

# KIET GROUP OF INSTITUTIONS, GHAZIABAD Department of Computer Science

# **Course Outcomes**

**Session 2023-24** 



# **Department of Computer Science**

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

Website: www.kiet.edu

### **Department of Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 2nd

Semester:

3rd

Course Name: Sensor & Instrumentation

Course Code: BOE305

Course Coordinator Name: Prof. SALIM

**Course Outcomes** 

Af	ter completion of the course, the student will be able to	Relevant POs/ PSOs	Revised	Knowledge
CO No.	Statement of Course Outcome	Relevant POS/ PSOS	Bloom's Level (BL)	Category (KC)
CO1	Understand the use of sensors for measurement of displacement, force and pressure.	PO1, PO2, PO3, PO4, PO11, PSO1, PSO2	Understand	C, P
CO2	Understand the use of sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.	PO1, PO2, PO3, PO4, PO5, PO9, PO11, PSO1, PSO2	Understand	C, P
СОЗ	Apply the concept of virtual instrumentation in automation industries.	PO1, PO2, PO3, PO4, PO5, PO6, PSO1, PSO2	Apply	F, P
CO4	Understand, Identify and use data acquisition methods.	PO1, PO2, PO3, PO4, PO5, PO6, PSO1, PSO2	Understand	C, P
CO5	Comprise intelligent instrumentation in industrial automation.	PO1, PO2, PO3, PO4, PO5, PO6, PSO1, PSO2	Understand	C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Prof. SALIM	Cu/		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech Course Name: Sensor & Instrumentation

Academic Session: 2023-24

Course Code: BOE305

Year: 2nd

Semester: 3rd

Course Coordinator Name: Prof. SALIM

### CO - PO/PSO/APO Matrix

												P	PSO	
1	2	3	4	5	6	7	8	9	10	11	12	1	2	
3	2	2	2	-	-	-	-	-	-	2	-		2	
3	3	2	3	2	-	-		-	-	3	_		2	
3	2	2	3	3	3		_	_	-				2	
2	3	2	2	2	3	2	_	_	-	-				
2	2	2	2	2			_				-		2	
2.6	2.4	2					-	-	-		-		2	
	3 3 2	3 3 2 2 2 2	3 2 2 3 3 2 2 2 2 3 2 2 2 2	3     2     2     2       3     3     2     3       3     2     2     3       2     3     2     2       2     2     2     2	1     2     3     4     5       3     2     2     2     -       3     3     2     3     2       3     2     2     3     3       2     3     2     2     2       2     2     2     2     2	1     2     3     4     5     6       3     2     2     2     -     -       3     3     2     3     2     -       3     2     2     3     3     3       2     3     2     2     2     3       2     2     2     2     2     2	1     2     3     4     5     6     7       3     2     2     -     -     -       3     3     2     3     2     -       3     2     2     3     3     -       2     3     2     2     2     3     2       2     2     2     2     2     2     -	3     2     2     2     -     -     -       3     3     2     3     2     -     -       3     2     2     3     3     -     -       2     3     2     2     2     3     2     -       2     2     2     2     2     2     -     -	1     2     3     4     5     6     7     8     9       3     2     2     -     -     -     -     -       3     3     2     3     2     -     -     -       2     3     2     2     3     3     -     -     -       2     3     2     2     2     3     2     -     -       2     2     2     2     2     -     -     -	1     2     3     4     5     6     7     8     9     10       3     2     2     -     -     -     -     -     -       3     3     2     3     2     -     -     -     -       2     3     2     2     2     3     2     -     -     -       2     2     2     2     2     -     -     -     -     -	1     2     3     4     5     6     7     8     9     10     11       3     2     2     2     -     -     -     -     -     2       3     3     2     3     2     -     -     -     -     -     3       2     3     2     2     3     3     -     -     -     -     2       2     3     2     2     2     3     2     -     -     -     3       2     2     2     2     2     -     -     -     -     -     2	1     2     3     4     5     6     7     8     9     10     11     12       3     2     2     -     -     -     -     -     -     -     2     -       3     3     2     3     3     -     -     -     -     2     -       2     3     2     2     3     2     -     -     -     -     3     -       2     2     2     2     2     -     -     -     -     2     -       26     24     2     2     2     2     -     -     -     -     2     -	1     2     3     4     5     6     7     8     9     10     11     12     1       3     2     2     2     -     -     -     -     -     2     -     3       3     3     2     3     2     -     -     -     -     -     2       2     3     2     2     3     3     -     -     -     -     2       2     3     2     2     3     2     -     -     -     -     2       2     2     2     2     2     -     -     -     -     2       26     24     2     2     2     2     -     -     -     -     2	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	C:t
1. Prof. SALIM	my	reaching the Course	Signature

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science** 

Program Name: B.Tech Course Name: Universal Human Values Academic Session: 2023-24

**Course Outcomes** 

Year: 2nd

Course Code: BVE301

	After completion of the	Course Code: BVE3	Course Coor	dinator Name: Pro	Semester: 3
~ -	completion of the cour	se, the student will be able to		rame, Pro	i. Pawan Kr. Pal
CO No.	Stateme	nt of Course Outcome	Relevant POs/ PSOs	Revised	Knowledge
CO1	Understand the process of	self-exploration and meaning of natura acceptance.	PO6, PO7, PO8,	Bloom's Level (BL)	Category (KC)
CO2	Explore the concept of ha	armony in the human to the	PO9, PO10, PO12, PSO2	Understand	C, P
CO3	Analyze the process of dev	'body' as separate entity veloping harmony in family and society	PO6, PO7, PO8, PO9, PO10, PO12 PO6, PO7, PO8,	Analyze	C, P
CO4		eloping harmony in nature and existenc	PO9, PO10, PO12, PSO2	Analyze	C, P
CO5		nderstanding of harmony of professiona	POPO9, PO10, PO12	Analyze	C, P
	embers Teaching the Course	etnics.	PO9, PO10, PO12, PSO2	Apply	C, P
1. Prof	f. Pawan Kumar Pal	Signature Facu	llty Members Teaching the C		Signature
	C. Arti Sharma	Jest	·	A	
gnature o	f Course Coordinator	Assoc./ Asst. Head DOC	Signature of Add Hon	Sin	,

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.

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

# **Department of Computer Science**

Program Name: B.Tech.

Academic Session: 2023-24

Year: 2nd

Semester: 3rd

Course Name: Universal Human Values Course Code: BVE301

Course Coordinator Name: Prof. Pawan Kumar Pal

CO - PO/PSO/APO Matrix

CO No.				1	Progr	amme C	utcome	(PO)						
	l	2	3	4	5	6	7		-				PS	O
CO1	-	-	-			- 1		8	9	10	11	12	1	2
				_	-	1	1	1	1	1	-	1	-	
CO2	-	-		-	-	3	2	3	2	1	-	2		1
CO3	-	-	-	-	_	3						2	-	-
					_	3	2	3	2	1	-	2	-	2
CO4	-	-	-	-	-	3	2	3	2	1	-	2		
CO5	-	-	-	-		-				<u> </u>		2	-	-
					-	3	2	3	2	1	-	2	-	2
PO Target	-	-	-	-	-	2.6	1.0	2 (						
						2.0	1.8	2.6	1.8	1	-	1.8	-	1.

Faculty Members Teaching the Course	Signature	P. L.	
1.Prof. Pawan Kumar Pal	Signature	Faculty Members Teaching the Course	Signature
2.Prof. Arti Sharma	MAC		
3.Prof. Rishabh Jain	1		
	Moon		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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
- ❖ If there is no correlation, then put a "-" (dash).

### **Department of Computer Science**

Program Name: B.Tech

Course Name: Data Structure

**Course Outcomes** 

Academic Session: 2023-24 Course Code: BCS301

Course Coordinator Name: Dr. Harsh Kharter

Af	ter completion of the course,	the student will be able to		Revised	** * * *
CO No.	Statement o	f Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)	Category (XO
CO1	Apply the concepts of Array	and Linked List in problem solvin	g. PO1, PO2, PO3, PO12, PSO1, PSO2	Apply	C.P
CO2	and the same of th	l-linear data structures to solve the ession Solving, Tower of Hanoi, e	101,102,103,1012,	Apply	C.P
CO3	1 1	g and sorting algorithms using data ure concepts.	PO1, PO2, PO3, PO12, PSO1, PSO2	Apply	C.P
CO4		various data structures on different places and memory allocation.	PO1, PO2, PO3, PO4, PO12, PSO1, PSO2	Analyze	C.M
CO5	Make the solutions for see algorithm and	enario-based problems in terms of programming code.	PO1, PO2, PO3, PO12, PSO1, PSO2	Cresse	C,M
ander M	embers Teaching the Course	Signature	Faculty Members Teaching the	Course	Shame
	Harsh Khatter	O land			
		(Ni			
	f. Anurag Mishra				
3. Pro	f. Sreesh Gaur	TIM.	4		13

Signature of County Coordinator

Signature of Addl. HoD

The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminary included a survival design credit of the seminary courses of the seminary

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 are see Active & Considering a proper structure having mandatory and optional parts. Condition and Criteria.

# **Department of Computer Science**

Program Name: B.Tech Course Name: Data Structure

Academic Session: 2023-24

Year: 2nd

Semester: 3rd

Course Code: BCS301

Course Coordinator Name: Dr. Harsh Khatter

### CO - PO/PSO/APO Matrix

CO No.	NATURE OF THE PARTY OF THE PART	Programme Outcome (PO)											100	
	1	2	3	.1	5		7	-	-	1.0	1		I	<b>'SO</b>
CO1	3	3	2			6	/	8	9	10	11	12	1	2
COI	AT BEST AND DESCRIPTION OF THE PARTY OF THE		~	-	*	*	*	-	*	-	-	2	3	2
CO2	3	3	2	16	- CONTRACTOR COM		of representatives are in the	-	-	-				
	A SECULAR SECU							-	*	**	*	2	3	2
CO3	3	3	1	N.	-				4	7 4 10 100000 10 10 10 10 10		1	-	
	^	- characteristic residence	The state of the s							*		-4	3	2
CO4	3	3	1	2			*	-		4		)	3	1
610 -	3	2	-	- Charleston Controller		Patters to accorde							3	4.
CO5	,	3	'		*	*	*		*			2	3	2
PO Target	3	3	1.40	2	and the state of t	ROTTE: SHARETSHARE		territerasinskriterasyri			-			
PO Target			1110	A-1	"		*		*		100	2	3	2

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	21
1. Dr. Harsh Khatter	1 0	racing Memoers Teaching the Course	Signature
2.Prof. Anurag Mishra	N. W.		
3.Prof. Sreesh Gaur	0-16		A.
	115		The second second

Signature of Codese Coordinator

Assoc. FAsst. Head DOC

Signature of HoD

- 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-PSO Matrix,
- ❖ If there is no correlation, then put a "-" (dash).

Department of Computer Science

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

Semester: 3rd

Course Name: Computer Organization and Architecture Course Code:BCS302 Course Coordinator Name: Prof. Amit Kumar Singh Sanger

Course Outcomes

Aft	er completion of the course, the student will be able to	Relevant POs/ PSOs	Revised Bloom's Level	Knowledge Category (KC)	
CO No.	Statement of Course Outcome	Relevanti Os 1303	(BL)		
CO1	Relate the fundamental components of the basic computer system with its organization.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12	Understand	C. P	
CO2	Illustrate the design of ALU, fixed- floating-point representations and various multiplication, division operations on binary numbers.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12	Apply	C.P	
CO3	Interpret control unit design and concept of pipelining.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12	Understand	c	
CO4	Apply the concept of different types of memories for designing of memory system.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12 Apply		C.P	
CO5	Understand different ways of communication with I/O devices and standard I/O interfaces	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12	Understand	C.P	

Faculty Members Teaching the Course		Signature	Faculty Members Teaching the Course S
<ol> <li>Prof. Amit Kumar Singh Sanger</li> </ol>		Info Dillie	
Prof. Akash Goel			
3. Prof. Shreela Pareek	tone		

- Select Total

Signature of Course Coordinator

Assoc./ Asst. Head DOC

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, inclustrial 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

# Course Name: Computer Organization and Architecture Course Code; BCS302 Course Coordinator Name; Prof. Amit Kumar Singh Sanger CO - PO/PSO/APO Matrix

CO No.	- Annual Control of the Control of t			•	Prop	gramme (	Outcom	e (PO)					The same of the same	
	l	2	3	4	5	6	7	8	0	1 40	The state of the s		P	SO
CO1	2	2	1	2			-	0	\ <u>'</u>	10	11	12	1	2
CO2	0		-	-	N .		1.50	is natural residence		"	1		*	1
The same of the sa	4	2	1	2	"	An		-	**		THE REAL PROPERTY.	8	2	
CO3	2	2	2	2	**	n	м	В	H .		and the same of th			
CO4	2	2	2	2					-	n management	NT SECURIORIS	Approximation		1
CA CA		A.	4	4							1	м	*	1
CO5	2	2	2	2		-	~		M	и		я	R CONTRACTOR CONTRACTOR	
PO Target	2	2	1.60	2			н			To Commission of the Commissio	Total State of the last of the			

Faculty Members Teaching the Course	Cianatawa	11	
1. Prof. Amit Kumar Singh Sanger	Signature	Faculty Members Teaching the Course	Signature
2. Prof. Akash Goel	0		
3. Prof. Shreela Pareek	Land		343.50

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science** 

Program Name: B.Tech Course Name: DSTL

Academic Session: 2023-24

Year: 2nd

Semester: 3rd

Course Outcomes

Course Code: BCS303

Course Coordinator Name: Prof. Harshvardhan

Aft	er completion of the course,	the student will be able to			
CO No.	Statement	of Course Outcome	Relevant POs/ PSOs	Revised Bloom's Level	Knowledge Category (KC)
CO1	Illustrate basic mathemat	ical objects such as sets, relations,	PO1, PO2, PO12,	(BL)	
	POSE	T and Lattices.	DSO2	Apply	C,P
CO2	Examine various structure	s and properties of Boolean algebra	ra PO1, PO2, PO7,	11.	3,2
	and	d functions.	DCO2	Apply	C,P
CO3	Explore the mathematical	properties via formal language of	PO1, PO2, PO4, PO7,	11.5	
CO3	propositional	l and predicate logic.	PO11, PO12, PSO1,	Analyze	C,P
	Salva substantial		DSO2		٠,,
CO4	Solve substantial experience	ce of Algebraic Structure as group	s, PO1, PO2, PO4,		
C04	ring	s and fields.	PO11, PO12, PSO1,	Apply	C,P
	Llos sweethers at 1		PSO2		,
CO5	Ose graphs as tools to vis	ualize and simplify the problems.	PO1, PO2, PO4, PO5,		
203			PO7, PO11, PO12,	Apply	C,P
Coulty Ma			PSO1, PSO2		
	embers Teaching the Course	Signature	Faculty Members Teaching the C	Course	Signature
1. Prof	f. Harsh Vardhan	1988h	8		Signature

Signature of Course Coordinator

2. Prof. Pardeep Tyagi

3. Prof. Akanksha

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech.

Academic Session: 2023-24

Year: 2nd

Semester: 3<sup>rd</sup>

Course Name: DSTL Course Code: BCS303

Course Coordinator Name: Prof. Harshvardhan

CO - PO/PSO/APO Matrix

CO No.				•	Prog	ramme	Outcom	e (PO)					I	PSO
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	1	-	-	-	-	-	-	-	-	-	1	-	1
CO2	3	1	-	-	-	-	1	-	-	-	-	-	-	2
CO3	2	1	-	2	-	-	1	-	-	-	1	2	1	3
CO4	3	1	-	2	-	-		-	-	-	1	1	1	3
CO5	2	1	-	2	3	-	1	-	-	-	2	2	2	2
PO Target	2.6	1	-	2	3	-	1	-	-	-	1.33	1.40	1.33	2.0

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Prof. Harshvardhan	4981b	, and equipe	Signature
2. Prof. Pardeep Tyagi	Pr		
3. Prof. Akanksha	20gr		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science** 

Program Name: B.Tech

Academic Session: 2023-24

Semester: 3rd

Course Name: Python Programming

Course Code: BCC302

Course Coordinator Name: Prof.Vishakha Chauhan

Year: 2nd

Course Outcomes

	upletion of the course, the student will be able to		Revised	
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)	Knowledge Category (KC)
C01	Explain the fundamentals of Python syntax, semantics and programming.	PO1, PO2	Understand	С
CO2	Acquire proficiency in the handling of strings and functions and be fluent in the use of Python control flow statements.	PO1, PO2, PO3, PO4, PO12	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	Apply	C, P
CO4	Interpret the commonly used operations involving file systems and regular expressions.	PO1, PO2, PO3, PO4, PO12	Understand	F, C
C05	Explain and use of different in-built function of packages and connecting with GUI programming.	PO1, PO2, PO3, PO4, PO12	Apply	C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Vishakha Chauhan	Vishalle	•	
2. Rahul Kumar	Mul		

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.

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. Condition and Criteria.

**Department of Computer Science** 

Program Name: B.Tech Course Name: Python Programming

Academic Session: 2023-24 Course Code: BCC 302

Year: 2nd

Semester: 3rd Course Coordinator Name: Prof. Vishakha Chauhan

CO - PO/PSO/APO Matrix

CO No.					Progra	amme O	utcome (	(PO)					PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	2	1	-	-	-	-	-	-	-	-	_	-	-		
CO2	2	2	1	1	-	-	-	-	_	-	-	2	-		
CO3	3	2	1	1	-		-	-	-	-	-	2	-		
CO4	2	2	2	1	_	-	-	-	-	-	-	2	-	-	
CO5	3	3	2	1-	-	,-	-	-	-	-	-	2	-	-	
PO Target	2.4	2	1.5	1	-	-	-	-	-	-	-	2	-	-	

			21	
Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature	
	viellehm			-
1. Vishakha Chauhan	Mul			
2 Rahul Kumar	J.m.			

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

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 Computer Science** 

Program Name: B.Tech.

Course Name: Data Structures Lab

Academic Session: 2023-24

Year:2nd

Semester: 3rd

**Course Outcomes** 

Course Code: BCS351

Course Coordinator Name: Prof. Anurag Mishra

F	After completion of the course, the student will be able to		Revised	Knowledge
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)	Category (KC)
CO1	Perform the primitive operation on various types of data structures	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Apply	С, Р
CO2	Apply the concepts of data structure in problem solving.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Apply	C, P
CO3	Make a solution for the scenario-based problems in terms of algorithm and programming code on competitive platforms.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Analyze	C, P
CO4	Design a solution for a project-based problem as a team and present the solution in class	PO1, PO2, PO3, PO4, PO5 PO12, PSO1, PSO2	, Create	P, M

			Cianatura
Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
	Money		
1.Dr. Harsh Khatter			
2.Prof. Anurag Mishra			
3.Prof. Sreesh Gaur	Ju ,	\( \tag{\chi}	O /
S.I Toll diversi		les,	
. ( ) \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	11/1	Signature of Addl. HoD	Signature of HoD

Signature of Course Coordinator

Assoc. Asst. Head DOC

Signature of Addl. HoD

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

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 Computer Science**

Program Name: B.Tech.

Academic Session: 2023-24

Year:2nd

Semester: 3<sup>rd</sup>

Course Name: Data Structure Lab

**Course Code: BCS351** 

Course Coordinator Name: Prof. Anurag Mishra

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

CO No.					Progr	ramme (	Outcome	e (PO)					PS	so
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	2	2	3	-	-	-	_	_	_	1	3	3
CO2	3	3	. 2	2	3	-	-	· ;	_	_	_	2	. ,	2
CO3	3	3	2	2	3	-	_	_	_	_	_	3	2	2
CO4	3	3	3	2	3	- "	_	-	-	_	_	3	3	3
PO Target	3	2.75	2.25	2	3	- 1	-	-	-	-	-	2.25	2.5	2.5

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Dr. Harsh Khatter	Marino	2	Signature
2.Prof. Anurag Mishra	Mr		
3.Prof. Sreesh Gaur	- Ju		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech Course Name: COA Lab

Academic Session: 2023-24

Year: 2nd

Semester:3rd

**Course Outcomes** 

Course Code: BCS352

Course Coordinator Name: Prof. Akash Goel

Aft	er completion of the course, the student will be able to		D	
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO1	Build half adder and full adder using basic logic gates and solve code conversions: binary to gray and gray to binary.	PO1, PO2, PO3, PO12, PSO1	Apply	C,P
CO2	Construct Multiplexers (4x1, 8x1) and Decoders (2x4, 3x8)	PO1, PO2, PO3, PO12, PSO1	Apply	C,P
CO3	Make use of excitation tables of various flip flops.	PO1, PO2, PO3, PO12, PSO1	Apply	C,P
CO4	Model 8-bit Arithmetic Logical unit.	PO1, PO2, PO3, PO12, PSO1	Apply	C,P
CO5	Model 8-bit input output system with four-bit internal registers.	PO1, PO2, PO3, PO12, PSO1	Apply	C,P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Akash Goel			
2.Prof. Amit Kumar Singh Sanger	3/6/2/5duc		
3.Prof. Shreela Pareek	torely	1	0
	1 1		(OR)

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.

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.

# KIET Group of Institutions, Delhi - NCR, Ghaziabad **Department of Computer Science**

Program Name: B.Tech Course Name: COA Lab

Academic Session: 2023-24

Year: 2nd

Semester: 3rd

Course Code: BCS352

Course Coordinator Name: Prof. Akash Goel

### CO - PO/PSO/APO Matrix

CO No.					Progr	amme (	Outcome	(PO)					PSO	
337101	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	1	1	-	-	-	-	-		-		1	1	
CO2	2	1	1	-	-	-	-	-		_		1	1	
CO3	3	1	1	-	-	_	-	-	-			1	1	
CO4	2	1	1	-	-	-	-	-	-	-	-	1	1	•
CO5	2	1	1	-	-	-	-	-		-	-	1	1	
PO Target	2.20	1	1	-	-		-	-	-	-	-	1	1	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Akash Goel			
2.Prof. Amit Kumar Singh Sanger	3/2 (5/m-		
3.Prof. Shreela Pareek	Janes -		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science

Program Name: B.Tech Course Name: Web Design Workshop

Course Outcomes

Academic Session: 2023-24

Year: 2nd

Semester: 3rd

Course Code: BCS 353

Course Coordinator Name: Prof. Anmol Jain

CO N <sub>0</sub> .	er completion of the course, the student will be able to  Statement of Course Outcome	Relevant POs/PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
	Implement advanced HTML tags for designing HTML pages.	PO1, PO2, PO3, PO4, PO5, PSO, PSO2	Apply	Р
CO2	Implement elements of Cascading Style Sheet (CSS) for providing look and feel in web sites.	PO1, PO2, PO3, PO4, PO5, PSO1. PSO2	Apply	P
CO3	Implement Bootstrap components to design dynamic web sites.	PO1, PO3, PO4, PO5, PO12, PSO1, PSO 2	Apply	Р
CO4	Understanding the basic concept of Java Script and its application.	PO1, PO4, PO5, PSO1, PSO2	Understand	C
CO5	Implement the validation and verification functions in web sites by using Java Script.	PO1, PO4, PO5, PSO1, PSO2	Apply	P

aculty Members Teaching the Course			
	Signature	Faculty Members Teaching the Course	C:
1.Prof. Anmol Jain		2.Prof. Amit Kumar Singh Sangar	
	0000	2.1 101. Aimt Kumar Singn Sangar	3/17/26/07

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of HoD

- 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

### Department of Computer Science

Program Name: B.Tech

Course Name: Web Design Workshop

Academic Session: 2023-24 Course Code: BCS 353

Year: 2nd

Semester: 3rd Course Coordinator Name: Prof. Anmol Jain

CO - PO/PSO/APO Matrix

					Prog	ramme	Outcom	e (PO)					PSO	
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C01	1	1	2	1	1	-	-	-	-	-	-	-	1	1
CO2	1	1	2	. 1	2	-		-	-	-	-	-	1	1
CO3	2	-	3	1	3		-	-	-	-	-	3	2	2
CO4	- 1		_	1	1	-	-	-	-	-	-	-	1	l
C05	2	_		2	2	-	-	-	-	-	-	3	2	2
PO Target	1.4	1	2.33	1.2	1.8	-	-	-	-	-	-	3	1.4	1

			Cianatura	
m 11 de Course	Signature	Faculty Members Teaching the Course	Signature	
Faculty Members Teaching the Course		2.Prof. Amit Kumar Singh Sangar	>1129 PM	
1.Prof. Anmol Jain	Smolay	2.1 for. Anne realization		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 2nd

Semester: 3rd

Course Name: Mini Project/Internship Assessment

Course Code: BCC351 Course Coordinator Name: Prof. Rahul Kumar

**Course Outcomes** 

Af	ter completion of the course, Statement o	the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
C01		m and their implementation thround techniques.	ugh	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	С
CO2		process through the integration erse technical knowledge.	and	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Understand	С
C03		ntion to meet the requirements of olem solving.	the	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	С
CO4	Prepare solution by employ	ing a variety of tools and techniq	ues.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	С
C05		ion to ensure impact fullness tow lected problem.	ards	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Understand	C
Faculty Me	embers Teaching the Course	Signature $\land$	Facı	ulty Members Teaching the Course		ature
	ay Pratap Singh	Han	4.Pr	of. Pallavi Sharma	1 Pallar	
	hakha Chauhan	and 1	5.Pr	of. Rahul Kumar	Grund	
	nishek Goyal	Assoc, Asst. Head DO	)C	Signature of Addl. HoD	Signa	ature of HoD

Signature of Course Coordinator

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 Computer Science**

Program Name: B.Tech.

Academic Session: 2023-24

Year:2nd

Semester: 3rd

Course Name: Mini Project/Internship Assessment

Course Code: BCC351

Course Coordinator Name: Prof. Rahul Kumar

CO - PO/PSO/APO Matrix

CO No.	TARTIX				Progre	amma	Outoon	(DO)							
	1	Programme Outcome (PO)  1 2 3 4 5 6 7 8 0 10 10											PS	PSO	
CO1	3	3	3	2	3	2	/	8	9	10	11	12	1	2	
				-	3	2	2	2	3	3	2	3	2	3	
CO2	3	3	2	3	3	2	2	2	3	2	2		-		
CO2	3	3	2	_			_	-	3	) 3	2	3	2	3	
CO3	3	3	2	3	3	2	2	2	3	3	2	3		3	
CO4	3	3	3	2	3	2	2		1	-			2	5	
							2	2	3	3	2	3	2	3	
CO5	3	3	3	2	3	2	2	2	3	3	2	3		3	
DO T		,										J	2	3	
PO Target	3	3	2.6	2.4	3	2	2	2	3	3	2	3	,	3	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	∩ Signature
1. Prof. Vinay Pratap Singh	~ NOW	5.Prof. Rahul Kumar	Kney
2.Prof. Vishakha Chauhan	W		
3.Prof. Abhishek Goyal	No.		
4.Prof. Pallavi Sharma	Pallan		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 (V-30.82) (N-30.82) Matrix.
- If there is no correlation, then put a "-" (dash).

### Department of Computer Science

Program Name: B.Tech

Course Name: Operating System

Academic Session: 2023-24

Year: 2nd

Semester: 4th

Course Outcomes

Course Code: BCS401

Course Coordinator Name: Dr. Harsh Khatter

Af	ter completion of the course, the student will be able to		Revised		
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level	Knowledge Category (KC)	
CO1	Understand the basic concepts, functions, and types of operating systems.	PO1, PSO1	(BL) Understand	C	
CO2	Identify process synchronization techniques to achieve better performance of a computer system.	PO1, PO2, PO12, PSO1	Understand	С	
CO3	Analyse different process scheduling algorithms and deadlock management techniques.	PO1, PO2, PO12, PSO1	Analyze	C, P	
CO4	Compare various memory management mechanism used in the operating system.	PO1, PO2, PSO1	Analyze	C, P	
CO5	Examine input and output management; and how the operating system performs the disk management.	PO1, PO2, PSO1	Analyze	C, P	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Dr. Harsh Khatter	Mund	2.Prof. Arti Sharma	1 felor
3.Prof. Punit Goyal			1./

Signature of Course Coordinator

Assoct Asst. Head DOC

Signature of Addl. 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 inclustrial training having credits less than 3 cases. 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 are Action & Countries are action in Countries and optional parts. Condition and Criteria.

### **Department of Computer Science**

Program Name: B.Tech

Course Name: Operating System

Academic Session: 2023-24 Course Code: BCS401 Year: 2nd

Semester: 4th

Course Coordinator Name: Dr. Harsh Khatter

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

CO No.	Programme Outcome (PO)												PSO	
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C01	2	-		-		-	-	-	-		-	-	2	-
CO2	3	2		-		-	-	-	-	-	-	2	2	-
CO3	3	2	-	-	-	-	-	-	-	-	-	2	2	-
CO4	3	2		-	-	-	-	-	-	\-	-	-	2	-
CO5	3	2	-			-	-		-	-	-	-	2	
PO Target	2.8	2	-		-	-		-	-	-	-	2	2	

			Faculty Members Teaching the Course	. Signature	
	Faculty Members Teaching the Course	Olgitatai		1 1 80 /	
3	1.Dr. Harsh Khatter	1	2.Prof. Arti Sharma	King C	
1	1.Dr. Haisii Kiiattei	The state of the s		,	
	3.Prof. Punit Goyal	4			

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/APOPSO Matrix.

Department of Computer Science

Program Name: B.Tech Course Name: TAFL Course Outcomes

Academic Session: 2023-24 Course Code: BCS402

Year: 2nd

Semester: 4th

Course Coordinator Name: Prof. Sreesh G:

Λſ	ter completion of the course, the student will be able to		rame, Proj.	Sreesh Gaur
CO No.	Statement of Course Outcome Understand basic concepts of automate the second of the se	Relevant POs/ PSOs	Revised Bloom's Level	Knowledge Category (KC)
CO2	Washington Market and the state of the state	PO1, PO11, PO12, PSO1	(BL) Analyze	C C
	Construct finite automata and regular expressions for regular languages.	PO1, PO2, PO3, PO11, PO12, PSO1	Apply	C
CO3	Construct regular and context-free grammar for formal languages.	PO1, PO2, PO3, PO11, PO12, PSO1	Analyze	C
CO4	Construct the pushdown automata for context free languages.	PO1, PO2, PO3, PO11, PO12, PSO1	Apply	С
CO5	Construct Turing machines for formal languages.	PO1, PO2, PO3, PO11, PO12, PSO1	Analyze	C

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Sreesh Gaur	- Tou-	2.Prof. Rajkumar q	REAL PROPERTY OF THE PROPERTY
3.Prof. Amit Chaudhary	July sellur		

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 5 number of COs. The laboratory courses/ 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 Computer Science**

Program Name: B.Tech Course Name: TAFL CO - PO/PSO/APO Matrix Academic Session: 2023-24

Semester: 4th

Course Code: BCS402

Course Coordinator Name: Prof. Sreesh Gaur

					Prog	gramme	Outcom	e (PO)					PSO	
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	-	-	_	_	_	_	-	-	-	1	1	•	-
CO2	3	2	2	-		-	-	-	-	-	1	2	2	
CO3	3	2	2	-	-	-	-	-	-	-	1	2	2	-
CO4	3	2	2	-		-			-	-	1	2	2	
C05	3	2	2	-	-	-	-	-	,-	-	1	2	2	
PO Target	2.8	2	2	_	_	_	-	-	-	-	1	1.80	2	

	0'	Faculty Members Teaching the Course	Signature
Faculty Members Teaching the Course	Signature	1/2.	
1.Prof. Sreesh Gaur	Flu	2.Prof. Rajkumar	
1.P101. Steesii Gaut	CCC		
3.Prof. Amit Chaudhary	100 Jarden		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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/APOPSO Matrix.
- ❖ If there is no correlation, then put a "-" (dash).

### **Department of Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 2nd

Semester: 4th

Course Name: Object Oriented Programming with Java

Course Code: BCS403 Course Coordinator Name: Prof. Anmol Jain

Course Outcomes

Af	ter completion of the course, the student will be able to		Revised	V. II
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)	Knowledge Category (KC)
CO1	Implement core Java concepts that model real world entities.	PO1, PO2, PO3, PO4, PO5, PO12	Apply	P
CO2	Implement special features of Java like Exception Handling and Multithreading	PO1, PO2, PO3, PO4, PO5, PO12	Apply	P
CO3	Develop Programs based on New Java features (JDK 8+).	PO1, PO2, PO3, PO4, PO5, PO12	Apply	P
CO4	Apply a collection framework to build modular Java programs.	PO1, PO2, PO3, PO4, PO5, PO11, PO12	Apply	P
CO5	Implement web and RESTful Web Services with Spring Boot using Spring Framework concepts	PO1, PO2, PO3, PO4, PO5, PO11, PO12	Apply	P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Anmol Jain	Auder.	2.Prof. Abhishek Goyal	Rus
3.Dr. Kalpna Sagar			

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 2nd

Semester: 4th

Course Name: Object Oriented Programming with Java

Course Code: BCS403 Course Coordinator Name: Prof. Anmol Jain

### CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)													
	1	2	3	4	5	6	7	8	0	10			P	SO
CO1	2	3	2	2				0	9	10	11	12	1	2
~ -				2	2	-	-	-		-	-	2	_	
CO2	2	3	2	2	2	-	_	_						
CO3	2	3	2						-	<u> </u>	-	2	2	2
		3	2	2	2	-	-	-	-		-	3	3	2
CO4	2	2	2	2	3	_					_			
COF					-		-	-	-	-	2	3	2	2
CO5	2	3	3	3	2	-	-	-	_	-	2	3	2	2
PO Target	2	2.8	2.2	2.2	2.0			-			<u> </u>	3		
	_	2.0	2.2	2.2	2.2			_	-	-	2	2.6	2.25	2

Faculty Members Teaching the Course 1.Prof. Anmol Jain	Signature	Faculty Members Teaching the Course  2.Prof. Abhishek Goyal	J. S. Mature
3.Dr. Kalpna Sagar		21. Tota Homshek Goyal	w

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Course Name: Cyber Security

**Course Outcomes** 

Academic Session: 2023-24

Year:2nd

Semester: 4th

Course Code: BCC401

Course Coordinator Name: Prof. Umnah

Af	ter completion of the course, the student will be able to	2	Revised	Knowledge	
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)	Category (KC)	
CO1	Discuss the fundamental principles underlying cybersecurity and cybercriminal activities.	PO1,PO6,PO8	Understand	F,C	
CO2	Explain the fraud and mitigating attacks targeting mobile devices.	PO1,PO6,PO8, PSO2	Understand	С	
CO3	Explore the tools and techniques employed in cybercrime.	PO1,PO5,PO6,PO8, PSO2	Understand	С	
CO4	Investigate the concepts of cyber forensics	PO1,PO2,PO6,PO8, PSO2	Analyze	С	
CO5	Elaborate the cyber security policies and cyber laws	PO6, PO8	Understand	F,C	

Faculty Members Teaching the Course	Signaturė	Faculty Members Teaching the Course	Signature
1.Ms. Arushi Gupta	Vin Vin	2.Ms. Unmah	Mmah
3.Mr. Amit Choudhary	will allow		

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.

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 Computer Science**

Program Name: B.Tech Course Name: Cyber Security Academic Session: 2023-24

Year:2nd

Semester: 4th

Security Course Code: BCC401

Course Coordinator Name: Prof. Umnah

### CO - PO/PSO/APO Matrix

		Programme Outcome (PO)												PSO	
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	1		-	_	-	3	-)	3	-	-	-	2	-		
	2	1	-	-	-	3	-	2	-	-	-	2	-		
CO2	2	1	_	_		1	-	2	-		-	2	-		
CO3	2	-			1	1		2		-	<del>                                     </del>	2	-	-	
CO4	2	1	-	-	-	1	-	2	-	-					
		-	-	-	-	3	-	3	-	-	-	2	-		
CO5								2.4	-	-	-	2	-	-	
PO Target	1.75	1	-	-	1	2.2									

11 1 ()	Faculty Members Teaching the Course Signature  2.Prof. Arushi Gupta
1.Prof. Umnah 3.Prof. Amit Choudhary	

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 Computer Science** 

Program Name: B.Tech Course Name: Maths IV

Academic Session: 2023-24

Year: 2nd

Semester: 4th

Course Name: Maths IV
Course Outcomes

Course Code: BAS403

Course Coordinator Name: Dr. Neelam Sharma

Aft	er completion of the course, the student will be able to		Revised	Vnomilada		
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)	Knowledge Category (KC)		
CO1	Solve partial differential equations by Lagrange, Charpit and other particular methods.	PO1, PO2, PO12, PSO1	Apply	C, P		
CO2	Apply the method of separation of variables to solve Wave, Heat and Laplace equation. Application of Fourier transform.	PO1, PO2, PO3, PO12, PSO2	Apply	C, P		
CO3	Determine moments, correlation, linear regression lines and obtain best fitting curves to the given data.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1, PSO2	Analyze	C, P		
CO4	Apply the concept of probability to solve discrete and continuous probability problems.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Apply	С, Р		
CO5	Apply the theory of sampling to solve t-test, z-test and Chisquare test problems.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO12, PSO1	Apply	C, P		

Faculty Members Teaching the Course 1.Dr. Neelam Sharma	Signature	Faculty Members Teaching the Course	Signature

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech Course Name: MathsIV Academic Session: 2023-24 Course Code: BAS403 Year: 2nd

Semester: 4th

Course Coordinator Name: Dr. Neelam 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
C01	2	2	-	-	-	-	_	-	_	_		2	1	_
CO2	2	2	2		-	_	_	-		_	_	2		_ 1
CO3	2	2	2	2	2	_	_	_	_	ļ_	_	2	1	1
CO4	2	2	1	1	1	_	_	_	_	_	_	1		1
CO5	2	1	2	2	2	2	2	_	_	_	_	2	1	1
PO Target	2	1.8	1.75	1.67	1.67	2	2	-	-	-	-	1.80	1	1

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signatura
1. Dr. Neelam Sharma	Nell	, and a sum of the course	Signature

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 2nd

Semester: 4th

Course Name: Technical Communication Course Outcomes

Course Code: BAS401

Course Coordinator Name: Dr. Kavita Tiwari

Ai	fter completion of the course, the student will be able to		Revised	T
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)	Knowledge Category (KC)
CO1	Understand the nature and objective of Technical Communication relevant for the work place as Engineers.	PO7, PO9, PO10, PO12	Understand	С
CO2	Develop an understanding of key concepts of writing, designing and speaking.	PO7, PO9, PO10, PO12	Apply	P
CO3	Utilize the technical writing skills for the purposes of Technical Communication and its exposure in various dimensions.	PO7, PO9, PO10, PO12	Apply	P
CO4	Build up interpersonal communication traits that will make the transition from institution to workplace smoother and help them to excel in their jobs.	PO7, PO9, PO10, PO12	Apply	С
CO5	Apply technical communication to build their personal brand and handle crisis communication	PO7, PO9, PO10, PO12	Apply	С

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Kavita Tiwari	Ku		3

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 2nd

Semester: 4th

Course Name: Technical Communication

Course Code: BAS401

Course Coordinator Name: Dr. Kavita Tiwari

### 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	
C01	-	-	-	-	1-	-	1	-	2	3	-	2		-	
CO2	-	-	-	-	-	-	1	-	2	3	-	2	_	-	
CO3	-	-	-	-	-	-	1	-	2	3	-	2	-		
CO <sub>4</sub>	-	-	-	-	-	-	1	-	2	3	-	2	_	_	
CO5	-	-	-	-	-	-	1	-	2	3	_	2	_	_	
PO Target	-	-	-	-	-	-	1	-	2	3	-	2	-	_	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signatura
1. Dr. Kavita Tiwari	Ku	- Franceis Federing the Course	Signature

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science** 

Program Name: B.Tech

Academic Session: 2023-24

Year: 2nd

Semester: 4th

Course Name: Operating System Lab

Course Code: BCS451

Course Coordinator Name: Prof. Puneet Goyal

**Course Outcomes** 

Af	ter completion of the course, the student will be able to  Statement of Course Outcome	Relevant POs/ PSOs	Revised Bloom's Level	Knowledge Category (KC)
CO No.			(BL)	<u> </u>
C01	Understand basic UNIX/LINUX commands and simple shell scripts to automate repetitive tasks, incorporating concepts like variables, loops, conditionals, and functions.	PO1, PO12	Understand	С
CO2	Demonstrate the knowledge of various CPU scheduling algorithms to identify the best algorithm as per software requirement.	PO1, PO2, PO12, PSO1	Apply	P
CO3	Examine process synchronization and principles of Deadlock avoidance using the Banker's Algorithm to ensure system safety.	PO1, PO2, PO12, PSO1	Apply	Р
CO4	Determine the performance of various page replacement algorithms based on page fault rate.	PO1, PO2, PO12, PSO1	Apply	Р
CO5	Investigate the various Disk scheduling algorithms based on metrics such as seek time, throughput etc.	PO1, PO2, PO12	Apply	Р

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Puneet Goyal		2.Dr. Harsh Khatter	Hammer.
3.Prof. Arti Sharma	Sarah		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science

Program Name: B.Tech

Academic Session: 2023-24

Year: 2nd

Semester ##

Course Name: Operating System Lab

Course Code: BCS451

Course Coordinator Name: Prof. Paneet Goval

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

CO No.	Programme Outcome (PO)								PSO					
33710.	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	-	-	-		-	_			_		2		
CO2	3	2	-		-	_	_	_				2	2	-
CO3	3	2	-	-	-	_	-	_				2	2	-
CO4	3	2	-	-		-	-	_			_	,	2	
C05	3	2	_	-	-	-	-		_	-	-	2	_	
PO Target	2.8	2		-	-	-	-	-		-	-	2	2	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature .
1.Prof. Puneet Goyal		2.Dr. Harsh Khatter	di mariano
3.Prof. Arti Sharma	Just		11

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Semester:4th

Course Name: Object Oriented Programming with Java Lab

Course Code: BCS452 Course Coordinator Name: Dr. Kalpna Sagar

**Course Outcomes** 

Aft	er completion of the course, the student will be able to	Relevant POs/ PSOs	Revised Bloom's Level	Knowledge Category (KC)	
CO No.	Statement of Course Outcome	Relevant 1 Os/ 1 5 Os	(BL)		
CO1	Demonstrate core JAVA OOPS concepts on an integrated development environment to solve real world problems.	PO1, PO5, PO12, PSO1, PSO2	Apply	P	
CO2	Apply Exception Handling and Multithreading JAVA features in problem solving.	PO1, PO5, PO12, PSO1, PSO2	Apply	Р	
CO3	Solve problems in context of programming code based on New Java features (JDK 8+).	PO1, PO5, PO12, PSO1, PSO2	Apply	P .	
CO4	Complete a solution for case study-based problem using JAVA Collection framework.	PO1, PO5, PO11, PO12, PSO1, PSO2	Apply	P	
CO5	Practice RESTful Web Services with Spring Boot Test using Spring Framework concepts	PO1, PO5, PO11, PO12, PSO1, PSO2	Apply	P	

Too bing the Course	Signature	Faculty Members Teaching the Course	Signature
Faculty Members Teaching the Course		2.Prof. Abhishek Goyal	
1.Dr. Kalpna Sagar	Moder	00	
3.Prof. Anmol Jain  Signature of Course Coordinator		C Signature of Addl, HoD	Signature of HoD
Signature of Course Cool unator			

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 Computer Science** 

Program Name: B.Tech

Academic Session: 2023-24

Year: 2nd

Semester:4th

Course Name: Object Oriented Programming with Java Lab

Course Code: BCS452 Course Coordinator Name: Dr. Kalpna Sagar

### 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
C01	2	2	2	2	2	-		-	-	-	-	2	2	2
CO2	2	2	2	2	2	-	-	-	-		-	2	2	2
CO3	2	2	2	2	2	-	-	_	-	-	-	3	2	2
CO4	2	2	2	2	2	-	_	-	-	-	2	2	2	2
CO5	2	2	3	3	2	-	-	-	-	-	2	2	2	2
PO Target	2	2	2.2	2.2	2	-	-	-	-	-	2	2.2	2	2

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Dr. Kalpna Sagar		2.Prof. Abhishek Goyal	Coy
3.Prof. Anmol Jain	anold		<u> </u>

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 2nd

Semester: 4th

Course Name: Cyber Security Workshop

Course Code: BCS453

Course Coordinator Name: Prof. Umnah

**Course Outcomes** 

Af	ter completion of the course, the student will be able to	n i i no inco	Revised	Knowledge
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)	Category (KC)
C01	Apply Wireshark to identify irregular patterns within the network.	PO1, PO5, PO6, PO8, PO12, PSO2	Analyze	p
CO2	Demonstrate proficiency in web app security with DVWA	PO1, PO5, PO6, PO8, PO12, PSO2	Apply	P
CO3	Apply comprehension of the tools and techniques employed in Cyber Security.	PO1, PO5, PO6, PO8, PO12, PSO1, PSO2	Apply	P
CO4	Apply different encryption techniques	PO1, PO6, PO8, PO12, PSO1, PSO2	Apply	P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Prof. Umnah	Mings	2.Prof. Pallavi Sharma	Pallons
3. Prof. Amit Chaudhary	d	4. Prof. Arushi Gupta	Juli

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl HoD

Signature of HoD

- 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 Computer Science

Program Name: B.Tech

Academic Session: 2023-24

Year: 2nd

Semester: 4th

Course Name: Cyber Security Workshop

Course Code: BCS453

Course Coordinator Name: Prof. Umnah

### CO - PO/PSO/APO Matrix

- PO/PSO/APC	) WHILLIA							(00)					PSC	0
	Programme Outcome (PO)											1	2	
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	-	1
	2				3	2	-	2	-	-	-	4	-	-
CO1	_	-								-		-		1
	2	-	-	-	3	2	-	2	-	-	-	-		
CO2										-		1 2	1	1
002	3	-	-	-	3	2	-	2	-	-	_			
CO3						2	-	2	-	-	1.	2	2	
CO4	3	-	-	-	-	1	-	1						
CU4					-	-	-	1 2	-	1.		2	1.5	
PO Target	2.5	-	-	-	3	2	-	-						

Faculty Members Teaching the Course Signa	1 2 1 2 1 1 Channe	Signature Pella-
1.Ms. Umnah  3.Mr. Amit Chaudhary		10/10

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science** 

Program Name: B.Tech Course Name: DBMS

Academic Session: 2023-24

Year: 3rd

Semester: 5th

Course Outcomes

Course Code: KCS 501

Course Coordinator Name: Dr. Gaurav Dubev

A	After completion of the course, the student will be able to		Devised	
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO1	Illustrate the knowledge of database concepts along with selection of the data model and Conceptual design of database for real world.	PO1, PO2, PO3, PO12	Apply	C, P
CO2	Apply query processing techniques (relational algebra and relational calculus expressions) with knowledge of relational model and query languages.	PO1, PO2, PO3, PO4, PO12	Apply	C, P
CO3	Solve the database redundancy problem using normalization techniques for good database design.	PO1, PO2, PO3, PO4, PO12	Analyze	C, P
CO4	Explain the database transactions processing concepts and broad range of database management issues in concurrent environment.	PO1, PO2, PO3, PO12	Apply	C, P
CO5	Examine the different concurrency control techniques and study of database recovery methods.	PO1, PO2, PO3, PO12	Apply	C, P

Faculty Members Teaching the Course 1.Prof. (Dr.) Ajay Shrivastava	Signature	Faculty Members Teaching the Course	Signature
2.Dr. Gaurav Dubey	- Francis		
3.Prof. Shivani	livani		

Signature of Course Coordinator

Assoc. Asst. Head DOC

**PO12** 

Signature of HoD

- 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
- 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

### **Department of Computer Science**

Program Name: B.Tech. Course Name: DBMS

Academic Session: 2023-24 Course Code: KCS501

Year: 3rd

Semester: 5th

Course Coordinator Name: Dr. Gaurav Dubey

CO - PO/PSO/APO Matrix

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

		Faculty Members Teaching the Course	Signature
Faculty Members Teaching the Course	Signature /	Faculty Members Teaching the Course	Signature -
1.Prof. (Dr.) Ajay Shrivastava			
2.Prof. (Dr.) Gaurav Dubey	W.		
3.Prof. Shivani	Jumen.		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 3rd

Semester: 5th

Course Name: Compiler Design

Course Code: KCS502

Course Coordinator Name: Prof. Arti Sharma

Course Ou Afte	r completion of the course, the student will be able to	Relevant POs/ PSOs	Revised Bloom's Level	Knowledge Category (KC)	
CO No.	Statement of Course Outcome		(BL)		
CO1	Understand different phases and passes of compiler along with LEX and YACC tool.	PO1, PO2, PO3, PO4, PO12	Understand	С	
CO2	Illustrate various parsing techniques i.e. Top-Down and Bottom-up parsers using LL, SLR, CLR, and LALR parsing table.	PO1, PO2, PO3, PO12	Apply	C,P	
CO3	Make use of Syntax Tree, DAG to generate the intermediate code in the form of 3-address code.	PO1, PO2, PO12	Apply	C,P	
	Apply data structures used for Symbol Table, Run time organization and error in phases of compiler.	PO1, PO2, PO12	Understand	С	
CO4 CO5	Apply code optimization and Generation techniques resulting in Target Code.	PO1, PO2, PO3, PO12	Apply	C,P	

- 1		9		
_		Faculty M	lembers Teaching the Course	Signature
	Faculty Members Teaching the Course	Signature Faculty IV		
- 1	1. Prof. Arti Sharma			- An
	2.Prof. Akash Goel	moter		
	3.Prof. Anmol Jain	- 4	Signature of Addl. HoD	Signature of HoD
	Signature of Course Coordinator	Assoc./Asst. Head DOC		reciping having credits less than 3 should

- 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 2 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 Computer Science**

Program Name: B.Tech. Course Name: Compiler Design

Academic Session: 2023-24 Course Code: KCS502

Year: 3rd

Semester: 5th

Course Coordinator Name: Prof. Arti Sharma

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

CO No.					Progr	amme C	Outcome	(PO)					PSO	
	1 2 3				5 6		7 8		9 10		11	12	1	2
CO1	3	2	2	1	-	-	-	-	-	-	-	2	-	
CO2	3	3	1	-	-	-	-	-		-	-	2	-	
CO3	3	3	-	-	-,	-	-	-	-	-	-	2	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	2	-	
C05	3	3	2	-	-	-	-	-	-	-	-	2	-	
PO Target	3	2.6	1.67	1	-	-	-	-	-	-	-	2	-	-

Faculty Members Teaching the Course	Signature /	Faculty Members Teaching the Course	Signature
1. Prof. Arti Sharma	Votus/		o.g.mare
2.Prof. Akash Goel			
3.Prof. Anmol Jain	John John Market		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech Course Name: DAA

Academic Session: 2023-24

Year: 3rd

Semester: 5th

**Course Outcomes** 

Course Code: KCS503

Course Coordinator Name: Prof. Raj Kumar

	After completion of the course, the student will be able to		Revised	1
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level	Knowledge Category (KC)
C01	Analyze the performance of algorithms using different asymptotic analysis methods	PO1, PO2, PO3, PO12, PSO1	(BL) Analyze	C, M
CO2	Understand the concept of Advance Data Structures	PO1, PO2, PO3, PO12, PSO1	Understand	С
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 algorithm.	PO1, PO2, PO3, PO12, PSO1	Apply	C, P
CO5	Understand the concept of P & NP-Problems	PO1, PO2, PO3, PO12, PSO1	Understand	С

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Raj Kumar	Ct.		3,5
2. Anshula Gupta	And		
3. Vivek Kumar Sharma	Ny		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 3rd

Semester: 5th

Course Name: DAA

A Course Code: KCS503

Course Coordinator Name: Prof. Raj Kumar

CO - PO/PSO/APO Matrix

CO No.		Programme Outcome (PO)												ngo
	1	2	3	4 5 6 7 9 9 10									PSO	
CO1	3	2	2		+	-	-	0	9	10	11	12	1	2
CO2	2	2	-		-	-	-	-	-	-	-	2	3	-
CO2	3	2	2	-	-	-	-	-	-	-		2	3	-
CO3	3	2	2		-	-						2		
CO4	3	2	2						-		-	2	3	-
	-	-		•	-	-	-	-	-	-	-	2	3	_
CO5	3	2	2	-	-	-	-		-	_		2	-	
PO Target	3	2	2								•	2	1	-
					_	-	-	-	-	-	-	2	2.6	

Faculty Members Teaching the Course	Signature	Foculty M. J. W. L.	
1. Prof. Raj Kumar	KAT	Faculty Members Teaching the Course	Signature
2. Prof. Anshula Gupta			
3. Prof. Vivek Kumar Sharma	Avis .		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech Course Name: OOSD Academic Session: 2023-24

Year: 3rd

Semester: 5th

Course Code: KCS 054

Course Coordinator Name: Prof. Abhishek Goyal

Course Or	er completion of the course, the student will be able to	D ( DC / DCO-	Revised	Knowledge	
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)	Category (KC)	
CO1	Understand the insights of object-oriented programming.	PO2, PO3, PO4, PO12	Understand	С	
CO2	Apply the role of overall modelling concepts using UML.	PO 2, PO3, PO4, PO5, PO12, PSO1	Apply	C,P	
CO3	Understand various object-oriented structures (SA/SD, JSD)	PO2, PO3, PO4, PO5, PO12, PSO1	Understand	C,P	
CO4	Apply programming language C++ w.r.t OOPS	PO2, PO3, PO4, PO12	Apply	С,Р	
CO5	Implement C++ in object-oriented modelling.	PO2, PO3, PO4, PO12	Apply	C,P	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
Faculty Members Teaching the Course	1		
1. Prof. Vivek Sharma	A CONTRACTOR OF THE PARTY OF TH		
1. 1101. VIVER SHEETING	-07		
2 Prof Vinay Kunar	$\sim 22$		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech. Course Name: OOSD

Academic Session: 2023-24 Course Code: KCS 052

3-24 Year:3rd

Semester: 5th

Course Coordinator Name: Prof. Abhishek Goyal

CO - PO/PSO/APO Matrix

$CO N_0$ .	1				Prog	ramme	Outcom	e (PO)						
	1	2	3	4	5	6	7			T				PSO
CO1	-	2	3	2	-		<u> </u>	8	9	10	11	12	1	2
				~	-	-	-	-		1-	-	2	<b>—</b>	<u> </u>
CO <sub>2</sub>	-	3	3	3	2	-								-
					~	-	-	-	-	-	-	3	2	<u> </u>
CO3	-	3	3	2	-	_								
CC 15	1						•	-	-	-	-	3	2	-
CO43	1	3	3	2	-	-	-			-				
C05	1	3						_	-	-	-	3	-	-
	1	3	3	2	-	-	-		-					
PO Target	1	2.8	3	2.2	2					-	-	3	-	-
			"	2.2	2	-	-	-	-		-	2.8	2	

Faculty Members Teaching the Course Signature Faculty Members 1. Prof. Abhishek Goyal 3. Prof. Vivek St. 2. Prof. Vinay Pratap Singh	pers Teaching the Course Signature Sharma
--	---

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 3rd

Semester: 5th

Course Name: Machine Learning Techniques

Course Code: KOE055

Course Coordinator Name: Prof. Pawan Kumar Pal

**Course Outcomes** 

Aft	ter completion of the course,	the student will be able to				Revised	Knowledge
CO No.	Statement of	of Course Outcome		Relevant POs/ PSOs		om's Level (BL)	Category (KC)
C01	Understand the need for machi	ne learning for various problem solv	ing	PO2, PO6, PO10, PO11, PO12, PSO1	U	nderstand	С
C02		earning algorithms and how to evalu enerated from data	ate	PO1, PO2, PO6, PO10, PO11, PO12, PSO1		Apply	C,P
СО3	Understand the late	st trends in machine learning		PO2, PO6, PO10, PO11, PO12, PSO1	Uı	nderstand	С
CO4		ne learning algorithms and apply the a real-world problem.		PO1, PO2, PO6, PO9, PO10, PO11, PO12, PSO1		Apply	C,P
C05		nd report on the expected accuracy to the by applying the models	that	PO1, PO2, PO6, PO10, PO11, PO12, PSO1	1	Apply	С,Р
Faculty M	embers Teaching the Course	Fac	ulty Members Teaching the Co	ourse		Signature	
1. Prof. Pawan Kumar Pal							
2. Prof. Harsh Vardhan							
3. Prof. Ne	eha Shukla	John					

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech.

Academic Session: 2023-24

Year: 3rd Semester: 5th

Course Name: Machine Learning Techniques

Course Code: KOE055

Course Coordinator Name: Prof. Pawan K Pal

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

CO No.					Progr	amme (	Outcome	(PO)					P	SO
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	1	-	-	-	2			-	1	1	1	2	-
CO2	3	2	-	-	-	2	-	-	-	1	1	1	2	-
CO3	-	1	•	•		2		-		1	1	1	2	-
CO4	3	2	-	-	•	2	-	-	1	1	1	1	2	-
CO5	2	2	-	-	-	2	-	-	-	1	1	1	2	-
PO Target	2.67	1.6	-	-	-	2	-	-	1	1	1	1	2	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Prof. Pawan Kumar Pal	Xv		
2. Prof. Harsh Vardhan	Mazeh		
3. Prof. Neha Shukla	yele		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech Course Name: COI

Academic Session: 2023-24 Course Code: KNC-501

Year: 3rd

Semester: 5th

**Course Outcomes** 

Course Coordinator Name:

Prof. Pallavi Sharma

Aft	er completion of the course, the student will be able to	n. I no. /ngo	Revised	Knowledge Category (KC)	
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)		
CO1	Identify the basic features and modalities about the Indian constitution.	PO6, PO8, PO12	Understand	F/C	
CO2	Relate the functioning of the Indian parliamentary system at the center and state level.	PO6, PO8, PO12	Understand	F/ C	
СО3	Differentiate between different aspects of the Indian Legal System and its related bodies.	PO6, PO8, PO12	Understand	F/C	
CO4	Paraphrase intellectual property rights and innovation environment with related regulatory framework.	PO6, PO8, PO10, PO12	Apply	F /P	
CO5	Relate the role of engineers with different organizations and governance models.	PO6, PO8, PO10, PO11, PO12	Understand	F/C	

				ert.
ı	D. H. Marsham Topphing the Course	Signature	Faculty Members Teaching the Course	Signature
	Faculty Members Teaching the Course	De Way		
	1. Prof. Pallavi Sharma			
	2. Prof. Yashi Rastogi	Yevshi		2

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech.

Academic Session: 2023-24

Year: 3rd

Semester: 5th

Course Name: COI

Course Code: KNC-501

Course Coordinator Name: Prof. Pallavi Sharma

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

CO No					Progr	amme (	Outcome	(PO)					PSO	
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C01	-	-	-		-	2		2	•			poor	•	-
CO2	-	-	-	-	•	2		2	-			1		-
CO3	-	-	-	•	•	2	-	2				1		-
CO4	-	-		•	-	2		2		2		1		
CO5	-	-	•		-	2	-	2	-		2	1		
PO Target	•				*	2		2		2	2	1		

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Prof. Pallavi Sharma	Phillons		
2. Prof. Yashi Rastogi	Yashi		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of Hol)

- 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-POSS)

  Matrix.
- ♦ If there is no correlation, then put a "=" (dash).

### **Department of Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 3rd

Semester: 5th

Course Name: DBMS Lab

Course Code: KCS551

Course Coordinator Name: Prof. Shivani

**Course Outcomes** 

After com	Statement of Course Outcome	Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO 1	Implement the concepts of table creation, views, indexes and other database objects using Oracle 10g express edition.	PO1, PO2, PO4, PO5, PO11, PO12	Apply	P
CO 2	<b>Solve</b> simple and complex queries using DDL, DML, DCL and TCL.	PO1, PO2, PO4, PO11, PO12	Apply	P
CO 3	Utilize entity integrity, referential integrity, key constraints and domain constraints on database.	PO1, PO2, PO4, PO11, PO12	Apply	Р
CO 4	Implement the PL/SQL blocks, procedure functions, packages and	PO1, PO2, PO4, PO11, PO12	Apply	P
CO 5	triggers, cursors.  Design a database schema for a real-world problem like Hospital management system.		Apply	P
	G' coture F	PSO2 aculty Members Teaching the C	Course	Signature
1. Dr. Aja	Members Teaching the Course  Signature  Ly Kumar Shrivastava  urav Dubey  hivani  Assoc Asst. Head DOC	Signature of Add	I. HoD	Signature of HoD

Assoc./ Asst. Head DOC

Signature of Course Coordinator 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 decuded to 10 february courses from the course of the

The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and appropriate are Condition and Colors. Condition and Criteria.

### **Department of Computer Science**

Program Name: B.Tech.
Course Name: DBMS Lab

Academic Session: 2023-24 Course Code: KCS551 Year: 3rd

Semester: 5th

Course Coordinator Name: Prof. Shivani

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

CO No.					Prog	ramme (	Outcome	(PO)					PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	-	1	3	-	-	-	-	-	2	2	-	-
CO2	3	3	-	3	-	-	-	-	-	-	2	2	-	-
CO3	3	3	-	3	-	-	-	-	-	-	2	2	-	-
CO4	3	3	-	3	-	-	-	-		-	2	2	-	-
CO5	3	3	2	3	-	-	-	-	-	-	3	3	2	3
PO Target	3	3	2	2.60	3	-	-	-	-	-	2.20	2.20	2	3

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Ajay Kumar Shrivastava	9		
2. Dr. Gaurav Dubey	- Con		
3. Prof. Shivani	Lumand		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science

Program Name: B.Tech

Academic Session: 2023-24

Year: 3rd

Semester: 5th

Course Name: CD Lab

Course Code: KCS552

Course Coordinator Name: Prof. Akash Goel

Aft	er completion of the course, the student will be able to	Relevant POs/ PSOs	Revised Bloom's Level	Knowledge Category (KC)	
CO No.	Statement of Course Outcome		(BL)		
C01	Implement the Lexical Analyzer using C language and LEX tool.	PO1, PO2, PO5, PO9, PO12	Apply	C, P	
CO2	Experiment with the knowledge of different parsers (Operator precedence, shift reduce etc.) using C language.	PO1, PO2, PO9, PO12	Apply	С, Р	
CO3	Implement Intermediate code generation and optimization for various expressions.	PO1, PO2, PO9, PO12	Apply	С, Р	
CO4	Design a basic tool that showcase phase(s) of the compiler.	PO1, PO2, PO3, PO4, PO9, PO11, PO12, PSO1	Apply	C, M	

	Signature 1	<b>Faculty Members Teaching the Course</b>	Signature
Faculty Members Teaching the Course	January		
Prof. Arti Sharma     Prof. Akash Goel			
3.Prof. Anmol Jain	) And	(N).	(Ar

Signatured of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

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 5 number of COs. 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. Condition and Criteria.

### **Department of Computer Science**

Program Name: B.Tech.

Academic Session: 2023-24

Year: 3rd

Semester: 5th

Course Name: CD Lab

Course Code: KCS552

Course Coordinator Name: Prof. Akash Goel

### CO - PO/PSO/APO Matrix

	Programme Outcome (PO)													PSO	
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	3	3	-	-	2	-	-	-	1	-	-	2	-	-	
CO2	3	3	-	-	-	-	-	-	1	-	-	2	-	-	
CO3	3	3	-	-	-	-	-	-	1	-	-	2	-	-	
C04	3	3	1	2	-	-	-	-	2	-	1	2	3		
PO Target	2	3	1	2	2		-	-	1.25	-	1	2	3	-	

			C'ture
	Signature	Faculty Members Teaching the Course	Signature
Faculty Members Teaching the Course	Signature		
1. Prof. Arti Sharma	Have		
2.Prof. Akash Goel			
3.Prof. Anmol Jain	D 0		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech Course Name: DAA Lab

Academic Session: 2023-24

Year:3rd

Semester: 5th

**Course Outcomes** 

Course Code: KCS 553

Course Coordinator Name: Prof. Anshula Gupta

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

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Rajkumar	(R)		
	A H. V		
2.Prof. Anshula Gupta	2) of		
3.Prof. Vishaka	Vishan		61

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

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. Condition and Criteria.

## Department of Computer Science

Program Name: B.Tech.

Academic Session: 2023-24

Year:3rd

Course Name: DAA Lab

Course Code: KCS 553

Course Coordinator Name: Prof. Anshula Gupta

CO - PO/PSO/APO	Matrix							(DO)	`				PS	0
	Programme Outcome (PO)								1	2				
CO No.	1	2	3	4	5	6	7	8	9	10	11	12		-
	1	_		2	2	-		-	-	-	-	1	3	
CO1	3	2	1	-							-	1	3	-
		2	1	2	2	-	-	-	-			1		
CO2	3		l				-	-	-	-	-	1	3	-
	3	2	1	2	2	-							1	-
CO3	3		-	2	3	-	-	-	-	-	-	1	3	
COL	3	2	1	-							-	,	3	-
CO4		1 2	-	2	2.25	-	-	-	-			1		
PO Target	3	2	1							-			Signatu	-

	PO Target 3	•		sa Signature
ļ	,	Signature	Faculty Members Teaching the Cour	Nº S.
	Faculty Members Teaching the Course			
	1.Prof. Rajkumar			
	2.Prof.Anshula Gupta	duguez_		
		vishar		A. 3.
	3.Prof. Vishaka		•	C. C.

Signature of Course Coordinator

Assoc./ Asst. Head DOC

\* 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

### **Department of Computer Science**

Program Name: B.Tech Course Name: Mini Project

Academic Session: 2023-24 Course Code: KCS554

Year: 3rd

Semester: 5th

Course Coordinator Name: Prof. Vinay Pratap Singh

#### **Course Outcomes**

Aft	er completion of the course,	the student will be able to			D	
CO No.		of Course Outcome		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO1		and gather its requirements	PC	1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	С
CO2		blem using latest tools & techniques	PO	1, PO2, PO3, PO4, PO5, PO9, PO11, PO12, PSO1, PSO2	Understand	С
CO3		ct using latest technology.	PC	01, PO2, PO3, PO4, PO5, PO6, D9, PO11, PO12, PSO1, PSO2	Apply	С
CO4		nd critical thinking to prepare for ma project	PO	01, PO2, PO3, PO4, PO5, PO6, O8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	С
CO5		resent project works to the evaluators	s. P	PO1, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Understand	С
	embers Teaching the Course	Signature	Faculty N	Members Teaching the Course	Sign	ature

Faculty Manufactor To 1' (1 C	α. Λ		
Faculty Members Teaching the Course	Signature/\	Faculty Members Teaching the Course	Signature
1.Prof. Vinay Pratap Singh	VSV	4.Prof. Pallavi Sharma	Pallaz
2.Prof. Vishakha Chauhan	vigul		
3 Prof. Abhishek Goval	Test -		6

3.Prof. Admistick Goyal

Signature of Course Coordinator

Assoc. Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech.

Academic Session: 2023-24

Year:3rd

Semester: 5th

Course Name: Mini Project

Course Code: KCS554

Course Coordinator Name: Prof. Vinay Pratap Singh

### CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)										PSO			
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	3	3	2	-	-	2	2	2	3	2	2
CO2	3	3	3	3	3	-	-	<i>-</i>	2	-	2	3	2	3
CO3	3	3	3	3	3	1	-	-	3	-	2	2	3	2
CO4	3	3	3	3	3	2	-	2	3	2	2	3	2	2
CO5	2	-	-	-	-	-	-	2	2	3	2	3	2	2
PO Target	2.8	3	3	3	3	1.67	-	2	2.4	2.33	2	2.80	2.2	2.2

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Prof. Vinay Pratap Singh	NA/-		
2.Prof. Vishakha Chauhan	Vishah		
3.Prof. Abhishek Goyal	X		
4.Prof. Pallavi Sharma	Pullan		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Course Name: Software Engineering

Academic Session: 2023-24

Year:3rd

Semester: 6th

Course Outcomes

Course Code: KCS601

Course Coordinator Name: Prof. Akash Goel

CO No.	Statement of Course Outcome  Explain various software characteristics and different types of	Relevant POs/PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO1	software development models.	PO1, PO2, PO3, PO4, PO11, PSO2	Understand	С
CO2	Prepare the contents of SRS and apply basic software quality assurance practices.	PO1, PO2, PO3, PO4, PO11, PSO2	Apply	С
CO3	Apply various methods for software design techniques.	PO1, PO2, PO3, PO4, PO11, PSO2	Apply	С
CO4	Illustrate various software testing techniques.	PO1, PO2, PO3, PO4, PO11, PSO2	Apply	С
C05	Examine various software maintenance and project management techniques.		Apply	С

Faculty Members Teaching the Course  1.Prof. Akash Goel		Faculty Members Teaching the Course  2. Prof. Pardeep Tyagi	Signature
3.Prof. Akanksha	PW .		377 49

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science

Program Name: B.Tech

Academic Session: 2023-24

Year:3rd

Semester: 6th

Course Name: Software Engineering Course Code: KCS601

Course Coordinator Name: Prof. Akash Goel

### CO - PO/PSO/APO Matrix

CO No.		Programme Outcome (PO)													
	1	2	3	4	5	6	,	The residence of the last owner the					75	0	
CO1					-	0	/	8	9	10	11	12	1	7	
	2	2	1	2											
CO <sub>2</sub>	2	2							•			e .		1	
CO3	-	- 4	1	2							1				
COS	2	2	2	2						A COLUMN TO SERVICE				-	
CO4				Er .		*			- 4 Manuscriptonics		1			1	
	2	2	2	2											
CO5	2	2	1					4	4	*	1	¢	£	1	
no m		-	1	2							1				
PO Target	2	2	1.6	2					4	The state of the s		E CONTRACTOR OF THE PERSON OF	· ·	1	

Faculty Members Teaching the Course	Signature	Family M.
1.Prof. Akash Goel		Faculty Members Teaching the Course Signature
3.Prof. Akanksha		2.Prof. Pardeep Tyagi
, marksha	Wr.	

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl, HoD

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 1 (low correlation).
- ♦ If there is no correlation, then put a "•" (dash).

#### **Department of Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year:3rd

Semester: 6th

Course Name: Web Technology

Course Code: KCS602

Course Coordinator Name: Prof. Vivek Kumar Sharma

**Course Outcomes** 

	ter completion of the course, the student will be able to	Relevant POs/ PSOs	Revised Bloom's Level	Knowledge
CO No.	Statement of Course Outcome		(BL)	Category (KC)
CO1	Develop Java programs for window/web-based applications with understanding of web development Strategies and Protocols governing Web.	PO1, PO2, PO3, PO4, PSO1	Apply	C, P
CO2	Design web pages using HTML, XML, CSS and JavaScript.	PO1, PO2, PO3, PO4, PSO1	Apply	C, P
CO3	Create M web pages using JavaScript & AJAX and client-server environment using socket programming.	PO1, PO2, PO3, PO4, PSO1	Apply	C, P
CO4	Building enterprise level applications and manipulate web databases using JDBC	PO1, PO2, PO3, PO4, PO12, PSO1	Apply	C, P
CO5	Design interactive web applications using Servlets and JSP	PO1, PO2, PO3, PO4, PO12, PSO1	Analyze	C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	O. Signature
1.Prof. Vivek Kumar Sharma	Awda O	2.Prof. Shivani	Shundra
3.Prof. Vinay Pratap Singh	MAG	<u> </u>	N.
Me	An	Rgo.	(95)
Signature of Course Coordinator	Assoc./ Asst. Head De	OC Signature of Addl. HoD	Signature of HoD

- 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 Computer Science

Program Name: B.Tech Course Name: Web Technology

Academic Session: 2023-24 Course Code: KCS602

Year:3rd

Semester: 6th

Course Coordinator Name: Prof. Vivek Kumar Shama

### CO - PO/PSO/APO Matrix

CO No.		Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11		1	30	
CO1	1	2	2				,	0	9	10	11	12	1	2	
	1		3	3	•	-	-	-	-	-	-	_			
CO2	1	1	3	1	_	_	_	_						-	
CO3							-	-	-	-	-	-	-	-	
	1	2	3	3	-	١.		_	_		'				
CO4	1	2	3	3	_					-	-	-	-	-	
CO5						-	-		-	-	-	2	-	-	
	2	2	3	3	-		_	_							
PO Target	1.2	1.8	3	2.6	-				-	-	-	2	-	-	
						-	-	-	-	-	-	2	-	-	

Faculty Members Teaching the Course	6)	Faculty Members Teaching the Course	Signature
1.Prof. Vivek Kumar Sharma	distribution of the state of th	2.Prof. Shivani	()
3.Prof. Vinay Pratap Singh	NAT	Z.I IOI. OIIIValli	Shuar
	101		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 3rd

Semester: 6th

Course Name: Computer Network

Course Code: KCS603

Course Coordinator Name: Prof. Pawan Kumar Pal

**Course Outcomes** 

Ai	fter completion of the course,	, the student will be able to		Revised		
CO No.	Statement of	of Course Outcome	Relevant POs/ PSOs	Bloom's Level	Knowledge Category (KC)	
CO1	models, sch	ncepts of networking, networking hemes and devices.	PSO1	(BL) Understand		
CO2	technologi	otocols used at application layer i., TELNET and VPN, and the receies on networking.	e. PO1, PO2, PO3, PO4, PO12 PSO1	Understand	C	
CO3	Understand the data link lay allocation, framing, error	yer and its components like channer and flow control techniques in uter networks.	PO1, PO2, PO3, PO4, PO12, PSO1	Understand	С	
CO4	Routing Mechanism or	Logical addressing, subnetting & ndifferent practical scenarios.	PO1, PO2, PO3, PO4, PO12, PSO1	Apply	C	
CO5	Analysis of various Tra addressing, Connection Ma control mechanism ba	Insport Layer function i.e. Port inagement, Error control and Flow ased on the QoS parameters.	PO1, PO2, PO3, PO4, PO12, PSO1	Apply	C	
	bers Teaching the Course		aculty Members Teaching the Co			

Faculty Members Teaching the Course Faculty Members Teaching the Course 1.Prof. Pawan Kumar Pal Signature 2.Prof. Neha Shukla 3.Prof. Rahul

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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
- 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

#### **Department of Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 3rd

Semester: 6th

Course Name: Computer Network

Course Code: KCS603

Course Coordinator Name: Prof. Pawan Kumar Pal

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

CO No.					Prog	gramme	Outcom	e (PO)					PSO	
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C01	3	2	1	_	-	-	-	-		-	-	2		
CO2	3	2	1	1	-	-	-	-		-	-	2	-	
CO3	3	2	1	1	-	-	-	-	-	-	-	2		
CO4	3	3	2 /	1	-	-	-	-	-		-	2		4
CO5	3	3	2	1	-	-	-	-	-	-	-	2		
PO Target	3	2.4	1.4	1	-	-		-	-	-	-	2	-	•

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Pawan Kumar Pal	Xta	2.Prof. Neha Shukla	Oele
3.Prof. Rahul Kumar	June		

Signature of Course Coordinator

Assoc./Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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-FO COPSO Matrix.
- ❖ If there is no correlation, then put a "-" (dash).

### Department of Computer Science

Program Name: B.Tech

Academic Session: 2023-24

Year:3rd

Semester:6th

Course Name: Big Data

Course Code: KCS061

Course Coordinator Name: Dr. Gaurav Dubey

**Course Outcomes** 

Af	ter completion of the course, the student will be able to	Relevant POs/ PSOs	Revised Bloom's Level	Knowledge Category (KC)	
CO No.	Statement of Course Outcome		(BL)	Category (RC)	
C01	Understand the knowledge of Big Data concepts, its architecture and applications.	PO1, PO2, PO3, PO11, PSO2	Apply	С	
CO2	Demonstrate the components of Hadoop and Map Reduce Framework.	PO1, PO2, PO3, PO5, PO11, PSO1, PSO2	Apply	С	
CO3	Demonstrate the Hadoop Distributed File System and setting up it's environment.	PO1, PO2, PO3, PO11, PO12, PSO2	Apply	С	
CO4	Demonstrate NoSQL database and tools for job scheduling.	PO1, PO2, PO3, PO5, PO11, PO12, PSO1, PSO2	Apply	С	
C05	Demonstrate Pig, HIVE and HBASE to abstract Hadoop Eco System.	PO1, PO2, PO3, PO5, PO11, PO12, PSO1, PSO2	Apply	С	

Faculty Members Teaching the Course	digitaturo	Faculty Members Teaching the Course	
1.Dr. Gaurav Dubey	traf	2.Prof. Anurag Mishra	
3.Prof. Pawan Kumar Pal	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		- Oal

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

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 Computer Science

Program Name: B.Tech Course Name: Big Data

Academic Session: 2023-24

Year:3rd

Semester:6th

Course Code: KCS061

Course Coordinator Name: Dr. Gaurav Dubey

### CO - PO/PSO/APO Matrix

CO No.	,			Anna Carrella Maria	Prog	ramme	Outcome	e (PO)			dent many or dealer		PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	2								2	2	-	
CO2	3	3	2	-	2						2	2	2	2
CO3	3	1	2		_						2	2	-	2
CO4	3	3	2	-	3	_					2	2	2	2
CO5	3	3	2	-	3	-	-				2	2	1	2
PO Target	3	2.4	2	-	2.67	-	-				2	2	1.67	2

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Sycatore
1.Dr. Gaurav Dubey	- Jais	2.Prof. Anurag Mishra	(New
3.Prof. Pawan Kumar Pal	Www.		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 120 NO Matrix.
- If there is no correlation, then put a "-" (dash).

### **Department of Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 3

Semester: VI

Course Name: Software Project Management

Course Code: KOE068

Course Coordinator Name: Prof. Shivani

Course Outcomes

Af	er completion of the course, the student will be able to		Revised	Vacadida
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)	Knowledge Category (KC)
CO1	Determine the Cost benefit of the Projects with thorough understanding of project planning activities and the key phases of project management.	PO10, PO11, PO12	Apply	Р
CO2	Utilize an appropriate management strategy after identifying the different project contexts.	PO1, PO2, PO9, PO11	Apply	Р
CO3	Apply different software process models and cost estimation models for development of a project.	PO1, PO2	Apply	Р
CO4	Make use of various project activities to compute critical path for risk analysis.	PO1, PO2	Apply	Р
CO5	Illustrate the role of professional ethics in team building for successful software development.	PO3, PO8, PO9, PO10, PO12, PO14	Apply	Р

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Shivani	Shurand	2.Prof. Akash Goel	

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 3

Semester: VI

Course Name: Software Project Management

Course Code: KOE068

Course Coordinator Name: Prof. Shivani

### 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	-	-
CO2	1	2	-	-	-	-	-	-	3	-	3	-	-	-
CO3	2	2	-	-	-	-	-	-	-	I-	-	-	-	-
CO4	2	2	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	2	-	-	-	-	2	3	2	-	2	-	2
PO Target	1.67	2	2	-	-	-	-	2	3	2	3	2	-	2

Faculty Members Teaching the Course	0:		
	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Shivani	Showard	2.Prof. Akash Goel	Oignature O

Signature of Cource Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science** Academic Session: 2023-24

Program Name: B.Tech

Course Name: Idea to Business Model

Semester: 6th

Course Outcomes

Course Code: KOE060

Course Coordinator Name: Prof. Anmol Jain

Year: 3rd

CO No.	ter completion of the course, the student will be able to  Statement of Course Outcome	Polovová PO	Revised	
CO1	Understand the opportunities for carefully chosen business idea	Relevant POs/ PSOs	Bloom's Level (BL)	Knowledge Category (KC)
CO2	Siedly.	PO1, PO2, PO4, PO5, PO6, PO9, PSO1, PSO2	Understand	C (110)
	Estimate the barriers in business and find the solutions for identified barriers.	PO1, PO2, PO3, PO4, PO5, PSO1, PSO2	Understand	
CO3	Customize Entrepreneur Development Training Program.	PO10		С
CO4	Derive Production, Planning, and Control (PPC) steps.	PO3, PO4, PO7, PO11,	Apply	P
CO5		PO12, PSO1, PSO2	77.9	P
	Prepare communication and presentation skills.	PO10	Apply	P

Faculty Members Teaching the Course			
1 Prof. Armed L.:	Signature F	aculty Members Teaching the Course	
1.Prof. Anmol Jain	And de	y stemoers reaching the Course	Signature
	4		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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

**Department of Computer Science** 

Program Name: B.Tech

Academic Session: 2023-24

Year: 3rd

Semester:6th

Course Name: Idea to Business Model

Course Code: KOE060

Course Coordinator Name: Prof. Anmol Jain

### 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
C01	2	3	-	2	3	1			2	-	-		2	2
CO2	2	2	3	2	2		-			-		*	2	2
C03	-	-	-	-	-	•				3		-		-
CO4	-	-	3	2	-	•	2				3	2	2	2
CO5		-	-	-		•		•		3	-	-	-	9
PO Target	2	2.5	3	2	2.5	1	2		2	3	3	2	2	2

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Anmol Jain	Amolda		A STORY OF THE STO

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Summer of Bod

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as I (low correlation). 2 (medium correlation) and 3 digit correlation and 3 digit correlation.)
- If there is no correlation, then put a "=" (dash).

### **Department of Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

023-24

Year:3rd

Semester:6th

Course Name: Indian Tradition, Culture and Society

Course Code: KNC602

Course Coordinator Name: Prof. Shreela Parekh

**Course Outcomes** 

Aft	er completion of the course,	the student will be able to	D. I	Revised	Knowledge
CO No.		Course Outcome	Relevant POs/ PSOs	Bloom's Leve (BL)	Category (KC)
CO1	Examine and associate the an Societal formation with the u	cient roots and details of State & nderstanding of Polity in India.	PO2, PO3, PO4, PO 5, PO 6, PO7, PO8, PO9, PO10, PO11	Apply	F, C
CO2	Tradition, Practices	rledge of Indian Literature, Cultur to present Indian System.	PO7, PO8, PO9, PO10,	Apply	F, C
CO3	of Pre-Vedic and Vedic I System Indian Phi	n, Philosophy, Practices and shado Religion, Buddhism, Jainism, Six losophy in present system.	PO8, PO9, PO10, PO11	Analyze	F, C
CO4	Explore the Indian Knowled in modern perspectives	ge System, Science & Managemen	PO1, PO2, PO3, PO6, PO7, PO8, PO9, PO10, PO11	Analyze	C,P
CO5	Ancient India, Indian's Cu	ect, Engineering and Architecture Itural Contribution to the World and in Arts and Cultural for the prese system.	nd PO1,PO2, PO3, PO4, PO 5,	Analyze	C.P
	embers Teaching the Course	Signature	Faculty Members Teaching the Co	ourse	Signature
1.Mr. Ami	t Kumar Sanger	31/batshuc	2.Ms. Shreela Pareek	4	5 oxely
3.Mrs. Pal	lavi ()	f May	,		

Signature of Course Coordinator

Assoc. Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session:

2023-24

Year:3rd

Semester:6th

Course Name: Indian Tradition, Culture and Society

**Course Code: KNC602** 

Course Coordinator Name: Prof. Shreela Parekh

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

		Programme Outcome (PO)													
CO No.	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	-	2	2	1	2	-	2	2	2	1	-	-	-	-	
CO2	2	1	2	-	2	-	2	2	2	1	-	-	-	-	
CO3	1	1	2	-	-	-	2	2	1	2	-	-	-	-	
CO4	2	2	2	-	-	-	2	2	2	2	-	-	-	-	
CO5	2	1	2	2	2	-	2	2	2	2	-	-	-	-	
PO Target	1.75	1.4	2	1.5	2	-	2	2	1:8	1.6	-	-	-	, -	

			C:
Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Amit Kumar Singh Sanger	- 3and book	2.Prof. Shreela Pareek	forch
3.Prof. Pallavi	Pallow		

Assoc./ Asst. Head DOC

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year:3rd

Semester:6th

Course Name: Software Engineering Lab

Course Code: KCS651

Course Coordinator Name: Prof. Pardeep Tyagi

**Course Outcomes** 

Aft	er completion of the course, the student will be able to		Revised		
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level	Knowledge Category (KC)	
CO1	Discover ambiguities, inconsistencies and incompleteness in SRS document and to identify its functional and non-functional requirements.	PO1, PO2, PO3, PO4, PO5, PSO2	(BL) Apply	C	
CO2	Demonstrate use case diagrams by identifying different actors and use cases from a given problem statement.	PO1, PO2, PO3, PO4, PO5, PSO2	Apply	С	
CO3	Prepare a class diagram after identifying classes and association among them.	PO1, PO2, PO3, PO4, PO5, PSO2	Apply	С	
CO4	Illustrate UML diagrams and associations among them by identifying the logical sequence of activities undergoing in a system.	PO1, PO2, PO3, PO4, PO5, PSO2	Apply	С	
CO5	Articulate the use of modern engineering tools for software specification, design, implementation and testing.	PO1, PO2, PO3, PO4, PO5, PSO2	Apply	С	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Cours	e Signature
1.Prof. Pardeep Tyagi	Lyde	2.Prof. Akanksha	Signature
3.Prof. Akash Goel	9		-p

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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.

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Program Name: B.Tech

Department of Computer Science Academic Session: 2023-24

Year:3rd

Semester:6th

Course Name: Software Engineering Lab

Course Code: KCS651

Course Coordinator Name: Prof. Pardeep Tyagi

### CO - PO/PSO/APO Matrix

CO No.					Pro	gramm	e Outco	me (PO)					1	PSO
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	2	2	2	2	_						12	1	1 2
CO2	2	2	2	2	2	_	_	-		-	-	-	-	-
CO3	2	2	2	3	2	_			-	-	-	-	-	-
CO4	2	2	2	2	2	-,:	_	_		-		-	-	-
CO5	2	2	2	2	2	-	-	-	-	-	_	_	-	-
PO Target	2	2	2	2.2	2	-	-	-	-	-	-	-	-	-

Faculty Members Teaching the Course		Faculty Members Teaching the Course	A Signature
1.Prof. Pardeep Tyagi	WL	2.Prof. Akanksha	Liller
3.Prof. Akash Goel			19

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 FSO Matrix.
- If there is no correlation, then put a "-" (dash).

#### **Department of Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Year: 3rd

Semester: 6th

Course Name: Web Technology Lab

Course Code: KCS652

Course Coordinator Name: Prof. Vinay Pratap Singh

**Course Outcomes** 

A)	fter completion of the course, the student will be able to  Statement of Course Outcome	Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
C01	Develop static web pages using HTML, CSS.	PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Apply	С
CO2	Develop Java programs for window/web-based applications.	PO1, PO3, PO4, PO5, PO6, PO12, PSO1	Apply	С
CO3	Design dynamic web pages using Javascript and XML.	PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Apply	C
CO4	Design dynamic web page using server site programming Ex. SERVLET and JSP.	PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Apply	С
CO5	Design server site applications using JDDC, ODBC and session tracking API.	PO3, PO4, PO5, PO6, PO12, PSO1	Apply	С

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Vinay Pratap Singh	102	2.Prof. Vivek Sharma	duft
	Tion!		ACCUPATION AND DESCRIPTION OF THE PROPERTY OF
3.Prof. Shivani	grava .		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science

Course Coordinator Name: Prof. Vinay Pratap Singh Semester: 6th Year: 3rd

Course Code: KCS652 Academic Session: 2023-24

Course Name: Web Technology Lab Ргодгат Мате: В.Тесћ

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

		- Gray			emr	ivek Shai	V .lo1q.	2		VIX	0		dgnið	Prof. Vinay Pratap S
	ature	IgiZ	nrse	oD aht gr	Teachir	Aembers	Faculty A		nre	isitai &		Course		Faculty Members Tea
		T	1	1							_			
-	-	τ	-	-	-	-	-	-	7	ε	ε	τ	7	tegraT Oq
-	-	7	-	-	-	-	-	7	7	3	3	-	-	CO2
-	-	7	-	-,	-	-	-	-	7	3	3	7	-	CO4
-	-	7	-	-	-	-	-	-	7	3	3	7	-	CO3
-	-	7	-	-	-		-	-	7	ε	3	<b>-</b>	7	COT
-	-	7	-	-	-	-	-	-	7	ε	3	7	-	COI
7	I	71	H	10	6	8	L	9	S	<b>t</b>	ε	7	I	1011.02
OS	FI I					(Oq) 91	MostuO	gramme	Prog		•			CO No.

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Signature of Addl. HoD

Signature of Gourse Coordinator

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

Matrix.

3.Prof. Shivani

If there is no correlation, then put a "-" (dash).

### Department of Computer Science

Program Name: B.Tech

Academic Session: 2023-24

Year: 3rd

Semester:6th

Course Name: Computer Networks Lab Course Outcomes

Course Code: KCS653

Course Coordinator Name: Prof. Rahul Kumar

Aft	er completion of the course, the student will be able to		Revised	
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Bloom's Level	Knowledge Category (KC)
CO1	Examine the networking commands and configuring network hardware.	PO1, PO2, PO3, PO4, PO5, PO11	(BL) Apply	C
CO2	Demonstrate the working of different network topologies.	PO1, PO3, PO4, PO5, PO11	Apply	С
CO3	Apply the concepts of Framing, stop & wait ARQ, Network addressing and routing.	PO1, PO2, PO3, PO4	Apply	С
CO4	Construct the Transport layer protocols-based sockets for various applications.	PO1, PO2, PO3, PO4, PO5, PO11	Apply	С
CO5	Implement transport and security mechanisms.	PO1, PO2, PO3, PO4, PO5, PO11	Apply	С

Faculty Members Teaching the Course	n Signature	Faculty Members Teaching the Course	Signature
1.Prof. Rahul Kumar	John	2.Prof. Neha Shukla	1 lele
3.Prof. Pawan Kumar Pal	XVZ		The state of the s

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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.

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Program Name: B.Tech

Department of Computer Science
Academic Session: 2023-24

Year: 3rd

Semester:6th

Course Name: Computer Networks Lab

Course Code: KCS653

Course Coordinator Name: Prof. Rahul Kumar

## CO - PO/PSO/APO Matrix

CO No.	1	Programme Outcome (PO)												
	1	2	3	4	5	6	7			1				PSO
C01	2	2				-	/	8	9	10	11	12	1	2
004	2	2	2	3	2	-	-	-						
CO2	2		2	2						· ·	-	-	I	2
CO3				2	2		-	-	-	-		_	2	
	2	2	3	3	_								1	<u> </u>
CO4	3	_					-	-	-	ļ.	-	-		1
00-	3	3	2	3	2	-	-	-					1	
CO5	3	2	3	2	_					<del>-</del> -	-	-		2
PO Target				2	2	•	-	-	-	-			1	,
10 Target	2.4	2.25	2.4	2.6	2									- 2

Faculty Members Teaching the Course  1.Prof. Rahul Kumar	One	Faculty Members Teaching the Course 2.Prof. Neha Shukla	Signature
3.Prof. Pawan Kumar Pal	My	THE SHUKIA	peale

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science

Program Name: B.Tech Course Name: Software Testing

Academic Session: 2023-24 Course Code: KCS076

Year: 4th

Course Outcomes

CO No.	er completion of the course, the student will be able to			emester: 7th f. Shreela Pareek
CO1	Statement of Course Outcome  Understand the basics of software testing, its objectives, validation and verification.	Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO2	Illustrate various functional and structural testing most	PO1, PO2, PO4, PO8, PO10, PO11, PSO1	Understand	C
CO3	Determine the process of Test Selection for D	PO1, PO2, PO4, PSO1	Apply	C, P
CO4	and of test eases	PO1, PO2, PO4, PSO1	Understand	C, P
CO5	Explore testing activities and test data generation tools.  Apply object oriented and web application test cases on Testing tools	PO1, PO2, PO4, PO5, PO12, PSO1	Analyze	C, P
	tools.	PO1, PO2, PO4, PO5, PO12, PSO1	Apply	C, P

Faculty Members Teaching the Course Signature	
1.Prof. Akanksha Signature	Faculty Mambas, Tourish
2.Prof. Abhishek Goyal	Faculty Members Teaching the Course Signature
3.Prof. Shreela Pareek	· ·
Sorul	
Signature of Course Coordinator  Please Note (Reference, Opp. a	
Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)	Signature of Addl. HoD
The theory courses/ project having credits 3 to 6 should have 5 number of COs. The	Signature of HoD

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

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

### **Department of Computer Science**

Program Name: B.Tech.

Academic Session: 2023-24

Year: 4th

Semester: 7th

Course Name: Software Testing

Course Code: KCS076

Course Coordinator Name: Prof. Shreela Pareek

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

CO No.		Programme Outcome (PO)												
	1	2	3	4	5	6	7	8	9	10	11	12	1	PSO
CO1	1	2	-	2	-	-	-	2		2	1	-	;	-
CO2	1	2	•	2	-	-	-	-	-	-	-	-		ļ .
CO3	1	2	-	2	-	-	-			-		_	1	
CO4	1	2		2	2							-	1	
	1	2		2			-			-	-	2	2	
C05					2	-	-	-	-	-	-	2	2	
PO Target		2	-	2	2	-	-	2	-	2	1	2	1,4	-

F 1 1/2			
Faculty Members Teaching the Course	Signature	Faculty Mambara Tarabia at G	
1.Prof. Akanksha	Ri	Faculty Members Teaching the Course	Signature
2.Prof. Devendra Gautam	Day		
3.Prof. Shreela Pareek	Forell		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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
- ♦ If there is no correlation, then put a "-" (dash).

#### **Department of Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

24 Year: 4th

Semester: 7th

Course Name: Cloud Computing

Course Code: KCS713

Course Coordinator Name: Prof. Vinay Pratap Singh

**Course Outcomes** 

Aft	er completion of the course, the student will be able to		D	1
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
C01	Articulate the main concepts, key technologies, strengths and limitations of cloud computing.	PO1, PO5, PO8, PO12	Understand	F, C
CO2	Understand the key and enabling technologies like virtualization in Cloud Computing	PO1, PO5, PO12	Understand	F, C
CO3	Interpret the architecture of cloud computing, cloud storage, service and delivery models.	PO1, PO5, PO12	Understand	F, C
CO4	Understand the core issues of cloud computing such as resource management and security.	PO1, PO5, PO12	Understand	F, C
C05	Classify cloud technologies for the next generation computing paradigm.	PO1, PO5, PO12	Analyze	F, C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	C:
1. Prof. Vinay Pratap Singh		racing memoers reaching the course	Signature
2.Prof. Amit Sanger	- SIMA COSTA		
3.Prof Sreesh Gaur			

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science

Program Name: B.Tech. Course Name: Cloud Computing

Academic Session: 2023-24 Course Code: KCS713

Year: 4th

Semester: 7th

Course Coordinator Name: Prof. Vinay Pratap Singh

## CO - PO/PSO/APO Matrix

CO No.	1	2	2	Programme Outcome (PO)							Page			
CO1		_	3	3 4 5 6 7 8 9 10							PS	0		
CUI	2	2	-	2	2			_	-	10	11	12	1	2
CO2	2	2		2		•	•	-	-	-	-	2	2	
C03	2	3		_	2	•	-	-	-	-	-	2	2	
CO4	2	_	-	2	2	-	-	-		-	1.	2		_
	2	3	-	2	3	-	_			-	-	-	2	-
C05	2	3	-	3	3			-			2	2	2	
PO Target	2	2.6				-	-	-	-	-	2	3	3	
		2.0	_	2.2	2.4	-	_				-			-

Faculty Members Teaching the Course		2 2.	2 2,2
1.Prof. Vinay Pratap Singh	Signature Faculty Man		
2.Prof. Amit Sanger	Taculty Memb	ers Teaching the Course	Signature
3. Prof Sreesh Gaur	Some		- January C
Caul	lu		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. 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 • If there is no correlation, then put a "-" (dash).

# Department of Computer Science

Program Name: B.Tech Course Name: PME

Academic Session: 2023-24

Year: 4th

Semester: 7th

Course Outcomes

Course Code: KHU 702

CO No.	ter completion of the course, the student will be able to			
C01	Statement of Course Outcome  Understand the theories of entrepreneurship and entrepreneurial development program.	Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO2	development program.  Categorize innovative business ideas and market opportunities for business development	PO6, PO9,PO10	Understand	C
CO3	Discuss the importance of project life and	PO3, PO6, PO9, PO11, PSO2 PO6, PO9, PO10, PO11	Analyze	C, P
CO4	Compute different types of project financing	PO6, PO9, PO11, PSO1	Understand	С
CO5	on cash flow statements.  Describe social entrepreneurship opportunities and risk management techniques in social enterprises.	PO6, PO9, PO11, PSO2	Apply Understand	<b>C, P</b> .

Faculty Members Teaching the Course			
1.Prof. Neha Shukla	Signature	Faculty Man 1	
2.Prof. Anshula Gupta	Ville	Faculty Members Teaching the Course	e Signature
	dryful		Samulo
3.F101. Snivani	luant		
Val.	Aur.		
3. Prof. Shivani	furant		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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
- 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

## **Department of Computer Science**

Program Name: B.Tech. Course Name: PME

Academic Session: 2023-24 Course Code: KHU702

Year: 4th

Semester: 7th

Course Coordinator Name: Prof. Neha Shukla

CO - PO/PSO/APO Matrix

CO No.		Programme Outcome (PO)												
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	1	-	-	2	1	-	-	1	
CO2	-	-	1	-		1	-	-	3	-	2	-	-	
CO3	-	-	<b>1-</b>	-	-	2	-		3	2	3		-	1
CO4		-	-	-	-	1	_		3				-	-
	- 1	<u> </u>	_					_		2	3		-	-
C05	-				-	2	-	-	2	-	1	-	-	2
PO Target	-	-	1	-	-	1.4	-,	-	2.6	1.67	2.25			1.50

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	0.
1. Prof. Neha Shukla	Mobe	rueatey inclineers reaching the Course	Signature
2. Prof. Anshula Gupta	Justil		
3. Prof. Shivani	Jennan		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science** 

Program Name: B.Tech

Academic Session: 2023-24

Semester: 7th

Course Name: RER

Course Code: KOE-074

Course Coordinator Name: Prof. Rahul Kumar

Course Outcomes

	ter completion of the course, the student will be able to	Relevant POs/ PSOs	Revised Bloom's Level	Knowledge Category (KC)
CO No.	Statement of Course Outcome		(BL)	- Category (110)
C01	Classify the renewable and non-renewable sources of energy.	PO1, PO2, PO7	Understand	F
CO2	Illustrate the working principle of various solar energy system.	PO1, PO2, PO7	Understand	F,C
CO3	Discuss the Geothermal & Tidal energy, its mechanism of production and its applications.	PO1, PO2, PO12	Understand	F,C
CO4	Interpret winds energy as alternative form of energy and its tapping.	PO1, PO2, PO7, PO12	Remember	F,C
CO5	Summarize the basics of biomass energy sources and relevant thermos-dynamics	PO1, PO2, PO7	Understand	F,C

E with March are Topphing the Course	Signature	Faculty Members Teaching the Course	Signature
Faculty Members Teaching the Course	Comme		
1. Prof. Rahul Kumar			
2. Prof. Pradeep Tyagi	fyl.		
3. Prof. Pallavi Sharma	( War		1

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech.

Academic Session: 2023-24

Year: 4th

Semester: 7th

Course Name: RER

R Course Code: B.Tech

Course Coordinator Name: Prof. Rahul Kumar

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

CO No.					Progr	amme C	utcome	(PO)					PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1		-	2	-	_	3	-	-	-	-	1	-	-
CO2	1	-	-	2	-	2	3	-	-	-	-	1	-	
CO3	1	-	-	2	-	-	3	-	-	_		1	_	
CO4	1	-	-	2	-	-	3	-	-	-	-	1	_	
CO5	1	-	-	2	-	-	3	-	-	-	-	1	_	_
PO Target	1	-	-	2	-	2	3	-	-	-	-	1	-	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Prof. Rahul Kumar	firm		orginature
2. Prof. Pradeep Tyagi	the transfer of the transfer o		
3. Prof. Pallavi Sharma	Phony		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech

Academic Session: 2023-24

Semester: 7th

Course Name: ST Lab

Course Code: KCS751A

Course Coordinator Name: Prof. Akanksha

**Course Outcomes** 

Af	ter completion of the course, the student will be able to	Relevant POs/ PSOs	Revised Bloom's Level	Knowledge
CO No.	Statement of Course Outcome	Relevant FOS/ FSOS	(BL)	Category (KC)
1	Derive effective test cases based on software requirements.	PO1, PO2, PO4, PO8, PO9, PO12	Apply	- Р
2	Apply a wide variety of testing techniques in an effective way.	PO1, PO2, PO4, PO5, PO8, PO12, PSO1	Apply	Р
3	Simulate various test scenarios using automated software testing tool (Selenium).	PO1, PO2, PO4, PO5, PO8, PO12, PSO1	Apply	P
4	Analyze test plan for the project and report generation using Mantis BT.	PO1, PO2, PO4, PO5, PO8, PO9, PO12, PSO1	Analyze	P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Akanksha	Be		<u> </u>
2.Prof. Abhishek Goyal	Jall		
3.Prof. Shreela Pareek	f'ruk		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech. Course Name: ST Lab

Academic Session: 2023-24 Course Code: KCS751A Year: 4th

Semester: 7th

Course Coordinator Name: Prof. Akanksha

#### 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	-		2	2	-	
CO2	2	2	-	1				1	1			2		-	
CO3	2	2	-	1	3	-	-	1	1			2	2		
CO4	2	2		1	3			1	2	-		2	2		
PO Target	2	2	-	1	3	-		1	1.25			,	2		

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Akanksha	A.		
2.Prof. Abhishek Goyal	feel		
3.Prof. Shreela Pareek	Sorek		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science

Program Name: B.Tech

Academic Session: 2023-24

Year: 4th

Semester: 7th

Course Name: Internship Assessment **Course Outcomes** 

Course Code: KCS752

Course Coordinator Name: Harsh Vardhan

Af	ter completion of the course, the student will be able to			maish varuhah
CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO1	Identify a problem and gather its requirements.	PO1, PO2, PO3, PO6, PO10, PSO1, PSO2	Apply	С
CO2	Design a solution of the problem using latest tools & techniques.	PO1, PO2, PO3, PO6, PSO1, PSO2	Apply	Р
CO3	Develop a project using latest technology.	PO1, PO2, PO3, PSO1, PSO2	Create	С
CO4	Develop professional skills and critical thinking to prepare for major project.	PO1, PO2, PO3, PO6, PO10, PSO1, PSO2	Analyze	P

Faculty Members Teaching the Course 1.Harsh Vardhan 2.Pawan Kumar Pal 3.Anurag Tiwari	Signature HOYAL	Faculty Members Teaching the Course 4.Prof. Yashi Rastogi 5.Prof. Arti Sharma	Signature Yas ly
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Marsh

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of HoD

- 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 Computer Science**

Program Name: B.Tech.

Academic Session: 2023-24

Year:4th

Semester:7th

Course Name: Internship Assessment

Course Code: KCS752

Course Coordinator Name: Prof. Harsh Vardhan

## CO - PO/PSO/APO Matrix

$CO N_0$ .	1				Pro	gramme	Outcom	e (PO)						
	1	2	3	4	5	6	7			_			1	PSO PSO
CO1	3	3	3	-		2	/	8	9	10	11	12	1	)
000	2					2	-	-	-	2	-	-		
CO <sub>2</sub>	3	3	3	-	-	1	_						2	2
CO3	3	3	12					-	-	-	-	-	2	,
CO3 .		)	3	-	-	-	-	-	-	-	-			3
CO4	3	3	3								-	-	3	2
				-	-	2	-	-	-	2	-	-		_
PO Target	3	3	3	-	-								2	2
			3			1.67	-	-,	-	2	-			

Faculty Members Teaching the Course 1.Harsh Vardhan 2.Pawan Kumar Pal 3.Anurag Tiwari	Signature Haysh	Faculty Members Teaching the Course 4.Prof. Yashi Rastogi 5.Prof. Arti Sharma	
	(1)		

Marsh

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/APOPSO

❖ If there is no correlation, then put a "-" (dash).

#### **Department of Computer Science**

Program Name: B.Tech Course Name:

**Project Lab** 

Academic Session: 2023-24 Course Code: KCS753 Year:4th

Semester: 7th

Course Coordinator Name: Prof. Neha Shukla

**Course Outcomes** 

After co	mpletion 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 real-life problem through information gathering.	PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12, PSO1, PSO2	Understand	C,P
CO2	Apply acquired knowledge to develop a Conceptual model.	PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	C,P
CO3	Analyze the outcome of each phase using various tools and techniques.	PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	C,P
CO4	Defend the validity of idea or quality of result with the previous data/ result.	PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12, PSO1, PSO2	Evaluate	C,P
		PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12, PSO1, PSO2	Create	C,P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Prof. Neha Shukla	Plele	2.Prof. Arti Sharma	dont
3.Prof. Pawan Kumar Pal	the.	4.Prof. Abhishek Goyal	ACU!
5.Prof. Pallavi Sharma	Pallare	·	

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

- 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 Computer Science

Program Name: B.Tech. Course Name: Project Lab

Academic Session: 2023-24

Year: 4th

Semester: 7th

Course Code: KCS753

Course Coordinator Name: Prof. Neha Shukla

CO - PO/PSO/APO Matrix

90 10/150/A	PO Matrix							`	course (	-00rdina	ator Name	: Prof. Nel	a Shukl	2
CO No.	1	2	3	,	Pro	ogramm	e Outcor							
CO1	-	3	3	3	5	6	7	8	9	10	11			PSO PSO
CO2	-	3	-		3	1	2	-	3	2	3	12	1	2
		3	3	3	2	1	2	-	3	2		3	3	3
CO3	-	3	3	3	2	1	2			2	3	3	3	3
CO4	-	3	3	3	2			-	3	2	3	3	3	3
CO5	-	3	3	2		1	2	-	3	2	2	2	3	
PO Town			3	3	2	1	2	-	3	2	1			3 -
PO Target	-	3	3	3	2.2	1	2				1	2	3	3
Faculty Members Te	and t					1	2	•	3	2	2.4	2.6	3	3
, weinbers le	eaching the	Course		C.										

Faculty Members Teaching the Course		3 2	2.4 2.6 3 3
4. Prof. Neha Shukla	Signature	Faculty Members Teaching the Co	
5. Prof. Pawan Kumar Pal	X	4.Prof. Arti Sharma	Signature
6. Prof. Pallavi Sharma	0,000	5.Prof. Abhishek Goyal	Pano La
	(0)		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

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 • If there is no correlation, then put a "-" (dash).

# **Department of Computer Science**

Program Name: B.Tech Course Name: RDAP

Academic Session: 2023-24 Course Code: KHU801

Year: 4th

Semester: 8th

Course Outcomes

Course Coordinator Name: Prof. Amit Kumar Singh Sanger

CO No.	er completion of the course, the student will be able to  Statement of Course Outcome	Relevant POs/ PSOs	Revised	Knowledge
CO1	Describe the definitions, concepts and components of Pro-	30,7003	Bloom's Level (BL)	Category (KC)
CO2	Development  Explain the importance, structure, significance, resources of	PO6, PO8, PO10, PO12	Understand	C
	Indian rural economy.  Identify Rural development programmes and their impact.	PO6, PO8, PO9, PO10, PO12	Understand	F, C
CO3		PO6, PO7, PO8, PO9, PO10, PO12	Understand	F, C
CO4	Explain the use of different methods of human resource planning		II-1	
COS	Acquire knowledge about rural entrepreneurship.	PO6, PO8, PO9, PO10, PO12	Understand	F, C
CO5	about tural entrepreneurship.	PO6, PO8, PO10, PO12	Understand	C

Faculty Mambara T. 1:			
Faculty Members Teaching the Course	Signature	Foodles M. J. St.	
1.Mr. Amit Kumar Singh Sanger	30 A =	Faculty Members Teaching the Course	Signature
	3/12/d6thut	2.Mr. Pardeep Tyagi	Signature
3.Prof. Vinay Pratap Singh	000	1 7 - 6.	1700
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3/Wath May			

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl HoD

Signature of HoD

- 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

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

Department of Computer Science

Program Name: B.Tech Course Name: RDAP

Academic Session: 2023-24

Year:4th

Semester: 8th

Course Coordinator Name: Prof. Amit Kumar Singh Sanger Course Code: KHU801

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

CO No.		Programme Outcome (PO)										PSO PSO		
	1	2	3	4	5	6	7	8	9	10	111	12	1	2
C01	-	-	-	-	-	-	-	1	-	1	-	1	-	-
CO2	-	-	-	-	-	-	-	1	2	1	-	1	-	-
CO3	-	-	-	-	-	-	3	1	2	1	-	1		_
CO4	-	-	-	-	-	-	-	1	1	1		1		
C05	-	-	-	-	-	-	-	1	-	1		1 1		
PO Target			-	-	-		3	1	1.67	1		1		

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	0.0
1.Prof. Amit Kumar Singh Sanger		2.Prof. Pardeep Tyagi	Signature
3.Prof. Vinay Pratap Singh	ALC.	2.1. ton radeep Tyagi	7
	White I was		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of HoD

- 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 Computer Science

Program Name: B.Tech

Academic Session: 2023-24

Year: 4th

Semester: 8th

Course Name: Quality Management

Course Code: KOE085

Course Coordinator Name: Prof. Akanksha

Course Outcomes

CO No.	Statement of Course Outcome	Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)	
COI	Understand the quality concept and its components.	PO6, PO8, PO9, PO10, PO11, PO12	Understand		
CO2	Understand the concepts of quality management and performance excellence in organization.	PO8, PO9, PO10, PO12	Understand	C	
CO3	Apply the several techniques and quality management tools.	PO5, PO10, PO11	A 1		
CO4	Analyze the defects, reliability and maintainability of and	PO2, PO3, PO9, PO10,	Apply	C, P	
CO5	interpretation of test results.	PO11, PO12	Analyze	C, P	
	Understand the quality system certification process.	PO8, PO10	Understand	С	

Faculty Members Total	
Faculty Members Teaching the Course Signature Faculty Months & Faculty Mon	
1. Prof. Akanksha  Paculty Members Teaching the Cot	
2 Prof. Cl	rse Signature
3.Dr. Kalpana Sagar 2.Prof. Shreela	
WWW	Forel
V. 2/101/	
	\

Signature of Course Coordinator

Assoc./ Asst. Head DOC

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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

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

Program Name: B.Tech Course Name: Quality Management

# Department of Computer Science

Academic Session: 2023-24

		-Seniell	ι		Comm	2023-24			V	0.2				
CO No.					Course	Code: K	OE085	(	Year:	4 <sup>th</sup>	S	emester: 8		
00 110.	1							,	-ourse (	Coording	tor Name	emester: 8º :: Prof. Aka	, .	
CO1		2	3	4	710	grammo	Outcon	ne (PO)				. Tol. Aka	nksha	
CO1	-			<u> </u>	5	6	7	8	9				D	00
CO <sub>2</sub>					-	1		-	9	10	11	12	P	SO
	-0				_			2	2	2	1	12	1	2
CO3								2		-	,	1		
	•	-			1				2	2	-	1		
CO4		4			'	-	-					,	•	-
COZ		'	1							2	1	-		
CO5	-						•	-	2	2	1			
PO Target					1-			_			,	1		
- miget	-	1	1					2	•	2	-			
Food 1					1	1	-	2	2	2			•	-
Faculty Members Te	aching the	Course		0:						2	1	1		-

Faculty Members Teaching the Course	ı ı	2 2 2	1 1
Tot. Akaliksna	Signature	Faculty Members T	
3.Dr. Kalpana Sagar		Faculty Members Teaching the (2.Prof. Shreela	Course Signature
	X		Jores
	Λ % X		

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of HoD

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Department of Computer Science

Program Name: B.Tech

Academic Session: 2023-24

Year: 4th

Semester: 8th

Course Name: Digital and Social Media Marketing Course Code: KOE094

Course Coordinator Name: Prof. Pallavi Sharma

CO No.	Statement of Course Outcome  Acquire the knowledge about the Digital Marketing, the various channels through which it operates and it and it is a large of the course.	Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO2	strategy.  Gain understanding of various social media plotforms.	PO6, PO10, PO12	Understand	F,C
C03	Assess the best practices: 11.	PO6, PO9, PO10, PO12	Apply	C,P
005	moderate wiredge of various digital	PO5, PO6, PO9, PO10,		F,C
CO4	marketing tool.  Formulate Digital marketing Strategies for an organization.	PO12	Understand	1,0
CO5	Analyze the privacy sequents	PO5, PO6, PO9, PO10, PO12	Apply	C,P
	associated with digital and social media platforms.	PO6, PO9, PO10, PO12	Understand	F,C

Faculty Members Teaching the Course				
1.Prof. Pallavi Sharma	Signature Faculty M	Members Teaching the Course	0	
3.Prof. Umnah	2.Prof. R	ahul Kumar	A Pignature	
0 0	Mmach	and Rallal	They	
Signature of Course Coordinator	The state of the s	(2)		
of Course Coordinator	Assoc. Asst. Head DOC		1975	د

Assoc. Asst. Head DOC

- 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
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Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

**Department of Computer Science** 

Semester: 8th

Program Name: B.Tech Course Name: Digital and Social Media Marketing Course Code: KOE094

Academic Session: 2023-24

Year: 4th Course Coordinator Name: Prof. Pallavi Sharma

				7)			(1)(1)				,	1	
				Prog	ramme	Outcom	e (PO)			11	12	1	
1	2	3	4	5	6	7	8	9	10	11	12		
						_	-	-	3		1	-	
	-	•	-	-							1		
			-	-	-	-	-	1	3	ļ ·	1		
-							_	2	3	-	1		
-		-	-	2	-	-					1		
		_		2	-	-	-	2	3	-	1	+	-
-		-	-					1	3	-	1	-	
-	-	-	-	-	-	-	-	1	-		1		
_		-	-	2	-	-	-	1.5	3	•			1
	-				2 2 2				1 2 2 2 2 2 1 - 1.5	1 3 2 2 3 2 2 3 2 1 3 - 1 3	1 3 2 3 2 3 1 3 1 3 2 3 1 3 1 3 1 3		

PO Target				
	Signature	Faculty Members Teaching the Course	Signature	
Faculty Members Teaching the Course	1 N Con	2.Prof. Rahul Kumar	4777	
1.Prof. Pallavi Sharma	Mma		$\mathcal{O}$	
3.Prof. Umnah	V		100	_

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of HoD

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Department of Computer Science

Program Name: B.Tech Course Name: Project Academic Session: 2023-24 Course Code: KCS851 Year:4th

Semester: 8th

Course Coordinator Name: Prof. Neha Shukla

Course Outcomes

Af	ter completios of the course	, the student will be able to	Delevent POe/ PSOe	Rev-sed	Knowledge	
CO No.	Statement	of Course Outcome	Relevant POs/ PSOs	Bloom's Level (BL)	Category (KC	
CO1	Identify real-life probler gathering for com	ns through effective information prehensive understanding.	PO1, PO2, PO3, PO4, PO5, PO7, PO9, PO10, PO11, PO12, PSO1	Understand	С	
CO2	Apply diverse insights o conceptual pr	ollaboratively to develop a robust roblem-solving model.	PO1, PO2, PO3, PO4, PO7, PO12, PSO1	Apply	C,P	
CO3		mental set-up necessary to complete project.	roject. PO12, PSO1 Create		C,P	
CO4	Examine acquired result conclusions through in-de	s thoroughly, drawing meaningful epth discussion and comprehensive analysis.	PO1, PO2, PO3, PO4, PO12, PSO1	Analyze	C,P	
C05	Demonstrate effectiv	e teamwork, presentation, and kills among team members.	PO8, PO9, PO10, PO11, PO12, PSO1	Apply	C,P	
CO6	journals/	ntal information to publish in conference/Patent.	PO1, PO2, PO4, PO8, PO12, PSO1, PSO2	Create	C,P	
	mbers Teaching the Course	Signature F	aculty Members Teaching the Cou	irse S	ignature	

1.Prof. Neha Shukla

Signature of Course Coordinator

Assoc./ Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

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#### **Department of Computer Science**

Program Name: B.Tech Course Name: Project

Academic Session: 2023-24 Course Code: KCS851

Year:4th

Semester: 8th Course Coordinator Name: Prof. Neha Shukla

CO - PO/PSO/APO Matrix

CO No.								3			PSO			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	3	2	-	2	-	3	2	2	3	3	
CO2	3	3	3	3	-	-	3	-	_	_	_	3	3	
CO3	3	3	3	3	3	-	_	_	_	_	_	3	3	
CO4	3	3	3	3	_	_	_	_	_	_	_	3	3	-
CO5	-	-	-	_	-	_	_	3	3	3	3	3		-
CO6	2	3	_	3	_	_	_	2					3	-
PO Target	2.80	3	3	3	2.50	_	2.50	2.50	3	2.50	2.50	3	3	3

Faculty Members Teaching the Course Signature Facu	Faculty Members Teaching the Course	Cianatura
1.Prof. Neha Shukla	y seeming the Course	Signature

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Signature of Course Coordinator

Assoc. Asst. Head DOC

Signature of Addl. HoD

Signature of HoD

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- If there is no correlation, then put a "-" (dash).