO5	By learning the basic programming constructs, students can easily switch over to any other language in future.	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	-	-	2	-	-	1	-	-	-	2	-	2
CO2	3	3	-	2	2	-	-	1	-	-	-	2	-	2
CO3	3	3	-	2	2	-	-	1	-	-	-	2	-	2
CO4	3	3	2	2	2	-	-	1	-	-	-	2	-	2
CO5	3	3	2	2	2	-	-	1	-	-	-	2	-	2
PO Target	3	3	2	2	2	-	-	1	-	-	-	2	-	2

Department of Electrical & Computer Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 1st Odd Semester
Course Name: Explorations in Electrical Engineering	Course Code: K24EEE13	Faculty: Dr. Rajeev 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	Understand the concepts of electric circuit solutions with DC supply using mesh-nodal analysis and Network Theorems.	Understand	Conceptual
CO2	Apply the concepts of electrical circuits with AC supply in single and three phase system	Apply	Procedural
CO3	Analyze the equivalent circuit and performance of single-phase AC transformer	Analyze	Procedural
CO4	Illustrate the working principle of induction motors, synchronous machines and DC machines.	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	-	-	-	-	-	-	-	2	-	-
CO2	3	2	2	2	-	-	-	-	-	-	-	2	-	-
CO3	3	3	2	2	-	-	-	-	-	-	-	3	-	-
CO4	3	3	2	2	-	-	-	-	-	-	-	3	-	-
PO Target	2.75	2.5	2	2	-	-	-	-	-	-	-	2.5	-	-

Department of Electrical & Computer Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 1st Odd Semester
Course Name: IoT and Embedded Systems Lab	Course Code: K24EEE11	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 basic concepts of sensors and transducers.	Understand	Conceptual
CO2	Understand basics of embedded system and different IoT boards.	Understand	Conceptual
CO3	Apply basic operations and programming techniques of IoT devices.	Apply	Procedural
CO4	Apply smart technology knowledge through case studies.	Apply	Procedural
CO5	Understand the basic concepts of sensors and transducers.	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	-	-	-	2	2	2	-	-	-	-	2	-	2
CO2	2	-	2	-	2	2	2	-	2	-	-	2	-	2
CO3	3	-	3	2	3	2	2	-	2	-	-	2	-	3
CO4	3	2	3	3	3	2	2	-	2	-	-	2	-	3
CO5	2	-	-	-	2	2	2	-	-	-	-	2	-	2
PO Target	2.4	2	2.66	2.5	2.4	2	2	-	2	-	-	2	-	2.4

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 1st Odd Semester
Course Name: Design Thinking	Course Code: K24CSIT11	Faculty: Dr. Natwar Singh Rathore

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome** After completion of the course, the student will be able to	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
CO1	Understand the basic requirements of a good design.	Understand	Conceptual
CO2	Empathize and ideate the solutions to problems in his environment	Understand	Conceptual
CO3	Prototype and test the developed solutions.	Apply	Procedural
CO4	Apply the principles of design thinking on developing innovative solutions to the real-world problems.	Apply	Procedural
CO5	Understand the basic requirements of a good design.		

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	3	3	2	2	2	2	-	2	2	-	2	3	-
CO2	1	3	3	2	2	2	2	-	2	2	-	2	3	-
CO3	1	3	3	2	2	2	-	-	2	2	-	2	3	-
CO4	1	3	3	2	2	2	2	-	2	2	-	2	3	-
CO5	1	3	3	2	2	2	2	-	2	2	-	2	3	-
PO Target	1	3	3	2	2	2	2	-	2	2	-	2	3	-

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 1st Odd Semester
Course Name: Semiconductor Physics and Devices Lab	Course Code: K24AS12P	Faculty: Dr. Soniya Juneja

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome After completion of the course, the student will be able to	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
CO1	Illustrate the basic concept of crystalline materials and their appropriate use.	Understand	Conceptual
CO2	Apply the fundamentals of basic semiconductor Physics on transistor and MOSFET.	Apply	Procedural
CO3	Apply the concepts of semiconductor Physics in aspect of solar cell and Zener diode.	Apply	Procedural
CO4	Implementing of semiconductor Physics to study various characteristics of optoelectronic devices.	Apply	Conceptual
CO5	Apply the concept of Quantum Physics to study various phenomenon.	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	2	1	-	-	-	2	2	-	-	2	-	3	2	1
CO2	3	2	-	-	-	2	2	-	-	2	-	3	3	2
CO3	3	2	-	-	-	2	2	-	-	2	-	3	3	2
CO4	3	2	-	-	-	2	2	-	-	2	-	3	3	2
CO5	2	1	-	-	-	-	-	-	-	1	-	2	2	1
PO Target	2.6	1.6	-	-	-	2	2	-	-	1.8	-	2.8	2.6	1.6

Department of Electrical & Computer Engineering

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 1st Odd Semester
Course Name: Programming for Problem Solving Lab	Course Code: K24IT11P	Faculty: Prof. Umang Rastogi

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome** After completion of the course, the student will be able to	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
CO1	Apply programming constructs of C language to solve real-world problems.	Apply	Procedural
CO2	Use the concepts of looping, branching, and decision-making statements for a given problem.	Apply	Conceptual
CO3	Develop Solutions to problems using modular programming constructs such as functions and recursion.	Apply	Procedural
CO4	Demonstrate the ability to write C programs using pointers, strings structures and unions.	Understand	Conceptual
CO5	Design a solution to problems using the concepts of pointers and files handling.	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
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CO4	3	3	2	2	2	-	-	1	-	-	-	2	-	2
CO5	3	3	2	2	2	-	-	1	-	-	-	2	-	2
PO Target	3	3	2	2	2	-	-	1	-	-	-	2	-	2

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 1ˢᵗ Odd Semester
Course Name: IoT and Embedded Systems Lab	Course Code: K24EEE11P	Faculty: Dr. Ankur Maheshwari

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome After completion of the course, the student will be able to	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
CO1	Understand the basic concepts of sensors and transducers.	Understand	Conceptual
CO2	Understand basics of embedded system and different IoT boards.	Understand	Conceptual
CO3	Apply basic operations and programming techniques of IoT devices.	Apply	Procedural
CO4	Apply smart technology knowledge through case studies.	Apply	Procedural

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CO2	2	-	2	-	2	2	2	-	2	-	-	2	-	2
CO3	3	-	3	2	3	2	2	-	2	-	-	2	-	3
CO4	3	2	3	3	3	2	2	-	2	-	-	2	-	3
PO Target	2.5	2	2.66	2.5	2.5	2	2	-	2	-	-	2	-	2.5

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 1st Odd Semester
Course Name: Explorations in Electrical Engineering Lab	Course Code: K24EEE13P	Faculty: Dr. Rajeev Kumar

Tagging COs with BLs & KCs

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CO2	3	2	2	2	-	-	-	-	-	-	-	2	-	-
CO3	3	3	2	2	-	-	-	-	-	-	-	3	-	-
CO4	3	3	2	2	-	-	-	-	-	-	-	3	-	-
PO Target	2.75	2.5	2	2	-	-	-	-	-	-	-	2.5	-	-

Program Name: B.Tech.	Academic Session: 2024-25	Semester: 1st Odd Semester
Course Name: Communications Skills	Course Code: K24ASH11P	Faculty: Dr. Soniya Verma

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome After completion of the course, the student will be able to	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
CO1	Get basic understanding of language dimensions (LSRW) and Communication Skills.	Apply	Factual
CO2	Apply correct English usage and formal style of writing.	Apply	Procedural
CO3	Analyze the usage of verbal and non-verbal cues in presentation and day-to-day communication.	Analyze	Procedural
CO4	Evaluate Communication skills with respect to the nature and objectives of workplace.	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	-	1	-	-
CO2	-	-	-	-	-	-	-	-	-	3	-	1	-	-
CO3	-	-	-	-	-	-	-	-	-	3	-	1	-	-
CO4	-	-	-	-	-	-	-	-	-	3	-	1	-	-
PO Target	-	-	-	-	-	-	-	-	-	3		1	-	-

THE END

Dean (ELCE)