

Department of Information Technology

# Course Outcome



## Session 2024-25 Odd Sem

# Department of Information Technology

**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

# Index

3rd Semester		
S No.	Subject Code	Subject Name
1	BOE305	Sensor & Instrumentation
2	BVE 301	Universal Human Values
3	BCS 301	Data Structure
4	BCS 302	Computer Organization and Architecture
5	BCS 303	Discrete Structure & Theory of Logic
6	BCC 302	Python Programming
7	BCS 351	DS Lab
8	BCS 352	COA Lab
9	BCC 351	Internship Assessment/Mini Project/StartUp & Entrepreneurship
10	BCS 353	Web Designing Workshop

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

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- ◆ If there is no correlation, then put a “-” (dash).

### Department of Information Technology

5 <sup>th</sup> Semester		
S No.	Subject Code	Subject Name
1	BCS055	Machine Learning Techniques
2	BCS 501	Database Management System
3	BCS 503	Design and Analysis of Algorithm
4	BCS 502	Web Technology
5	BCS054	Object Oriented Technology with C++
6	BNC 501	Constitution of India
7	BCS 551	DBMS Lab
8	BCS 553	DAA Lab
9	BCS 552	Web Technology Lab
10	BCS 554	Mini Project & Internship

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## Department of Information Technology

7 <sup>th</sup> Semester		
S No.	Subject Code	Subject Name
1	KCS 713	Cloud Computing
2	KCS 071	Artificial Intelligence
3	KHU 702	Project Management & Entrepreneurship
4	KOE 074	Renewable Energy Resources
5	KIT 751	Artificial Intelligence Lab
6	KIT 752	Mini Project + Internship
7	KIT 753	Project

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Program Name: B. Tech

Department of Information Technology

Academic Session: 2024-25

Year: 2<sup>nd</sup>

Semester: 3<sup>rd</sup>

Course Name: Sensor & Instrumentation

Course Code: BOE305

Course Coordinator Name: Dr Rajesh 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	Apply the use of sensors for measurement of displacement, force, and pressure.	PO1, PO2, PO3, PO4, PO11, 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, PO11, PSO1, PSO2	Apply	C, P
CO3	Demonstrate the use of virtual instrumentation in automation industries.	PO1, PO2, PO3, PO4, PO5, PO6, PO11, PSO1, PSO2	Apply	F, P
CO4	Identify and use data acquisition methods	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO11, PSO1, PSO2	Analyse	C, P
CO5	Discuss intelligent instrumentation in industrial automation	PO1, PO2, PO3, PO4, PO5, PO6, PO11, PSO1, PSO2	Understand	C, P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Dr Rajesh Yadav		<i>Rajesh Yadav</i>	Dr. Vibhu Srivastav	<i>Vibhu</i>

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## Department of Information Technology

Program Name: B. Tech

Academic Session: 2024-25

Year: 2<sup>nd</sup> Semester: 3<sup>rd</sup>

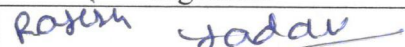
Course Name: Sensor & Instrumentation


Course Code: BOE 305

Course Coordinator Name: Dr Rajesh Yadav

### CO - PO/PSO/APO Matrix

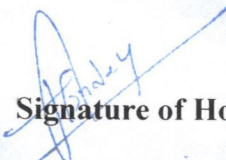
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	2	2	-	-	-	-	-	-	2	-	3	2
CO2	3	3	2	3	2	-	-	-	-	-	3	-	2	2
CO3	3	2	2	3	3	3	-	-	-	-	2	-	2	2
CO4	2	3	2	2	2	3	2	-	-	-	2	-	2	2
CO5	2	2	2	2	2	2	-	-	-	-	2	-	2	2
PO Target	2.6	2.4	2	2.4	2.25	2.66	2	-	-	-	2.2	-	2.2	2

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr Rajesh Yadav		Dr. Vibhu Srivastav	

  
Signature of Course Coordinator

  
Assoc./ Asst. Head DOC

  
Signature of Addl. HoD

  
Signature of HoD

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Year: 2<sup>nd</sup>

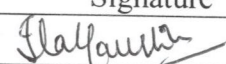
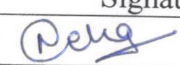

Semester: 3<sup>rd</sup>

Course Name: Universal Human Values

Course Code: BVE 301

Course Coordinator Name: Dr. Jitendra Kr. Seth

#### 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	Articulate the significance of value, skill, happiness, prosperity and the process of value education.	PO6, PO7, PO8, PO9, PO12, PSO1	Understand	C, P
CO2	Analyze the concept of harmony in the 'human being' as being 'I' & 'body' as separate entity and their coexistence.	PO6, PO7, PO8, PO9, PO12, PSO1	Apply	C, P
CO3	Apply the process of developing harmony in family, society and in universal order.	PO6, PO7, PO8, PO9, PO12, PSO1	Understand	C, P
CO4	Apply the process of developing harmony in nature as self-organizing unit and its coexistence.	PO6, PO7, PO8, PO9, PO12, PSO1	Understand	C, P
CO5	Analyze ethical, unethical practices and strategy in larger order based on case studies.	PO6, PO7, PO8, PO9, PO12, PSO1	Analyze	C, P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Ms. Ila Kaushik			Ms. Neha	
Dr. Jitendra Kr. Seth				

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Academic Session: 2024-25

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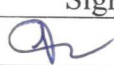
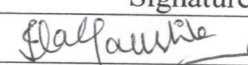
Course Name: Universal Human Values

Course Code: BVE 301

Course Coordinator Name: Dr. Jitendra Kr. Seth

CO - PO/PSO/APO Matrix

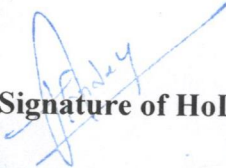
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	3	1	2	3	-	-	2	1	-
CO2	-	-	-	-	-	3	1	2	3	-	-	2	1	-
CO3	-	-	-	-	-	3	1	2	3	-	-	3	1	-
CO4	-	-	-	-	-	2	3	2	2	-	-	3	1	-
CO5	-	-	-	-	-	2	3	3	2	-	-	3	1	-
PO Target	-	-	-	-	-	2.6	1.8	2.2	2.6	-	-	2.6	1	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Jitendra Kr. Seth		Ms. Ila Kaushik	

  
Signature of Course Coordinator

  
Assoc./ Asst. Head DOC

  
Signature of Addl. HoD

  
Signature of HoD

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▪ **Program Name: B. Tech**

**Department of Information Technology**

**Academic Session: 2024-25**

**Year: 2<sup>nd</sup>**

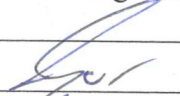

**Semester: 3<sup>rd</sup>**

**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	Apply the concepts of Array and Linked List in problem solving.	PO1, PO2, PO3, PO4, PO12, PSO1	Apply	C, P
CO2	Implement the working of abstract data types like Stack and Queue to solve scenario-based problems.	PO1, PO2, PO3, PO4, PO12, PSO1	Apply	C, P
CO3	Examine the working of various Searching and Sorting algorithms on scenario-based problems in terms of complexity	PO1, PO2, PO3, PO4, PO12, PSO1	Apply	C, P
CO4	Examine the various types of Tree data structure in terms of data storage, memory utilization, data representation, and optimization.	PO1, PO2, PO3, PO4, PO12, PSO1	Apply	C, P
CO5	Examine the problem statements in terms of Graphs to solve the real-world problems in an easy manner.	PO1, PO2, PO3, PO4, PO12, PSO1	Apply	C, P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Dr. Sanjeev Kumar				
Prof. Saurabh Sharma				

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Academic Session: 2024-25

Year: 2<sup>nd</sup> Semester: 3<sup>rd</sup>

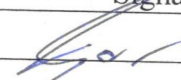
Course Name: Data Structure

Course Code: BCS 301


Course Coordinator Name: Dr. Sanjeev Kumar


#### CO - PO/PSO/APO Matrix

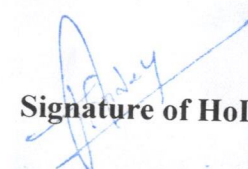
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	2	1	-	-	-	-	-	-	-	3	2	3
CO2	3	3	3	2	-	-	-	-	-	-	-	3	2	3
CO3	3	3	3	2	-	-	-	-	-	-	-	3	2	3
CO4	3	3	2	2	-	-	-	-	-	-	-	3	2	3
CO5	3	3	2	2	-	-	-	-	-	-	-	3	2	3
PO Target	3	3	2.4	1.8	-	-	-	-	-	-	-	3	2	3

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Sanjeev Kumar			

  
Signature of Course Coordinator

  
Assoc./ Asst. Head DOC

  
Signature of Addl. HoD

  
Signature of HoD

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**Department of Information Technology**

Program Name: B. Tech

Academic Session: 2024-25

Year: 2<sup>nd</sup>

Semester: 3<sup>rd</sup>

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	<b>Describe</b> the basic organization and operation of the components of a digital computer system.	PO1, PO2, PO3, PO4, PO12, PSO1	Apply	C, P
CO2	<b>Illustrate</b> 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	<b>Analyze</b> the performance issues of the processor and classify the control unit implementation techniques.	PO1, PO2, PO3, PO4, PO12, PSO1, PSO2	Analyze	C,P
CO4	<b>Categorize</b> the hierarchical memory system and examine the virtual memory implementation techniques.	PO1, PO2, PO3, PO4, PO12, PSO1, PSO2	Analyze	C,P
CO5	<b>Compare</b> 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
a) Prof. S. Sanjib Kumar		<i>Sanjib</i>		
b) Prof. Minakshi		<i>Minakshi</i>		

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**Department of Information Technology**

Academic Session: 2024-25

Year: 2<sup>nd</sup> Semester: 3<sup>rd</sup>

Program Name: B. Tech

Course Name: Computer Organization & Architecture Course Code: BCS 302

Course Coordinator Name: Prof. Minakshi

CO - PO/PSO/APO Matrix

CO No.	Programme 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	2.6	2	1.8	1	-	-	-	-	-	-	-	1	1.2	1

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Minakshi	<i>Minakshi</i>		

*Minakshi*  
Signature of Course Coordinator

*[Signature]*  
Assoc./ Asst. Head DOC

*[Signature]*  
Signature of Addl. HoD

*[Signature]*  
Signature of HoD

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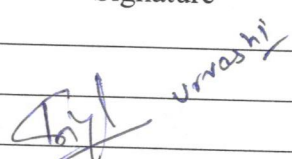
Program Name: B. Tech

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 problems of POSET and lattices	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Apply	C, P
CO2	Apply fundamental concepts of functions and Boolean algebra for solving the problems of logical abilities	PO1, PO2, PO3, PO5, PO12, PSO2	Apply	C, P
CO3	Employ the rules of propositions and predicate logic to solve the complex and logical problems.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Apply	F, C, P
CO4	Explore the concepts of group theory and their applications for solving the advance technological problems.	PO1, PO2, PO3, PO5, PO12, PSO2	Analyze	C, P
CO5	Illustrate the principles and concepts of graph theory for solving problems related to computer science.	PO1, PO2, PO3, PO5, PO12, PSO2	Analyze	F, C, P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Dr. Urvashi Chugh				
b) Prof. Priya Singh				

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**Program Name: B. Tech**

**Academic Session: 2024-25**

**Year: 2<sup>nd</sup> Semester: 3<sup>rd</sup>**

**Course Name: Discrete Structure & Theory of Logic**

**Course Code: BCS 303**

**Course Coordinator Name: Prof. Priya Singh**

**CO - PO/PSO/APO Matrix**

CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	1	1	1	1	-	-	-	-	-	-	1	-	1
CO2	3	1	1	-	2	-	-	-	-	-	-	1	-	1
CO3	3	1	1	2	2	-	-	-	-	-	-	1	-	1
CO4	3	2	1		1	-	-	-	-	-	-	1	-	2
CO5	3	3	2		2	-	-	-	-	-	-	2	-	2
<b>PO Target</b>	<b>3</b>	<b>1.6</b>	<b>1.2</b>	<b>1.5</b>	<b>1.6</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1.2</b>	<b>-</b>	<b>1.4</b>

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Urvashi Chugh	<i>Urvashi</i>		

*Priya*  
Signature of Course Coordinator

*[Signature]*  
Assoc./ Asst. Head DOC

*[Signature]*  
Signature of Addl. HoD

*[Signature]*  
Signature of HoD

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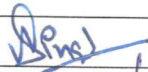
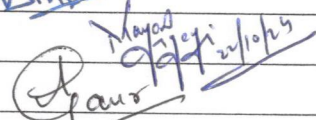
Semester: 3<sup>rd</sup>

Course Name: Python Programming

Course Code: BCC 302

Course Coordinator Name: Prof.Arushi 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	Understand the fundamentals of Python syntax, semantics and Programming.	PO1, PO2, PSO1	Understand	C
CO2	Acquire proficiency in handling strings and functions and be fluent in the use of Python control flow statements.	PO1, PO2, PO3, PO4, PO12, PSO1	Apply	C, P
CO3	Determine the methods for ease of user to write python programs by utilizing the data structures like lists, dictionaries, tuples and sets.	PO1, PO2, PO3, PO4, PO12, PSO1, PSO2	Apply	C, P
CO4	Apply the commonly used operations involved in file handling	PO1, PO2, PO3, PO4, PO12, PSO1, PSO2	Apply	C, P
CO5	Explain and use different in-built functions of packages and connect with GUI programming.	PO1, PO2, PO3, PO4, PO12, PSO1, PSO2	Apply	C, P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Prof. Arushi Singh				
b) Prof. Mayank Tyagi				
c) Prof. Anubha				

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**Program Name: B. Tech**

**Academic Session: 2024-25**

**Year: 2<sup>nd</sup> Semester: 3<sup>rd</sup>**

**Course Name: Python Programming**

**Course Code: BCC 302**

**Course Coordinator Name: Prof. Arushi Singh**

**CO - PO/PSO/APO Matrix**

CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	1	1	-	-	-	-	-	-	-	-	-	1	-
CO2	2	2	1	-	-	-	-	-	-	-	-	2	2	1
CO3	3	3	1	1	1	-	-	-	-	-	-	2	2	1
CO4	3	2	2	1	1	-	-	-	-	-	-	2	2	1
CO5	3	3	2	1	1	-	-	-	-	-	-	2	2	1
PO Target	2.6	2.2	1.5	1	1	-	-	-	-	-	-	2	1.8	1

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
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**

Academic Session: 2024-25

Year: 2<sup>nd</sup>

Semester: 3<sup>rd</sup>

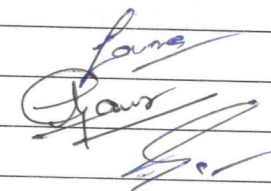

Course Name: DSUC Lab

Course Code: BCS 351

Course Coordinator Name: Dr. Sanjeev Kumar

Program Name: B. Tech

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
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Prof. Saurabh Sharma			Dr. Sanjeev Kumar	
b) Prof. Anubha				
c) 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.
- ❖ 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: 2024-25**

**Year: 2<sup>nd</sup>**

**Semester: 3<sup>rd</sup>**

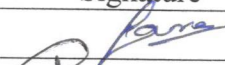
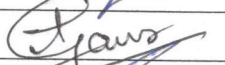

**Course Name: DSUC Lab**

**Course Code: BCS 351**

**Course Coordinator Name: Dr. Sanjeev Kumar**

**CO - PO/PSO/APO Matrix**

CO No.	Programme 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
<b>PO Target</b>	3	2.8	3	-	2	-	-	-	-	1	1	2.2	1.4	2.4

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
a) Prof. Saurabh Sharma			
d) Prof. Anubha			
e) Dr. Sanjeev 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).

▪ Program Name: B. Tech  
Course Name: COA Lab  
Course Outcomes

**Department of Information Technology**

Academic Session: 2024-25

Year: 2<sup>nd</sup>

Semester: 3<sup>rd</sup>

Course Code: BCS 352

Course Coordinator Name: Prof. Minakshi

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	Design the combinational circuits for binary arithmetic (such as adders, subtractors, and multiplier) and code converter.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO12	Evaluate	P
CO3	Design combinational circuits for encoders/decoders and selection devices multiplexers/demultiplexers using logic gates.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO12, PSO1, PSO2	Evaluate	P
CO4	Design 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	Evaluate	P
CO5	Design the 2-bit Arithmetic Logic Unit using logic gates.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO12, PSO1, PSO2	Evaluate	P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Prof. S. Sanjib Kumar		<i>Sanjib</i>		
b) Dr. Urvashi Chugh		<i>Urvashi</i>		
c) Prof. Minakshi		<i>Minakshi</i>		
d) Prof. Ruchin Gupta		<i>Ruchin</i>		

**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.

Program Name: B. Tech

Course Name: COA Lab

Department of Information Technology

Academic Session: 2024-25

Year: 2<sup>nd</sup> Semester: 3<sup>rd</sup>

Course Code: BCS 352

Course Coordinator Name: Prof. Minakshi

CO - PO/PSO/APO Matrix

CO No.	Programme 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	2.2	2.8	2.8	1.8	1	-	-	-	1	1	-	1	1.67	1

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
a) Prof. S. Sanjib Kumar	<i>Sanjib</i>		
b) Dr. Urvashi Chugh	<i>Urvashi</i>		
c) Prof. Minakshi	<i>Minakshi</i>		
d) Prof. Ruchin Gupta	<i>Ruchin</i>		

*Minakshi*  
Signature of Course Coordinator

*[Signature]*  
Assoc. Asst. Head DOC

*[Signature]*  
Signature of Addl. HoD

*[Signature]*  
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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▪ **Program Name: B. Tech**  
**Course Name: WD Workshop**  
**Course Outcomes**

**Department of Information Technology**


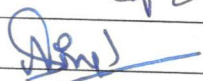
**Academic Session: 2024-25**

**Year: 2<sup>nd</sup>**

**Semester: 3<sup>rd</sup>**

**Course Code: BCS 353**

**Course Coordinator Name: Dr. Jitendra kr. Seth**

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 HTML tags to implement Web Pages	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Apply	P
CO2	Analyze the web pages look and feel using CSS.	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Analyze	P
CO3	Apply Bootstrap classes to design web pages.	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Analyze	P
CO4	Apply JavaScript to make web pages interactive.	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Apply	P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Dr. Jitendra kr. Seth				
b) Prof. Arushi Singh				

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

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**Department of Information Technology**

Academic Session: 2024-25

Year: 2<sup>nd</sup> Semester: 3<sup>rd</sup>

Program Name: B. Tech

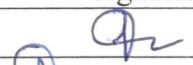

Course Name: WD Workshop

Course Code: BCS 353


Course Coordinator Name: Dr. Jitendra kr. Seth


CO - PO/PSO/APO Matrix

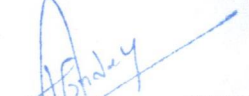
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	1	1	-	2	1	-	-	-	-	-	2	1	-
CO2	2	1	1	-	3	1	-	-	-	-	-	2	1	-
CO3	2	1	1	-	3	1	-	-	-	-	-	2	1	-
CO4	3	2	2	2	3	1	-	-	-	-	-	2	1	-
PO Target	2.25	1.25	1.25	2	2.75	1	-	-	-	-	-	2	1	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
a) Dr. Jitendra kr. Seth			
b) 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)

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**Department of Information Technology**

Academic Session: 2024-25

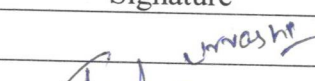
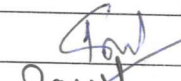
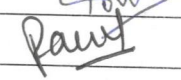
Year: 2<sup>nd</sup>

Semester: 3<sup>rd</sup>

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	Correlate the technical knowledge acquired in the internships for solving real world problems	PO1, PO2, PO3, PO4, PO6, PO8, PO9, PO10, PO11, PO12, PSO2	Analyze	Procedural
CO2	Use various tools for developing solution to the problem.	PO, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO11, PO12, PSO2	Create	Procedural
CO3	Validate technical information by means of written and oral reports.	PO1, PO4, PO8, PO9, PO10, PO11, PO12, PSO2	Evaluate	Conceptual, Procedural
Faculty Member's Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Dr. Urvashi Chugh				
b) Prof. Priya Singh				
c) Prof. Parul				

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

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**Department of Information Technology**

Academic Session: 2024-25

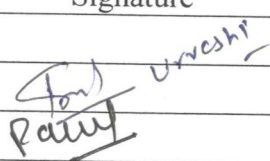
Year: 2<sup>nd</sup> Semester: 3<sup>rd</sup>

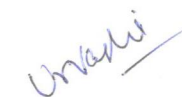
Program Name: B. Tech  
Course Name: Internship Assessment/Mini Project Course Code: BCC 351

Course Coordinator Name: Dr. Urvashi Chugh

**CO - PO/PSO/APO Matrix**

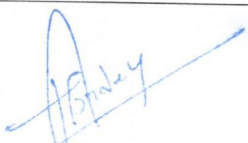
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1	3	1	1	-	3	2	3	3	-	3	3	-	1
CO2	1	-	3	3	2	1	-	3	3	1	3	3	-	2
CO3	1	-	-	1	-	-	-	3	3	3	3	2	-	1
PO Target	1	3	2	1.67	2	2	2	3	3	2	3	2.67	-	1.33

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
a) Dr. Urvashi Chugh			
b) Prof. Priya Singh			
c) Prof. Parul			

  
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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Program Name: B. Tech

Department of Information Technology

Academic Session: 2024-25

Year: 3<sup>rd</sup>

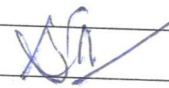

Semester: 5<sup>th</sup>

Course Name: Machine Learning Techniques

Course Code: BCS055

Course Coordinator Name: Dr. Sartaj Ahmad

Course Outcomes

After completion of the course, the student will be able to				
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO1	To understand the need for machine learning for various problem solving	PO1,PO2, PO3, PO6, PO7, PO12	Understand	C
CO2	To Apply a wide variety of learning algorithms for solving different type of real word problems	PO1,PO2, PO3, PO4, PO5, PO12	Apply	C,P
CO3	To understand the latest trends in machine learning	PO1,PO2, PO3, PO4, PO5,PO6,PO7, PO12	Understand	C
CO4	To design appropriate machine learning algorithms to a real-world problems	PO1,PO2, PO3, PO4, PO5,PO6,PO7, PO12,PSO1	Apply	C,P
CO5	To optimize the models learned and report on the expected accuracy	PO1,PO2, PO3, PO4, PO5, PO12,PSO1	Analyze	C,P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Dr. Sartaj Ahmad				
b) Prof. Arushi Singh				

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

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Program Name: B. Tech

Department of Information Technology

Academic Session: 2024-25

Year: 3<sup>rd</sup>

Semester: 5<sup>th</sup>

Course Name: Machine Learning Techniques

Course Code: BCS055

Course Coordinator Name: Dr. Sartaj Ahmad

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	1	1	-	-	1	1	-	-	-	-	2	-	-
CO2	2	2	2	1	1	-	-	-	-	-	-	2	-	-
CO3	2	2	2	1	1	1	1	-	-	-	-	2	-	-
CO4	2	2	3	3	2	1	1	-	-	-	-	1	1	-
CO5	2	2	2	1	3			-	-	-	-	1	1	-
PO Target	2	1.8	2	1.5	1.75	1	1	-	-	-	-	1.6	1	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Sartaj Ahmad			
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)

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**Department of Information Technology**

Academic Session: 2024-25

Year: 3<sup>rd</sup>

Semester: 5<sup>th</sup>


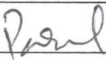
▪ Program Name: B. Tech

Course Name: Database Management System

Course Code: BCS 501

Course Coordinator Name: Prof. Analp Pathak

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 database knowledge to design solutions for real-life problems	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12	Apply	Conceptual / Procedural
CO2	Apply query processing techniques using SQL and PL/SQL to automate the real time problems of databases.	PO1, PO2, PO3, PO4, PO5, PO12	Apply	Conceptual / Procedural
CO3	Solve the redundancy problems in database tables using normalization	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO12	Apply	Conceptual / Procedural
CO4	Understand the concepts of transactions and recovery schemes	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO12	Understand	Conceptual
CO5	Understand the concepts of concurrency control techniques	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO12	Understand	Conceptual
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Prof. Analp Pathak				
b) Prof. Parul				

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

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**Department of Information Technology**

Academic Session: 2024-25

Year: 3<sup>rd</sup> Semester: 5<sup>th</sup>

Program Name: B. Tech

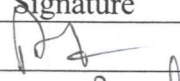
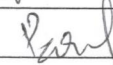
Course Name: Database Management System

Course Code: BCS 501

Course Coordinator Name: Prof. Analp Pathak


CO - PO/PSO/APO Matrix

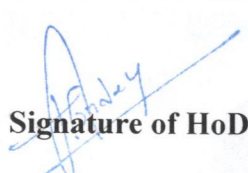
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	3	3	2	-	-	-	2	2	2	3	1	2
CO2	3	2	3	2	3	-	-	-	-	-	-	3	3	2
CO3	3	2	3	2	2	1	-	-	2	3	-	3	3	1
CO4	3	3	3	2	3	2	1	1	-	-	-	3	-	2
CO5	3	3	3	2	3	2	1	1	-	-	-	3	-	2
PO Target	3	2.4	3	2.5	2.6	1.66	1	1	2	2.5	2	3	2.33	1.8

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Analp Pathak			
Prof. Parul			

  
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: 2024-25**

**Year: 3<sup>rd</sup>**


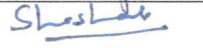
**Semester: 5<sup>th</sup>**

**Course Name: Design and Analysis of Algorithm**

**Course Code: BCS 503**

**Course Coordinator Name: Prof. Sherish Johri**

#### 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 the performance of algorithms using different asymptotic analysis methods	PO1, PO2, PO3, PO12, PSO1	Analyze	C, M
CO2	Understand the concept of Advance Data Structures	PO1, PO2, PO3, PO12, PSO1	Understand	C
CO3	Address computational problems using divide-and-conquer, greedy, and dynamic programming techniques	PO1, PO2, PO3, PO12, PSO1	Apply	C, P
CO4	Illustrate the applications of backtracking, branch-and-bound, string matching, and approximation algorithms	PO1, PO2, PO3, PO12, PSO1	Apply	C, P
CO5	Understand the concept of P & NP-Problems	PO1, PO2, PO3, PO12, PSO1	Understand	C
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Prof. Sherish Johri				
b) 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

Academic Session: 2024-25

Year: 3<sup>rd</sup>

Semester: 5<sup>th</sup>

Program Name: B. Tech

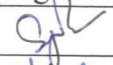
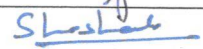
Course Name: Design and Analysis of Algorithm

Course Code: BCS 503

Course Coordinator Name: Prof. Sherish Johri


### CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	2	-	-	-	-	-	-	-	-	2	3	-
CO2	3	2	2	-	-	-	-	-	-	-	-	2	3	-
CO3	3	2	2	-	-	-	-	-	-	-	-	2	3	-
CO4	3	2	2	-	-	-	-	-	-	-	-	2	3	-
CO5	3	2	2	-	-	-	-	-	-	-	-	2	1	-
PO Target	3	2	2	-	-	-	-	-	-	-	-	2	2.6	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Sherish Johri			
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)**

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**Department of Information Technology**

Academic Session: 2024-25

Year: 3<sup>rd</sup>

Semester: 5<sup>th</sup>



Program Name: B. Tech

Course Name: Web Technology

Course Code: BCS502

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	Understand the fundamentals of web development with HTML and XML.	PO1, PO2, PO3, PO4, PO9, PO12, PSO1	Understand	F, C
CO2	Apply CSS to design responsive web applications.	PO1, PO2, PO3, PO4, PO9, PO12, PSO1	Apply	C, P
CO3	Apply Javascript, AJAX for scripting HTML documents and Networking concepts required for a website.	PO1, PO2, PO3, PO4, PO5, PO9, PO12, PSO1	Apply	C, P
CO4	Implement server side applications using EJB & Node.js with MongoDB.	PO1, PO2, PO3, PO4, PO5, PO9, PO12, PSO1	Apply	C, P
CO5	Apply components of servlets and JAVa Server Pages(JSP) to handle HTTP requests and session tracking.	PO1, PO2, PO3, PO4, PO5, PO9, PO12, PSO1	Apply	C, P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Prof. Rajeev Singh				
b) Prof. Anubha		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.

Program Name: B. Tech

Department of Information Technology

Academic Session: 2024-25

Year: 3<sup>rd</sup> Semester: 5<sup>th</sup>

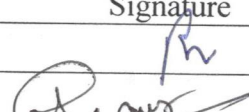
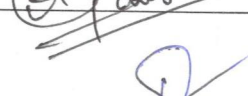
Course Name: Web Technology


Course Code: BCS502

Course Coordinator Name: Prof. Rajeev Singh

CO - PO/PSO/APO Matrix

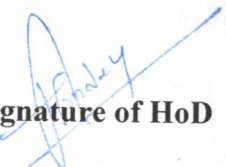
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1	1	1	1	-	-	-	-	1	-	-	2	2	-
CO2	1	1	1	1	-	-	-	-	1	-	-	2	2	-
CO3	2	2	2	2	2	-	-	-	2	-	-	2	2	-
CO4	2	2	2	3	3	-	-	-	2	-	-	2	2	-
CO5	2	2	2	2	2	-	-	-	2	-	-	2	2	-
PO Target	1.6	1.6	1.6	1.8	2.33	-	-	-	1.6	-	-	2	2	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Rajeev Singh			
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)

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**Department of Information Technology**

Academic Session: 2024-25

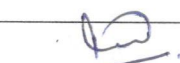
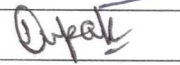
Year: 3<sup>rd</sup>

Semester: 5<sup>th</sup>

Course Name: Object Oriented Technology with C++ Course Code: BCS054

Course Coordinator Name: Prof. Ruchin Gupta

**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 insights of object-oriented programming	PO2, PO3, PO4, PO12, PSO1	Understand	C
CO2	Apply the role of overall modeling concepts using UML.	PO2, PO3, PO4, PO5, PO12, PSO1	Apply	P
CO3	Understanding various object-oriented analysis and design techniques	PO2, PO3, PO4, PO12, PSO1	Understand	C
CO4	Apply OOPS concepts using C++ programming language	PO1, PO2, PO3, PO4, PO12	Apply	P
CO5	Co-relate and Implement object-oriented concepts in example case study-based problems using C++	PO1, PO2, PO3, PO4, PO12	Analyze	P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Prof. Ruchin Gupta				
b) Prof. Deepak Vishwakarma				

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

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**Department of Information Technology**

**Program Name: B. Tech**

**Academic Session: 2024-25**


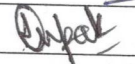
**Year: 3<sup>rd</sup> Semester: 5<sup>th</sup>**

**Course Name: Object Oriented Technology with C++ Course Code: BCS054**

**Course Coordinator Name: Prof. Ruchin Gupta**


**CO - PO/PSO/APO Matrix**

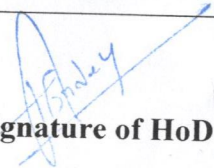
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	2	3	2	-	-	-	-	-	-	-	2	-	-
CO2	-	3	3	3	2	-	-	-	-	-	-	3	2	-
CO3	-	3	3	2	-	-	-	-	-	-	-	3	2	-
CO4	1	3	3	2	-	-	-	-	-	-	-	3	-	-
CO5	1	3	3	2	-	-	-	-	-	-	-	3	-	-
PO Target	1	2.8	3	2.2	2	-	-	-	-	-	-	2.8	2	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Ruchin Gupta			
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)**

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**Department of Information Technology**

Program Name: B. Tech

Academic Session: 2024-25

Year: 3<sup>rd</sup>

Semester: 5<sup>th</sup>

Course Name: Constitution of India, Law and Engineering

Course Code: BNC 501

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 basic features and modalities about the Indian constitution.	PO6,P07	Understand	Conceptual
CO2	Differentiate the functioning of Indian parliamentary system at the center and state level	PO6,P07	Analyze	Conceptual
CO3	Differentiate different aspects of the Indian Legal System and its related bodies.	PO6,P07,PO8	Analyze	Conceptual
CO4	Discover different laws and regulations related to engineering practices.	PO6,P07,PO8,PO10	Understand	Procedural
CO5	Correlate role of engineers with different organizations and governance models	PO6,P07,PO8,PO9,PO10,P011,PO12	Understand	Procedural
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
a) Prof. Ila Kaushik		<i>Ila Kaushik</i>		
b) Prof. Deepak Vishwakarma		<i>Deepak</i>		
c) Dr. Urvashi Chugh		<i>Urvashi</i>		

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

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**Department of Information Technology**

Academic Session: 2024-25

Year: 3<sup>rd</sup> Semester: 5<sup>th</sup>

Program Name: B. Tech

Course Name: Constitution of India, Law and Engineering

Course Code: BNC 501

Course Coordinator Name: Dr. Urvashi Chugh

**CO - PO/PSO/APO Matrix**

CO No.	Programme 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	2	-	-
PO Target	-	-	-	-	-	2.80	2	1.67	2	2	2	2	2	-	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Ila Kaushik	<i>Ila Kaushik</i>		
Prof. Deepak Vishwakarma	<i>Deepak Vishwakarma</i>		
Dr. Urvashi Chugh	<i>Urvashi Chugh</i>		

*Urvashi Chugh*  
Signature of Course Coordinator

*[Signature]*  
Assoc./ Asst. Head DOC

*[Signature]*  
Signature of Addl. HoD

*[Signature]*  
Signature of HoD

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### Department of Information Technology

▪ Program Name: B. Tech

Academic Session: 2024-25

Year: 3<sup>rd</sup>

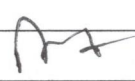


Semester: 5<sup>th</sup>

Course Name: DBMS Lab

Course Code: BCS 551

Course Coordinator Name: Prof. Anap Pathak

#### 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	Design logical and conceptual database schema for a real life problem using ERD tool.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO12, PSO1, PSO2	Create	C, P, M
CO2	Implement queries in SQL to store, retrieve, and manipulate data in relational databases.	PO1, PO2, PO3, PO5, PO12, PSO1, PSO2	Create	C, P, M
CO3	Apply PL/SQL to solve real-world database management and automation tasks.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO12, PSO1, PSO2	Apply	C, P, M
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Prof. Anap Pathak				
Dr. Sartaj Ahmad				
Prof. Parul				

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

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**Department of Information Technology**

Academic Session: 2024-25

Year: 3<sup>rd</sup>

Semester: 5<sup>th</sup>

Program Name: B. Tech


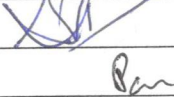

Course Name: DBMS Lab

Course Code: BCS 551

Course Coordinator Name: Prof. Analp Pathak

**CO - PO/PSO/APO Matrix**


CO No.	Programme 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	3	-	3	2	3
CO2	3	2	2	-	3	-	-	-	-	-	-	2	2	3
CO3	3	3	3	2	3	-	-	-	2	1	-	3	2	3
PO Target	3	2.66	2.66	2	3	2	-	-	2	2	-	2.66	2	3

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

  
Signature of Course Coordinator

  
Assoc./ Asst. Head DOC

  
Signature of Addl. HoD

  
Signature of HoD

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**Department of Information Technology**

Academic Session: 2024-25

Year: 3<sup>rd</sup>

Semester: 5<sup>th</sup>



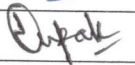
Program Name: B. Tech

Course Name: DAA Lab

Course Code: BCS 553

Course Coordinator Name: Prof. Sherish Johri

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	Implement algorithm to solve problems by iterative and recursive approach.	PO1, PO2, PO3, PO4, PO5 PO12, PSO1, PSO2	Apply	P
CO2	Implement algorithm to solve problems by divide and conquer approach.	PO1, PO2, PO3, PO4, PO5 PO12, PSO1, PSO2	Apply	P
CO3	Implement algorithm to solve problems by Greedy algorithm approach.	PO1, PO2, PO3, PO4, PO5 PO12, PSO1, PSO2	Apply	P
CO4	Implement algorithm to solve problems by Dynamic programming, backtracking, branch and bound approach.	PO1, PO2, PO3, PO4, PO5 PO12, PSO1, PSO2	Apply	P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Prof. Sherish Johri				
Prof. Shashank Yadav				
Prof. Deepak Vishwakarma				

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

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**Department of Information Technology**

Academic Session: 2024-25

Year: 3<sup>rd</sup>

Semester: 5<sup>th</sup>

Program Name: B. Tech

Course Name: DAA Lab

Course Code: BCS 553

Course Coordinator Name: Prof. Sherish Johri

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	1	1	2	-	-	-	-	-	-	1	3	-
CO2	3	2	1	1	2	-	-	-	-	-	-	1	3	-
CO3	3	2	1	1	2	-	-	-	-	-	-	1	3	-
CO4	3	2	1	1	3	-	-	-	-	-	-	1	3	-
PO Target	3	2	1	1	2.25							1	3	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Sherish Johri			
Prof. Shashank Yadav			
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)

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Program Name: B. Tech

**Department of Information Technology**

Academic Session: 2024-25

Year: 3<sup>rd</sup>



Semester: 5<sup>th</sup>

Course Name: Web Technology Lab

Course Code: BCS 552

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	Implement HTML CSS, Javascript and XML to develop dynamic and responsive websites.	PO1, PO2, PO3, PO4, PO5, PO9, PO12, PSO1	Apply	C, P
CO2	Implement different components of java Bean and Node.js to develop web application with MongoDB	PO1, PO2, PO3, PO4, PO5, PO9, PO12, PSO1	Apply	C, P
CO3	Construct server-side java application using Servlet and JSP tools to process request and response data.	PO1, PO2, PO3, PO4, PO5, PO9, PO12, PSO1	Apply	C, P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Prof. Rajeev Singh				
Prof. S Sanjib Kr.				
Prof. Anubha		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

Academic Session: 2024-25

Year: 3<sup>rd</sup>

Semester: 5<sup>th</sup>

Program Name: B. Tech

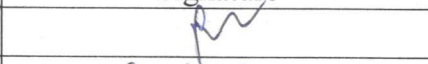

Course Name: Web Technology Lab


Course Code: BCS552

Course Coordinator Name: Prof. Rajeev Singh

### CO - PO/PSO/APO Matrix

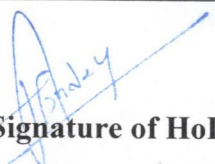
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1	2	2	1	1	-	-	-	2	-	-	2	2	-
CO2	2	2	2	3	3	-	-	-	2	-	-	2	2	-
CO3	2	2	2	2	2	-	-	-	2	-	-	2	2	-
PO Target	1.67	2	2	2	2	-	-	-	2	-	-	2	2	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Rajeev Singh			
Prof. S Sanjib Kr.			
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).

**Program Name: B. Tech**

**Department of Information Technology**

**Academic Session: 2024-25**

**Year: 3<sup>rd</sup>**

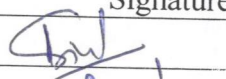


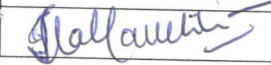
**Semester: 5<sup>th</sup>**

**Course Name: Mini Project / Internship**

**Course Code: BCS 554**

**Course Coordinator Name: Prof. Ruchin Gupta**

**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 real-life problems and apply programming knowledge to design and implement effective solutions.	PO1,PO2,PO3,PO4,PO5,P O6,PO7,PO9,PO10,PO11,, PSO1,PSO2	Analyze	C,P
CO2	Engage in the creative design process by synthesizing diverse technical knowledge and applying expertise to meet customer needs and address social issues.	PO1,PO2,PO3,PO4,PO5,P O6,PO7,PO9,PO10,PO11,, PSO1,PSO2	Apply	P
CO3	Utilize various tools, techniques, and coding practices to develop practical solutions for real-life problems.	PO1,PO2,PO3,PO4,PO5,P O6,PO7,PO9,PO10,PO11,, PSO1,PSO2	Create	P, M
CO4	Demonstrate writing and presentation skills by preparing and presenting comprehensive reports on the mini project.	PO1,PO2,PO3,PO4,PO5,P O6,PO9,PO10, PSO1,PSO2	Apply	P, M
CO5	Identify and evaluate errors in application solutions and refine the implementation to improve functionality.	PO1,PO2,PO3,PO4,PO5,P O6,PO9,PO10,PO11,PSO1, PSO2	Evaluate	P, M
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Prof. Priya Singh				
Prof. Parul				
Prof. Ruchin Gupta				
Prof. Ila Kaushik				

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

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**Department of Information Technology**

Academic Session: 2024-25

Year: 3<sup>rd</sup>

Semester: 5<sup>th</sup>

Course Name: Mini Project / Internship

Course Code: BCS 554

Course Coordinator Name: Prof. Ruchin Gupta

**CO - PO/PSO/APO Matrix**

CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	2	3	3	2	-	1	3	1	-	3	3
CO2	3	3	3	2	3	3	2	-	1	3	1	-	3	3
CO3	3	3	3	3	3	3	2	-	1	3	1	-	3	3
CO4	3	3	2	2	3	3	-	-	1	3	-	-	1	1
CO5	3	3	2	2	3	3	-	-	1	3	1	-	3	3
PO Target	3	3	2.6	2.2	3	3	2	-	1	3	1	-	2.6	2.6

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Priya Singh			
Prof. Parul			
Prof. Ruchin Gupta			
Prof. Ila Kaushik			

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 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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▪ Program Name: B. Tech

Course Name: Cloud Computing

Course Outcomes

Department of Information Technology


Academic Session: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

Course Code: KCS 713

Course Coordinator Name: Dr. Veepin Kumar

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 evolution & principles of cloud computing.	PO1, PO2, PO5, PO9, PO12, PSO2	Understand	F,C
CO2	Apply Virtualization of hardware and software resources for Cloud Computing.	PO1, PO2, PO5, PO8, PO9, PO10, PO12, PSO1, PSO2	Apply	C,P
CO3	Implement data access management, data storage and computing services on Cloud.	PO1, PO2, PO5, PO8, PO9, PO10, PO12, PSO1, PSO2	Apply	C,P
CO4	Explain Inter cloud resources management, cloud storage services and Security Services.	PO1, PO2, PO5, PO8, PO9, PO10, PO12, PSO2	Understand	F,C
CO5	Analyze standards, and applications of advanced cloud technologies.	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	F,C,P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Dr. Veepin Kumar				

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

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Program Name: B. Tech

Course Name: Cloud Computing

CO - PO/PSO/APO Matrix

Department of Information Technology

Academic Session: 2024-25

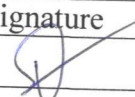
Course Code: KCS 713

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

Course Coordinator Name: Dr. Veepin Kumar

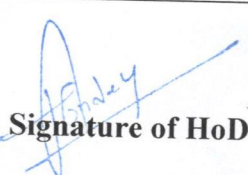
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	1	-	-	2	-	-	-	1	-	-	2	-	2
CO2	2	1	-	-	2	-	-	1	1	1	-	2	1	2
CO3	2	1	-	-	2	-	-	1	1	1	-	2	1	2
CO4	3	2	-	-	2	-	-	1	1	1	-	2	-	2
CO5	3	3	2	2	3	-	-	2	2	1	2	2	2	2
PO Target	2.4	1.6	2	2	2.2	-	-	1.2 5	1.2	1	2	2	1.3 3	2

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Veepin 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)

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**Department of Information Technology**

Academic Session: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

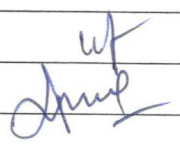
Program Name: B. Tech

Course Name: Artificial Intelligence

Course Code: KCS 071

Course Coordinator Name: Dr. 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.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Understand	C
CO2	Apply basic principles of AI in solutions that require problem-solving methods	PO1, PO2, PO3, PO5, PO12, PSO2	Apply	C,P
CO3	Determine the effectiveness of truths by knowledge representation methods in AI.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Analyze	C,P
CO4	Analyze intelligent agents by exploring the architecture and communication of agents.	PO1, PO2, PO3, PO5, PO12, PSO2	Apply	C,P
CO5	Analyze various AI applications in Information retrieval and extraction, Natural Language Processing, speech recognition and Robots	PO1, PO2, PO3, PO5, PO12, PSO2	Analyze	C,P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Dr. Mukul Agarwal				
Dr. Vikas Goel				

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**Program Name: B. Tech**

**Department of Information Technology**

**Academic Session: 2024-25**

**Year: 4<sup>th</sup>**

**Semester: 7<sup>th</sup>**

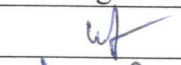

**Course Name: Artificial Intelligence**

**Course Code: KCS 071**

**Course Coordinator Name: Dr. Mukul Agarwal**

**CO - PO/PSO/APO Matrix**

CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	-	-	-	-	2	2	-	-	-	-	3	2	2
CO2	3	3	2	2	3	-	-	-	-	-	-	3	3	2
CO3	3	3	2	3	3	-	-	-	-	-	-	2	2	2
CO4	3	3	3	3	3	-	-	2	-	-	2	2	2	3
CO5	3	3	2	3	3	3	2	2	-	-	-	2	2	2
<b>PO Target</b>	3	3	2	3	3	2.5	2	2	-	-	2	2.5	2	2

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

  
 Signature of Course Coordinator

  
 Assoc./Asst. Head DOC

  
 Signature of Addl. HoD

  
 Signature of HoD

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### Department of Information Technology

Academic Session: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>


Program Name: B. Tech

Course Name: Project Management & Entrepreneurship  
Sharma

Course Code: KHU 702

Course Coordinator Name: Prof. Kamal Kant

#### 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 theories of entrepreneurship and Entrepreneurial Development Programmes.	PO6, PO9, PO11	Understand	F
CO2	Create innovative business ideas and market opportunities for business development.	PO6, PO9, PO11, PSO2	Understand	C
CO3	Understand the importance of Project life cycle and different types of appraisal techniques.	PO6, PO7, PO9, PO10, PO11, PO12	Understand	C
CO4	Define different types of project financing requirements on the basis of cash flow statements.	PO6, PO9, PO10, PO11, PO12	Apply	P
CO5	Describe social entrepreneurship opportunities and risk management techniques in social enterprises.	PO6, PO7, PO9, PO11, PO12, PSO2	Understand	C
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Prof. Kamal Kant Sharma				

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### Department of Information Technology

Academic Session: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

Program Name: B. Tech


Course Name: Project Management & Entrepreneurship

Course Code: KHU 702

Course Coordinator Name: Prof. Kamal Kant

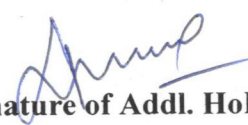
### CO - PO/PSO/APO Matrix

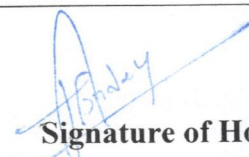
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	1	-	-	2	-	2	-	-	-
CO2	-	-	-	-	-	1	-	-	1	-	1	-	-	2
CO3	-	-	-	-	-	2	1	-	2	1	1	1	-	-
CO4	-	-	-	-	-	1	-	-	2	2	2	1	-	-
CO5	-	-	-	-	-	2	2	-	2	-	1	1	-	2
PO Target	-	-	-	-	-	1.4	1.5	-	2.25	1.5	1.4	1	-	2

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

  
Signature of Course Coordinator

  
Assoc./ Asst. Head DOC

  
Signature of Addl. HoD

  
Signature of HoD

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### Department of Information Technology

Academic Session: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

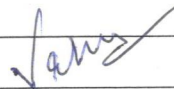
Program Name: B. Tech

Course Name: Renewable Energy Resources

Course Code: KOE 074

Course Coordinator Name: Prof Varun 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 various non-conventional energy resources and their availability along with knowledge on solar cells.	PO1, PO4, PO6, PO7, PO10, PO12	Understand	Factual
CO2	Apply the concept of solar radiation on flat plate and focusing type collectors to convert solar energy into electrical energy.	PO1, PO4, PO6, PO7, PO10, PO12	Apply	Conceptual
CO3	Understand the concept of electrical energy generation from geothermal energy, magneto-hydro dynamics and fuel cells.	PO1, PO4, PO6, PO7, PO10, PO12	Understand	Conceptual
CO4	Understand the concept of electrical energy generation from thermo-electrical, thermionic and wind energy conversions	PO1, PO4, PO6, PO7, PO10, PO12	Understand	Conceptual
CO5	Understand biomass, ocean thermal, wave and tidal wave energy conversions.	PO1, PO4, PO6, PO7, PO10, PO12	Understand	Conceptual
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Prof Varun Sharma				

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Program Name: B. Tech

Department of Information Technology

Academic Session: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

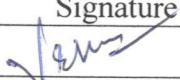
Course Name: Renewable Energy Resources

Course Code: KOE 074

Course Coordinator Name: Prof Varun Sharma


CO - PO/PSO/APO Matrix

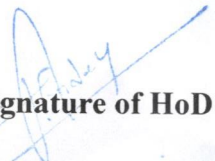
CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1	-	-	1	-	2	3	-	-	1	-	1	-	-
CO2	3	-	-	2	-	3	3	-	-	1	-	2	-	-
CO3	1	-	-	2	-	2	3	-	-	1	-	2	-	-
CO4	1	-	-	2	-	2	3	-	-	1	-	2	-	-
CO5	1	-	-	2	-	2	3	-	-	1	-	2	-	-
PO Target	1.4	-	-	1.8	-	2.2	3	-	-	1	-	1.8	-	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof Varun Sharma			

  
 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: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

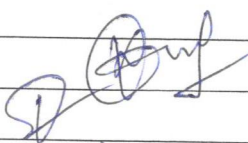
Program Name: B. Tech

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	Analyse	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 impact fulness 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)**

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Program Name: B. Tech

Department of Information Technology

Academic Session: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

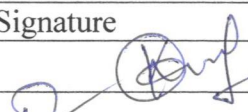

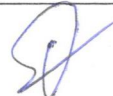
Course Name: Mini Project/ Internship

Course Code: KIT 752

Course Coordinator Name: Prof. Kamal Kant Sharma

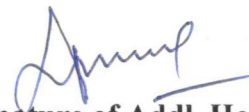
CO - PO/PSO/APO Matrix

CO No.	Programme 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	3	3	2.6	2.4	3	2	2	2	3	3	2	3	2	3

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.

**Department of Information Technology**

Program Name: B. Tech

Academic Session: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

Course Name: Artificial Intelligence Lab  
 Agarwal

Course Code: KIT 751

Course Coordinator Name: Dr. Mukul

**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 problems where artificial intelligence techniques are applicable.	PO1, PO2, PO3, PO4, PO5 PO12, PSO1, PSO2	Apply	C
CO2	Apply selected basic AI techniques; judge applicability of more advanced techniques.	PO1, PO2, PO3, PO4, PO5 PO12, PSO1, PSO2	Apply	C,P
CO3	Participate in the design of systems that act intelligently and learn from experience	PO1, PO2, PO3, PO4, PO5 PO12, PSO1, PSO2	Evaluate	C,P
Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course	Signature
Dr. Mukul Agarwal				
Dr. Vikas Goel				
Prof. Ila Kaushik				

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.



NIRF-2024  
Engineering Rank Band (151-200)  
Pharmacy Rank - 77  
Innovation Rank Band (11-50)

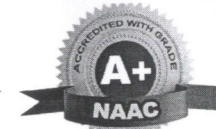


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Program Name: B. Tech

Course Name: Artificial Intelligence Lab  
Agarwal

CO - PO/PSO/APO Matrix

Department of Information Technology

Academic Session: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

Course Code: KIT 751

Course Coordinator Name: Dr. Mukul

CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	-	3	2	2	2	2	-	2	-	-	2	2	2
CO2	3	2	2	3	2	3	3	-	-	-	-	3	2	2
CO3	3	3	2	-	2	3	-	-	-	-	-	3	2	2
PO Target	3	2.5	2	3	2	3	3	-	2	-	-	3	2	2

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

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 -



### Department of Information Technology

Academic Session: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

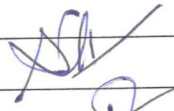
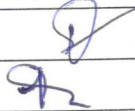

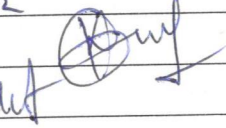
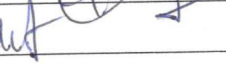
Program Name: B. Tech

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	Justify/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. Sartaj Ahmad				
Dr. Veepin Kumar				
Dr. Jitendra Kr. Seth				
Prof. Kamal Kant Sharma				
Dr. 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**

Academic Session: 2024-25

Year: 4<sup>th</sup>

Semester: 7<sup>th</sup>

Program Name: B. Tech

Course Name: Project

Course Code: KIT 753

Course Coordinator Name: Dr. Sartaj Ahmad

**CO - PO/PSO/APO Matrix**

CO No.	Programme 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
<b>PO Target</b>	3	3	3	3	2.2	2	1	1	3	2.2	2.4	2.8	1.8	2.4

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Dr. Sartaj Ahmad			
Dr. Veepin Kumar			
Dr. Jitendra Kr. Seth			
Prof. Kamal Kant Sharma			
Dr. Mukul Agarwal			

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

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