Course Outcomes and CO-PO,PSO Mapping

Session 2023-24

Department of Information Technology

13 KM STONE, GHAZIABAD-MEERUT ROAD, GHAZIABAD – 201206

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Department of Information Technology

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3rd Semester		
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4	BCS 302	Computer Organization and Architecture
5	BCS 303	Discrete Structure & Theory of Logic
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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd** **Semester: 3rd**

Course Name: Sensor & Instrumentation **Course Code: BOE305** **Course Coordinator Name: Dr. Niraj Singh Mehta**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Apply the use of sensors for measurement of displacement, force and pressure.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO2	Employ commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12, PSO1, PSO2	Apply	P, M
CO3	Demonstrate the use of virtual instrumentation in automation industries.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12, PSO1, PSO2	Understand	C, P
CO4	Identify and use data acquisition methods.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12, PSO1, PSO2	Apply	F, C
CO5	Comprehend intelligent instrumentation in industrial automation.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12, PSO1, PSO2	Understand	C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Niraj Singh Mehta		Dr Narendra Kumar	

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd Semester: 3rd**

Course Name: Sensor & Instrumentation **Course Code: BOE 305** **Course Coordinator Name: Dr. Niraj Singh Mehta**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	2	2	1	-	-	-	-	1	1	1	2	2
CO2	2	3	3	2	1	-	-	-	-	1	1	1	2	2
CO3	2	2	3	3	1	-	-	-	-	1	1	1	2	2
CO4	2	3	3	2	1	-	-	-	-	1	1	1	1	1
CO5	1	3	2	3	1	-	-	-	-	1	1	1	1	1
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Niraj Singh Mehta		Dr Narendra Kumar	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd** **Semester: 3rd**

Course Name: Universal Human Values **Course Code: BVE 301** **Course Coordinator Name: Prof. Amit Kumar**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Understand the essential complementarily between 'VALUES" and 'SKILLS'.	PO6, PO7, PO8, PO9, PO12	Understand	F, P
CO2	Understand how to ensure sustained happiness and prosperity.	PO6, PO7, PO8, PO9, PO12	Create	C
CO3	Apply understanding of values and human reality to develop a holistic perspective towards life, and profession.	PO6, PO7, PO8, PO9, PO12	Evaluate, Create	P, C
CO4	Analyze harmony in nature and existence, and work out their mutually fulfilling participation in the nature.	PO6, PO7, PO8, PO9, PO12	Understand, Create	F, C
CO5	Analyze ethical and unethical practices to actualize a harmonious environment wherever they work.	PO6, PO7, PO8, PO9, PO12	Create	C

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Amit Kumar			

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

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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd Semester: 3rd**

Course Name: Universal Human Values **Course Code: BVE 301** **Course Coordinator Name: Prof. Amit Kumar**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	1	1	2	2	-	-	3	-	-
CO2	-	-	-	-	-	2	2	3	3	-	-	3	-	-
CO3	-	-	-	-	-	3	3	2	3	-	-	3	-	-
CO4	-	-	-	-	-	2	3	2	3	-	-	3	-	-
CO5	-	-	-	-	-	2	3	3	2	-	-	3	-	-
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Amit Kumar			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd** **Semester: 3rd**

Course Name: Data Structure **Course Code: BCS 301** **Course Coordinator Name: Dr. Sanjeev Kumar**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand the concept of algorithm complexity and fundamental data structures.	PO1, PO2, PO3, PO5, PO10, PO12, PSO1, PSO2	Understand	C, P
CO2	Apply the knowledge of fundamentals data structures to implement linear data structures.	PO1, PO2, PO3, PO5, PO10, PO12, PSO1, PSO2	Apply	C, P
CO3	Practice standard algorithms for searching and sorting.	PO1, PO2, PO3, PO5, PO10, PO12, PSO1, PSO2	Apply	C, P
CO4	Apply the concept of recursion to implement non-linear data structure and operations.	PQ1, PO2, PO3, PO5, PO10, PO12, PSO1, PSO2	Apply	C, P
CO5	Analyze various graph algorithms to solve real-world problems.	PO1, PO2, PO3, PO5, PO10, PO12, PSO1, PSO2	Analyze	C, P, M

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Saurabh Sharma		Prof. Deepak Vishwakarma	
Dr. Sanjeev Kumar			

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.
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Department of Information Technology
Academic Session: 2023-24

Year: 2nd **Semester: 3rd**

Program Name: B. Tech

Course Name: Data Structure

Course Code: BCS 301

Course Coordinator Name: Dr. Sanjeev Kumar

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	1	-	3	-	-	-	-	1	-	3	2	3
CO2	3	2	2	-	3	-	-	-	-	1	-	3	2	3
CO3	3	2	2	-	3	-	-	-	-	1	-	3	2	3
CO4	3	2	2	-	3	-	-	-	-	1	-	3	2	3
CO5	3	3	3	-	3	-	-	-	-	1	-	3	2	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Sanjeev Kumar		Prof. Saurabh Sharma	
Prof. Deepak Vishwakarma			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd** **Semester: 3rd**

Course Name: Computer Organization & Architecture **Course Code: BCS 302** **Course Coordinator Name: Prof. Minakshi**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Describe the basic organization and operation of the components of a digital computer system.	PO1, PO2, PO3, PO4, PO12, PSO1	Apply	C, P
CO2	Illustrate various arithmetic and logical operations on different types of numbers to design an arithmetic and logic unit.	PO1, PO2, PO3, PO4, PO12, PSO1	Analyze	C, P
CO3	Analyze the performance issues of the processor and classify the control unit implementation techniques.	PO1, PO2, PO3, PO4, PO12, PSO1, PSO2	Analyze	C, P
CO4	Categorize the hierarchical memory system and examine the virtual memory implementation techniques.	PO1, PO2, PO3, PO4, PO12, PSO1, PSO2	Analyze	C, P
CO5	Compare the different I/O data transfer techniques, and describe the different ways of communication among I/O devices and standard I/O interfaces.	PO1, PO2, PO3, PO4, PO12, PSO1, PSO2	Analyze	C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Ruchin Gupta		Prof. Minakshi	Minakshi

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.
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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd Semester: 3rd**

Course Name: Computer Organization & Architecture **Course Code: BCS 302** **Course Coordinator Name: Prof. Minakshi**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	2	1	1	-	-	-	-	-	-	-	1	1	-
CO2	3	2	2	1	-	-	-	-	-	-	-	1	1	-
CO3	3	2	2	1	-	-	-	-	-	-	-	1	2	1
CO4	2	2	2	1	-	-	-	-	-	-	-	1	1	1
CO5	3	2	2	1	-	-	-	-	-	-	-	1	1	1
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Ruchin Gupta		Prof. Minakshi	Minakshi

Minakshi

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd** **Semester: 3rd**

Course Name: Discrete Structure & Theory of Logic **Course Code: BCS 303** **Course Coordinator Name: Prof. Priya Singh**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Acquire Knowledge of sets and relations for solving the problems of POSET and lattices.	PO1, PO2, PO3, PO4, PSO1, PSO2	Apply	C, P
CO2	Apply fundamental concepts of functions and Boolean algebra for solving the problems of logical abilities.	PO1, PO2, PO3, PSO1, PSO2	Apply	C, P
CO3	Employ the rules of propositions and predicate logic to solve the complex and logical problems.	PO1, PO2, PO3, PO4, PO12, PSO1, PSO2	Apply	F, C, P
CO4	Explore the concepts of group theory and their applications for solving the advance technological problems.	PO1, PO2, PO3, PO12, PSO1, PSO2	Analyze	F, C
CO5	Illustrate the principles and concepts of graph theory for solving problems related to computer science.	PO1, PO2, PO3, PO12, PSO1, PSO2	Analyze	F, C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Priya Singh	Priya Urvashi	Dr. Urvashi Chugh	Urvashi

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

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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd Semester: 3rd**

Course Name: Discrete Structure & Theory of Logic **Course Code: BCS 303** **Course Coordinator Name: Prof. Priya Singh**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	1	1	1	-	-	-	-	-	-	-	-	1	1
CO2	3	1	1	-	-	-	-	-	-	-	-	-	1	1
CO3	3	1	1	2	-	-	-	-	-	-	-	1	1	1
CO4	3	2	1	-	-	-	-	-	-	-	-	1	1	2
CO5	3	3	2	-	-	-	-	-	-	-	-	2	2	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Urvashi Chugh	Urvashi	Prof. Priya Singh	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd** **Semester: 3rd**

Course Name: Python Programming **Course Code: BCC 302** **Course Coordinator Name: Prof. Anjali Jain**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Interpret the fundamentals of Python syntax and semantics.	PO5, PO12	Understand	C
CO2	Express proficiency in the handling of strings and functions.	PO5, PO12	Understand	C, P
CO3	Discover the methods to utilize the data structures like lists, dictionaries, tuples and sets.	PO1, PO2, PO5, PO12, PSO2	Apply	C, P
CO4	Acquire the knowledge of file handling operations and adherence to coding standards.	PO1, PO2, PO5, PO12, PSO2	Apply	C, P
CO5	Develop Python-based projects by inculcating creativity and originality in problem-solving.	PO1, PO2, PO3, PO5, PO6, PO12, PSO1, PSO2	Create	P, M

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Arushi Singh		Prof. Anjali Jain	

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.
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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24**

Course Name: Python Programming **Course Code: BCC 302** **Year: 2nd Semester: 3rd**

Course Coordinator Name: Prof. Anjali Jain

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	3	-	-	-	-	-	-	1	-	-
CO2	-	-	-	-	3	-	-	-	-	-	-	2	-	-
CO3	3	3	-	-	3	-	-	-	-	-	-	2	-	2
CO4	3	3	-	-	3	-	-	-	-	-	-	2	-	2
CO5	3	3	3	-	3	2	-	-	-	-	-	3	3	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Arushi Singh		Prof. Anjali Jain	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd** **Semester: 3rd**

Course Name: WD Workshop **Course Code: BCS 353** **Course Coordinator Name: Prof. Nidhi Goyal**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand the concept of layout and structure of html	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Understand	C,P
CO2	Apply the integration of CSS in html pages to format and make Webpages attractive.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C,P
CO3	Apply the JS concept to process and validate the data of web page on client Machine.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C,P
CO4	Design the website by interlinking a number of webpages with the application of html CSS and JavaScript.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	C,P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Nidhi Goyal	Nidhi		

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

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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd Semester: 3rd**

Course Name: WD Workshop **Course Code: BCS 353** **Course Coordinator: Prof. Nidhi Goyal**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	3	3	1	1	1	1	1	2	3	3	3
CO2	3	3	3	3	3	1	1	1	1	1	2	3	3	3
CO3	3	3	3	3	3	1	1	1	1	1	2	3	3	3
CO4	3	3	3	3	3	1	1	1	1	1	2	3	3	3
PO Target	3	3	3	3	3	1	1	1	1	1	2	3	3	3

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Nidhi Goyal	Nidhi		

Nidhi
Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

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

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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd** **Semester: 3rd**

Course Name: DSUC Lab **Course Code: BCS 351** **Course Coordinator Name: Dr. Sanjeev Kumar**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Practice various Sorting and Searching Algorithms.	PO1, PO2, PO3, PO5, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO2	Analyze the recursive implementation of different sorting and searching algorithms.	PO1, PO2, PO3, PO5, PO10, PO11, PO12, PSO1, PSO2	Analyze	C, P
CO3	Exercise various data Structure operations using static and dynamic memory allocation.	PO1, PO2, PO3, PO5, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO4	Demonstrate various operations like traversal, insertion, deletion on tree data structure.	PO1, PO2, PO3, PO5, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO5	Illustrate and implement practical applications based on graphs and shortest paths.	PO1, PO2, PO3, PO5, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P, M

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Saurabh Sharma		Dr. Sanjeev Kumar	
Prof. Deepak Vishwakarma			

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Department of Information Technology

Academic Session: 2023-24 **Year: 2nd** **Semester: 3rd**

Program Name: B. Tech

Course Name: DSUC Lab **Course Code: BCS 351** **Course Coordinator Name: Dr. Sanjeev Kumar**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	-	2	-	-	-	-	1	1	2	1	2
CO2	3	3	3	-	2	-	-	-	-	1	1	2	1	3
CO3	3	2	3	-	2	-	-	-	-	1	1	2	1	3
CO4	3	3	3	-	2	-	-	-	-	1	1	2	2	2
CO5	3	3	3	-	2	-	-	-	-	1	1	3	2	2
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Saurabh Sharma		Dr. Sanjeev Kumar	
Prof. Deepak Vishwakarma			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd** **Semester: 3rd**

Course Name: COA Lab **Course Code: BCS 352** **Course Coordinator Name: Prof. Minakshi**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Examine the output of the basic logic gates for different combinations of inputs.	PO1, PO2, PO3, PO4, PO5 PO9, PO10	Apply	P
CO2	Simulate the combinational circuits for binary arithmetic (such as adders, subtractors, and multiplier) and code converter.	PO1, PO2, PO3, PO4, PO5 PO9, PO10, PO12	Apply	P
CO3	Simulate combinational circuits for encoders/decoders and selection devices multiplexers/demultiplexers using logic gates.	PO1, PO2, PO3, PO4, PO5 PO9, PO10, PO12, PSO1, PSO2	Apply	P
CO4	Simulate the basic building block of the sequential circuits (i.e., SR and D Flip Flops) using logic gates.	PO1, PO2, PO3, PO4, PO5 PO9, PO10, PO12, PSO1, PSO2	Apply	P
CO5	Simulate the 2-bit Arithmetic Logic Unit using logic gates.	PO1, PO2, PO3, PO4, PO5 PO9, PO10, PO12, PSO1, PSO2	Apply	P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Minakshi	Minakshi	Prof. Anubha	Ranu
Prof. Ruchin Gupta			

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd Semester: 3rd**

Course Name: COA Lab **Course Code: BCS 352** **Course Coordinator Name: Prof. Minakshi**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	2	2	1	1	-	-	-	1	1	-	-	-	-
CO2	3	3	3	2	1	-	-	-	1	1	-	1	-	-
CO3	2	3	3	2	1	-	-	-	1	1	-	1	1	1
CO4	2	3	3	2	1	-	-	-	1	1	-	1	2	1
CO5	2	3	3	2	1	-	-	-	1	1	-	1	2	1
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Minakshi	Minakshi	Prof. Anubha	
Prof. Ruchin Gupta			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd** **Semester: 3rd**

Course Name: Internship Assessment/Mini Project **Course Code: BCC 351** **Course Coordinator Name: Dr. Urvashi Chugh**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Explore the real-life problems and their implementation through Tools &Techniques.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO2	Expose the creative design process through the integration and application of diverse technical knowledge.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO3	Analyze the possible solutions to meet the requirements of the problem solving.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	C, P
CO4	Build a solution by employing a variety of tools and technologies.	PO1, PO2,.PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Create	C, P, M
CO5	Validate the designed solution to ensure impactfulness towards the selected problem.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Evaluate	C, P, M

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
a) Prof. Kamal Kant Sharma		Dr. Urvashi Chugh	
b) Prof. Arushi Singh		Prof. Arushi Singh	

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 2nd Semester: 3rd**

a) **Course Name: Internship Assessment/Mini Project** **Course Code: BCC 351** **Course Coordinator Name: Dr. Urvashi Chugh**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	2	3	2	2	2	3	3	2	3	2	3
CO2	3	3	2	3	3	2	2	2	3	3	2	3	2	3
CO3	3	3	2	3	3	2	2	2	3	3	2	3	2	3
CO4	3	3	3	2	3	2	2	2	3	3	2	3	2	3
CO5	3	3	3	2	3	2	2	2	3	3	2	3	2	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Urvashi Chugh		Prof. Kamal Kant Sharma	
Prof. Arushi Singh		Prof. Arushi Singh	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Machine Learning Techniques **Course Code: KCS055** **Course Coordinator Name: Prof. Deepika Kamboj**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand foundational concepts of machine learning approaches.	PO1, PO4, PO5, PO12	Understand	C
CO2	Apply regression techniques like Linear Regression and Logistic Regression to solve real- world problems.	PO1, PO2, PO3, PO4, PO5, PO9, PO11, PO12, PSO1, PSO2	Apply	C, P
CO3	Analyze the performance of Bayesian Learning methods on various datasets.	PO1, PO2, PO3, PO4, PO5, PO9, PO11, PO12, PSO1, PSO2	Analyze	C, P
CO4	Evaluate and compare various techniques like Support Vector Machines, Decision Trees, and Instance Based Learning on different datasets.	PO1, PO2, PO3, PO4, PO5, PO9, PO11, PO12, PSO1, PSO2	Evaluate	C, P
CO5	Model the solution of real-life problems using Deep Learning techniques, Genetic Algorithms and Reinforcement Learning.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Create	C, P, M

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Arushi Singh	A Singh	Prof. Deepika Kamboj	Deepika

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Machine Learning Techniques **Course Code: KCS055** **Course Coordinator Name: Prof. Deepika Kamboj**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1	-	-	1	3	-	-	-	-	-	-	1	-	-
CO2	3	1	1	1	3	-	-	-	3	-	1	2	1	1
CO3	3	3	2	2	3	-	-	-	3	-	1	2	1	2
CO4	3	3	2	3	3	-	-	-	3	-	1	2	2	3
CO5	3	3	3	3	3	-	-	-	3	3	2	3	3	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Arushi Singh		Prof. Deepika Kamboj	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Database Management System **Course Code: KCS 501** **Course Coordinator Name: Dr. Sartaj Ahmad**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Acquire knowledge of database design methodology for real-life applications.	PO1, PO5, PO8, PO9, PO11, PO12, PSO1, PSO2	Understand	C, P
CO2	Apply the concept of an ER diagram to design an information model.	PO1, PO2, PO3, PO4, PO5, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO3	Apply the concept of SQL to real-life databases.	PO1, PO2, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO4	Analyze the redundancy problem in the database and reduce it using normalization.	PO1, PO2, PO4, PO8, PO9, PO10, PO11, PO12, PSO2	Analyze	C, P
CO5	Identify the broad range of database management issues including integrity, security, and recovery transactions.	PO1, PO2, PO4, PO8, PO11, PO12, PSO2	Analyze	C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof.Analp Pathak		Dr. Sartaj Ahmad	

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Database Management System **Course Code: KCS 501** **Course Coordinator Name: Dr. Sartaj Ahmad**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	-	-	-	2	-	-	1	1	-	1	2	1	2
CO2	3	1	3	2	3	-	1	1	1	2	2	2	3	2
CO3	3	1	-	-	3	-	-	1	1	1	2	2	3	1
CO4	3	2	-	3	-	-	-	1	1	1	1	2	-	2
CO5	3	2	-	3	-	-	-	1	-	-	1	1	-	2
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Analp Pathak		Dr. Sartaj Ahmad	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Design and Analysis of Algorithm **Course Code: KCS 503** **Course Coordinator Name: Prof. Shashank Yadav**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Analyze running time of algorithms using asymptotic methods.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Analyze	C, P
CO2	Analyze advanced data structure algorithms to calculate their complexities.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Analyze	C, P
CO3	Devise solutions of Optimization problems using Dynamic Programming and Greedy Approach.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Create	C, P, M
CO4	Formulate solutions for optimization problems using backtracking and branch & bound techniques.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Create	C, P, M
CO5	Understand the concepts of NP Completeness, Randomized and Approximation Algorithms.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Understand	C

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Dinesh Kumar		Prof. Ajay Kumar	
Prof. Shashank Yadav			

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Design and Analysis of Algorithm **Course Code: KCS 503** **Course Coordinator Name: Prof. Shashank Yadav**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	2	2	1	-	-	-	-	-	-	2	2	2
CO2	3	3	2	2	1	-	-	-	-	-	-	2	2	2
CO3	3	3	3	2	1	-	-	-	-	-	-	2	2	2
CO4	3	3	3	2	1	-	-	-	-	-	-	2	2	2
CO5	2	2	1	1	1	-	-	-	-	-	-	1	1	1
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Dinesh Kumar		Prof. Ajay Kumar	
Prof. Shashank Yadav			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Web Technology **Course Code: KIT501** **Course Coordinator Name: Prof. Rajeev Singh**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Apply OOP concept using Java to create desktop-based programs.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	P
CO2	Apply the concepts of HTML, CSS and DHTML to create attractive web pages and XML to create your own tags and document layout.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	P
CO3	Apply JavaScript to process web page content at client machine and Socket programming to connect Systems.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	P
CO4	Apply JDBC concepts to create database and perform CRUD operations using Java Programs.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	P
CO5	Apply JSP and Servlets concepts in server-side scripting to create and process web-based Programs.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Rajeev Singh		Dr. Jitendra Kumar Seth	

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Web Technology **Course Code: KIT501** **Course Coordinator Name: Prof. Rajeev Singh**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	3	3	-	-	-	2	2	2	2	2	3
CO2	2	2	3	3	3	-	-	-	2	1	2	2	2	3
CO3	3	2	2	2	2	-	-	-	2	1	2	2	1	2
CO4	2	2	2	2	2	-	-	-	1	1	1	1	1	2
CO5	3	3	3	3	3	-	-	-	2	2	2	2	2	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Rajeev Singh		Dr. Jitendra Kumar Seth	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

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Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Object Oriented System Design **Course Code: KCS054** **Course Coordinator Name: Dr. Surendra Kr Keshari**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Understand the application development and the insights of object-oriented programming to implement application.	PO1, PO2, PO5, PO6, PO10, PO12, PSO2	Understand	C, P
CO2	Apply the role of overall modelling concepts to develop object-oriented System structure.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO12, PSO1, PSO2	Apply	C, P
CO3	Analyze the structured analysis / structured design and the oops programming style.	PO1, PO2, PO3, PO4, PO5, PO6, PO10, PO12, PSO1	Analyze	C, P
CO4	Evaluate the concepts of C++ for the implementation of object-oriented concepts.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO12, PSO1, PSO2	Evaluate	C, P
CO5	Evaluate the object-oriented paradigm concepts to implement real world problems in C++.	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Evaluate	C, P, M

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Nidhi Goyal	Nidhi	Dr. Surendra Kumar Kesari	

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Object Oriented System Design **Course Code: KCS054** **Course Coordinator Name: Dr. Surendra Kr Keshari**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	1	-	-	1	1	-	-	-	1	-	2	-	1
CO2	3	2	1	1	3	1	-	-	1	1	-	2	2	2
CO3	3	3	1	1	1	1	-	-	-	1	-	2	1	-
CO4	3	3	3	3	3	2	-	-	2	2	-	3	3	3
CO5	3	3	3	3	3	2	-	1	3	2	2	3	3	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Nidhi Goyal		Dr. Surendra Kr Kesari	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

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Department of Information Technology

Academic Session: 2023-24 **Year: 3rd** **Program Name: B. Tech**
Semester: 5th
Course Name: Constitution of India, Law and Engineering **Course Code: KNC 501** **Course Coordinator Name: Dr. A.K.Pandey**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Identify and explore the basic features and modalities of the Indian constitution.	PO6, PO7	Understand	F, C
CO2	Differentiate and relate the functioning of the Indian parliamentary system at the center and state level	PO6, PO7	Apply	F, C
CO3	Differentiate different aspects of the Indian Legal System and its related bodies.	PO6, PO7, PO8	Understand	F, C
CO4	Discover and apply different laws and regulations related to engineering practices.	PO6, PO7, PO8, PO10	Understand	F, C
CO5	Correlate the role of engineers with different organizations and governance models	PO6, PO7, PO8, PO9, PO10, PO11, PO12	Understand	F, C

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. A.K. Pandey		Prof. Mayank Tyagi	
Dr. Urvashi Chugh			

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Constitution of India, Law and Engineering **Course Code: KNC 501** **Course Coordinator Name: Dr. A.K. Pandey**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	3	2	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	2	1	-	-	-	-	-	-
CO4	-	-	-	-	-	3	2	2	-	2	-	-	-	-
CO5	-	-	-	-	-	2	2	2	2	2	2	2	-	-
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. A.K. Pandey		Prof. Mayank Tyagi	
Dr. Urvashi Chugh			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: DBMS Lab **Course Code: KCS 551** **Course Coordinator Name: Dr. Sartaj Ahmad**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand and apply MYSQL/Oracle 10g for creating tables, views, indexes, sequences and other database objects.	PO1, PO5, PO9, PO10, PO12, PSO1	Understand	C, P
CO2	Design and implement a database schema for company data base, banking data base, library information system, payroll processing system, student information system	PO1, PO2, PO3, PO4, PO5, PO7, PO9, PO10, PO11, PO12, PSO2	Apply	P
CO3	Apply the concept of SQL based on Case Study using DDL, DML	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO12, PSO2	Apply	P
CO4	Apply the concept of PL/SQL blocks, procedure functions, packages and triggers, cursors.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO12, PSO2	Apply	P
CO5	Demonstrate entity integrity, referential integrity, key constraints, and domain constraints on database.	PO1, PO4, PO5, PO9, PO10, PO12, PSO2	Apply	P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Analp Pathak		Dr. Sartaj Ahmad	

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 Information Technology

Academic Session: 2023-24 **Year: 3rd** **Semester: 5th**

Program Name: B. Tech

Course Name: DBMS Lab **Course Code: KCS 551** **Course Coordinator Name: Dr. Sartaj Ahmad**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	-	-	-	2	-	-	-	2	1	-	2	2	-
CO2	3	3	2	2	3	-	1	-	2	2	3	3	-	3
CO3	3	2	2	1	2	-	-	-	1	1	-	2	-	2
CO4	3	2	2	1	2	-	-	-	1	1	-	2	-	2
CO5	2	-	-	2	3	-	-	-	1	1	-	2	-	2
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Analp Pathak		Dr. Sartaj Ahmad	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: DAA Lab **Course Code: KCS 553** **Course Coordinator Name: Prof. Shashank Yadav**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Analyze algorithm to solve problems by iterative approach.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Analyze	C, P
CO2	Analyze algorithm to solve problems by divide and conquer approach.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Analyze	C, P
CO3	Implement algorithm to solve problems by Greedy algorithm approach.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Apply	C, P
CO4	Apply algorithm to solve problems by Dynamic programming, backtracking, branch, and bound approach.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Apply	P, M
CO5	Implement algorithm to solve problems by branch and bound approach.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Apply	C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Shashank Yadav	Shashank	Prof. Ajay Kumar	Ajay
Prof. Dinesh Kumar			

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 Information Technology

Academic Session: 2023-24

Program Name: B. Tech **Year: 3rd** **Semester: 5th**

Course Name: DAA Lab **Course Code: KCS 553** **Course Coordinator Name: Prof. Shashank Yadav**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1	3	2	2	1	-	-	-	-	-	-	3	1	1
CO2	2	3	2	3	2	-	-	-	-	-	-	2	1	2
CO3	3	2	2	1	2	-	-	-	-	-	-	2	1	2
CO4	2	2	2	1	2	-	-	-	-	-	-	2	2	2
CO5	2	2	2	2	1	-	-	-	-	-	-	2	2	2
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Shashank Yadav		Prof. Ajay Kumar	
Prof. Dinesh Kumar			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Web Technology Lab **Course Code: KIT 551** **Course Coordinator Name: Prof. Rajeev Singh**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Apply OOP concept using Java to create desktop-based programs.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	P
CO2	Apply the concepts of HTML, CSS and DHTML to create attractive web pages and XML to create your own tags and document layout.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	P
CO3	Apply JavaScript to process web page content at client machine and Socket programming to connect Systems.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	P
CO4	Apply JDBC concepts to create database and perform CRUD operations using Java Programs.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	P
CO5	Apply JSP and Servlets concepts in server-side scripting to create and process web-based Programs.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Rajeev Singh		Dr. Jitendra Kumar Seth	
Prof. Mayank Tyagi			

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Web Technology Lab **Course Code: KIT 551** **Course Coordinator Name: Prof. Rajeev Singh**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	3	3	-	-	-	2	2	2	2	2	3
CO2	2	2	3	3	3	-	-	-	2	1	2	2	2	3
CO3	3	2	2	2	2	-	-	-	2	1	2	2	1	2
CO4	2	2	2	2	2	-	-	-	1	1	1	1	1	2
CO5	3	3	3	3	3	-	-	-	2	2	2	2	2	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Rajeev Singh		Dr. Jitendra Kumar Seth	
Prof. Mayank Tyagi			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Mini Project / Internship **Course Code: KCS 554** **Course Coordinator Name: Dr. Surendra Kumar Keshari**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Explore the real-life problems and their implementation through Tools &Techniques.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO2	Expose the creative design process through the integration and application of diverse technical knowledge.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO3	Analyze the possible solutions to meet the requirements of the problem solving.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	C, P
CO4	Build a solution by employing a variety of tools and technologies.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Create	C, P, M
CO5	Validate the designed solution to ensure impactfulness towards the selected problem	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Evaluate	C, P, M

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Deepika Kamboj		Dr. Surendra Kr Kesari	
Prof. Anubha			

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 3rd** **Semester: 5th**

Course Name: Mini Project / Internship **Course Code: KCS 554** **Course Coordinator Name: Dr. Surendra Kumar Keshari**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	2	3	2	2	2	3	3	2	3	2	3
CO2	3	3	2	3	3	2	2	2	3	3	2	3	2	3
CO3	3	3	2	3	3	2	2	2	3	3	2	3	2	3
CO4	3	3	3	2	3	2	2	2	3	3	2	3	2	3
CO5	3	3	3	2	3	2	2	2	3	3	2	3	2	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Deepika Kamboj		Dr. Surendra Kr Kesari	
Prof. Anubha			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Deep Learning **Course Code: KCS 078** **Course Coordinator Name: Prof. Veepin Kumar**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Apply the concept of neural networks, including layers and activation functions to observe deep learning models.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO12, PSO1, PSO2	Apply	C, P
CO2	Explain the concept of backpropagation to optimize neural network weights.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO12, PSO1, PSO2	Analyze	C, P
CO3	Analyze different dimensionality reduction techniques for real world dataset.	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO12, PSO1, PSO2	Analyze	C, P
CO4	Evaluate different deep learning models for optimized solution of Natural Language Processing related problems.	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO12, PSO1, PSO2	Evaluate	C, P, M
CO5	Design deep learning solutions for complex real-world Problems using different deep learning tools.	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Create	C, P, M

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Veepin Kumar		Prof. Anubha	

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Deep Learning **Course Code: KCS 078** **Course Coordinator Name: Prof. Veepin Kumar**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	2	1	3	1	-	-	1	-	-	1	1	1
CO2	3	3	2	1	3	1	-	-	2	1	-	1	1	3
CO3	3	3	2	2	3	1	-	1	2	1	-	2	1	3
CO4	3	3	3	3	3	2	-	1	3	2	-	3	2	3
CO5	3	3	3	3	3	2	-	1	3	3	3	3	3	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Veepin Kumar		Prof. Anubha	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Artificial Intelligence **Course Code: KCS 071** **Course Coordinator Name: Prof. Mukul Agarwal**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Understand the concepts of artificial intelligence and intelligent agents.	PO5, PO6, PO12	Understand	C
CO2	Apply basic principles of AI in solutions that require problem-solving methods.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO12, PSO1, PSO2	Apply	C, P
CO3	Determine the effectiveness of truths by knowledge representation methods in AI.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO12, PSO1, PSO2	Evaluate	C, P
CO4	Analyze intelligent agents by exploring the architecture and communication of agents.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO12, PSO1, PSO2	Analyze	C, P
CO5	Analyze various AI applications in Information retrieval and extraction, Natural Language Possessing, speech recognition and Robots.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Mukul Agarwal		Dr. Vikas Goel	

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Artificial Intelligence **Course Code: KCS 071** **Course Coordinator Name: Prof. Mukul Agarwal**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	1	1	-	-	-	-	-	1	-	-
CO2	3	2	2	2	3	2	-	-	2	-	-	2	2	2
CO3	3	3	2	3	3	2	-	-	2	2	-	2	2	3
CO4	3	3	2	3	3	2	-	-	2	-	-	2	2	3
CO5	3	3	2	3	3	3	-	-	3	3	2	3	2	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Mukul Agarwal		Dr. Vikas Goel	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Rural Development: Administration and Planning **Course Code: KHU 701** **Course Coordinator Name: Prof. Kamal Kant Sharma**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Understand the definitions, concepts, and components of Rural Development.	PO6, PO7, PO10, PO12	Understand	C
CO2	Distinguish among importance, structure, significance, and resources of Indian rural economy.	PO6, PO7, PO9, PO10, PO11, PO12, PSO2	Analyze	C, P
CO3	Discuss rural area development programs and their impact.	PO6, PO7, PO10, PO12	Understand	C
CO4	Review the different methods for human resource planning.	PO6, PO7, PO10, PO12	Understand	C
CO5	Describe the knowledge of Rural Industrialization and Entrepreneurship.	PO6, PO7, PO10, PO12	Understand	C

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Kamal Kant Sharma		Prof. Anubha	

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Rural Development: Administration and Planning Course Code: KHU 701 Course Coordinator Name: Prof. Kamal Kant Sharma

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	2	3	-	-	2	-	1	-	-
CO2	-	-	-	-	-	2	3	-	2	2	2	1	-	2
CO3	-	-	-	-	-	2	3	-	-	2	-	1	-	-
CO4	-	-	-	-	-	2	3	-	-	2	-	1	-	-
CO5	-	-	-	-	-	2	3	-	-	2	-	1	-	-
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Kamal Kant Sharma		Prof. Anubha	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Renewable Energy Resources **Course Code: KOE 074** **Course Coordinator Name: Dr. Ajay Agarwal**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Discuss the basic knowledge of non-conventional energy resources with focusing on solar cell.	PO6, PO7, PO12	Understand	C
CO2	Explore the various Solar Cell material and its efficiency.	PO1, PO2, PO6, PO7, PO12	Apply	C
CO3	Examine the working principle, performance and limitation of geothermal energy, MHD and fuel Cell.	PO1, PO2, PO6, PO7, PO12, PSO2	Analyze	C, P
CO4	Explain the working principle, performance and limitation of Wind Energy.	PO1, PO2, PO6, PO7, PO12, PSO2	Analyze	C, P
CO5	Illustrate the working principle, performance and limitation of OTEC and Wave and Tidal Energy.	PO1, PO2, PO6, PO7, PO12, PSO2	Analyze	C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Ajay Agarwal			

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Renewable Energy Resources **Course Code: KOE 074** **Course Coordinator Name: Dr. Ajay Agarwal**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	2	3	-	-	-	-	3	-	-
CO2	3	2	-	-	-	2	3	-	-	-	-	3	-	-
CO3	3	3	-	-	-	3	3	-	-	-	-	3	-	3
CO4	3	3	-	-	-	3	3	-	-	-	-	3	-	3
CO5	3	3	-	-	-	3	3	-	-	-	-	3	-	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Ajay Agarwal			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Artificial Intelligence Lab **Course Code: KIT 751** **Course Coordinator Name: Dr. Vikas Goel**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Demonstrate the features of the PROLOG programming language, including basic syntax, selection and search strategies of PROLOG.	PO1, PO2, PO3, PO4, PO5, PO6	Apply	C, P
CO2	Explore syntax, semantics and natural deduction proof system of propositional and predicate logic.	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO2	Analyze	C, P
CO3	Implement the recursion and sequences using prolog programming.	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1, PSO2	Evaluate	C, P
CO4	Design various real-life problems using PROLOG programming language skills.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO11, PO12, PSO1, PSO2	Create	C, P, M
CO5	Demonstrate LISP programming language skills for solving real life problems.	PO1, PO2, PO3, PO4, PO5, PO6	Apply	C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Mukul Agarwal		Prof. Veepin Kr.	
Dr. Vikas Goel			

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Artificial Intelligence Lab **Course Code: KIT 751** **Course Coordinator Name: Dr. Vikas Goel**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	1	1	3	1	-	-	-	-	-	-	-	-
CO2	3	3	2	2	3	2	-	-	-	-	-	2	-	2
CO3	3	3	2	2	3	2	-	-	-	-	-	2	3	2
CO4	3	3	3	3	3	2	-	-	2	-	2	2	3	3
CO5	3	2	1	1	3	1	-	-	-	-	-	-	-	-
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Mukul Agarwal		Prof. Veepin Kr.	
Dr. Vikas Goel			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Mini Project/ Internship **Course Code: KIT 752** **Course Coordinator Name: Prof. Kamal Kant Sharma**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Explore the real-life problems and their implementation through Tools &Techniques.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO2	Expose the creative design process through the integration and application of diverse technical knowledge.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO3	Analyze the possible solutions to meet the requirements of the problem solving.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	C, P
CO4	Build a solution by employing a variety of tools and technologies.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Create	C, P, M
CO5	Validate the designed solution to ensure impactfulness towards the selected problem.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Evaluate	C, P, M

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Kamal Kant Sharma			
Dr. Veepin Kumar			
Prof. Mukul Agarwal			

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 Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Mini Project/ Internship **Course Code: KIT 752** **Course Coordinator Name: Prof. Kamal Kant Sharma**

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	2	3	2	2	2	3	3	2	3	2	3
CO2	3	3	2	3	3	2	2	2	3	3	2	3	2	3
CO3	3	3	2	3	3	2	2	2	3	3	2	3	2	3
CO4	3	3	3	2	3	2	2	2	3	3	2	3	2	3
CO5	3	3	3	2	3	2	2	2	3	3	2	3	2	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Kamal Kant Sharma			
Dr. Veepin Kumar			
Prof. Mukul Agarwal			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

Department of Information Technology

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: 7th**

Course Name: Project **Course Code: KIT 753** **Course Coordinator Name: Dr. Sartaj Ahmad**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	Statement of Course Outcome			
CO1	Select and summarize all aspects of the real-life problem through survey.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Understand	C, P
CO2	Apply acquired knowledge to develop working model and plan different phases for its execution.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C, P
CO3	Analyze outcome of each phase using various tools, techniques, and coding practices.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	C, P
CO4	Justfy/defend opinions, validity of ideas or quality of work based on a set of criteria.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Evaluate	C, P, M
CO5	Test the working model and modify related phase accordingly. Finally integrate all phases	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Create	C, P, M

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Surendra Kr kesari		Prof. Veepin Kr.	
Prof. Kamal Kant Sharma		Dr. Ajay Agarwal	
Dr. Urvashi Chugh	Urvashi		

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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Pharmacy Rank - 88
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Department of Information Technology

Academic Session: 2023-24 **Year: 4th** **Semester: 7th**

Program Name: B. Tech

Course Name: Project

Course Code: KIT 753

Course Coordinator Name: Dr. Sartaj Ahmad

CO - PO/PSO/APO Matrix

CO No.	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	3	3	2	1	1	3	3	3	3	1	1
CO2	3	3	3	3	2	2	1	1	3	2	3	3	2	2
CO3	3	3	3	3	2	2	1	1	3	2	3	3	2	3
CO4	3	3	3	3	2	2	1	1	3	2	2	3	2	3
CO5	3	3	3	3	2	2	1	1	3	2	1	2	2	3
PO Target														

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Surendra Kr kesari		Prof. Veepin Kr.	
Prof. Kamal Kant Sharma		Dr. Ajay Agarwal	
Dr. Urvashi Chugh			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoDss**

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

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