

Panipat Institute of Engineering & Technology

An Autonomous Institution, Approved by A.I.C.T & Affiliated to Kurukshetra University, Kurukshetra NBA Accredited (MBA,CSE,IT & ECE,UG) 70, MILESTONE, G.T.ROAD, SAMALKHA, PANIPAT-132103, HARYANA Phone No. – 0180-2569700 Fax: 0180-2569800 Email: info@piet.co.in Web: www.piet.co.in

Scheme of Studies and Examinations, and the Syllabi for Under Graduate Degree Programme

Bachelor of Computer Applications (Data Science)

(in phased manner)

as per NEP-2020 guidelines

With Multiple Entry-Exit and Internship w.e.f. Academic Session 2024-25

DEPARTMENT OF COMPUTER APPLICATIONS - UG

	Scheme of Studies and Examin	ation	e (w	o f	Sacc	sion	2024 - 2	025)				
	Bachelor of Computer Ap							023)				
	Bachelor of Computer Ap	риса	поп	2 (D	3) 3	еше	_	P -	Г			
Course Code	Course Title		Period(s)		Hours/ Week	Credit (s)	Continuous Internal Examination	Semester End Exanination	Total Marks	Duration of Exam (Hours)		
					Ħ		(CIE)	(SEE)	(CIE+SEE)	Œ		
		L	T	P			Max	Max	Max			
	Core C	ourse	(CC))					•			
BCA-101A	Foundations of Computer Science	3	0	0	3	3	40	60	100	3		
BCA-103A	Digital Logic Design	3	0	0	3	3	40	60	100	3		
ASH-MAT-115A		2	0	0	2	2	40	60	100	3		
	Value Added	d Cour	rse (1	VAC)								
ASH-HUM-107A	Universal Human Values	2	0	0	2	2	40	60	100	3		
	Skill Enhancer	nent C	ours	e (SI	C(C)							
BCA-105A	Problem Solving through C	3	0	0	3	3	40	60	100	3		
	Ability Enhance	ment (Cour	se (A	EC)							
ASH-HUM-117A	English Language and Communication-1	2	0	0	2	2	40	60	100	3		
	Multi Disciplin	ary C	ourse	e (MI	C)							
BBA-215A	Digital Marketing	2	0	0	2	2	40	60	100	3		
	Practicum	Cour	se (F									
BCA-171A	Digital Logic Design Lab	0	0	4	4	2	50	50	100	3		
BCA-173A	Problem Solving through C Lab	0	0	4	4	2	50	50	100	3		
	Total	17	0	8	25	21	380	520	900			
	Scheme of Studies and Examin							025)				
	Bachelor of Computer Ap	plicat	tions	s (DS	S) Se	mes			T			
		Period(s)		urs/ Week		(s)bo			ous al	End		E
Course Code	Course Title	Pe	riod((s)	ours/ Wee	Credit (s)	Continuous Internal Examination	Semester End Exanination	Total Marks	ation of Exa (Hours)		
Course Code	Course Title	Pe	riod((s)	Hours/Wee	Credit (s)	Continu Examin	Semester]		Ouration of Exa (Hours)		
Course Code	Course Title	Pe	riod((s)	Hours/Wee	Credit (s)			Marks	Duration of Exam (Hours)		
Course Code		L	T	P	Hours/ Wee	Credit (s)	(CIE)	(SEE)	Marks (CIE+SEE)	Duration of Exa (Hours)		
Course Code BCA-102A	Course Title Core C Operating System	L	T	P	Hours/ Wee	Credit (s)	(CIE)	(SEE)	Marks (CIE+SEE)	Duration of Exa		
	Core C	L ourse	T (CC)	P			(CIE) Max	(SEE) Max	Marks (CIE+SEE) Max			
BCA-102A	Core C Operating System	L ourse	T (CC)	P	3	3	(CIE) Max	(SEE) Max	Marks (CIE+SEE) Max	3		
BCA-102A BCA-122A BCA-124A	Core C Operating System Programming with Python	L ourse 3 3	T (CC) 0 0	P 0 0 0	3	3	(CIE) Max 40 40	(SEE) Max 60 60	Marks (CIE+SEE) Max 100 100	3		
BCA-102A BCA-122A BCA-124A	Core C Operating System Programming with Python Office and Spreadsheet Tools	L ourse 3 3 2 2	T (CC) 0 0 0	P 0 0 0 0 0 0 0	3 3 2 2	3 3 2	(CIE) Max 40 40 40	(SEE) Max 60 60 60	Marks (CIE+SEE) Max 100 100 100	3 3 3		
BCA-102A BCA-122A BCA-124A	Core C Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II	L ourse 3 3 2 2	T (CC) 0 0 0	P 0 0 0 0 0 0 0	3 3 2 2	3 3 2	(CIE) Max 40 40 40	(SEE) Max 60 60 60	Marks (CIE+SEE) Max 100 100 100	3 3 3		
BCA-102A BCA-122A BCA-124A ASH-MAT-116A	Core C Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II Value Addee Environmental Studies Skill Enhancer	L ourse 3 3 2 2 d Cour 2 nent C	T (CC) 0 0 0 0	P 0 0 0 0 0 vAC)	3 3 2 2 2	3 3 2 2	(CIE) Max 40 40 40 40	(SEE) Max 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100	3 3 3 3		
BCA-102A BCA-122A BCA-124A ASH-MAT-116A	Core C Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II Value Added Environmental Studies Skill Enhancer Introduction to Web Technology	L ourse 3 3 2 2 d Cour 2 ment C	T (CC) 0 0 0 0 0 rse (V	P 0 0 0 0 0 0 VAC) 0 se (SE	3 3 2 2 2 3 CC)	3 3 2 2	(CIE) Max 40 40 40 40	(SEE) Max 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100	3 3 3 3		
BCA-102A BCA-122A BCA-124A ASH-MAT-116A BT-CE-104A BCA-106A	Core C Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II Value Added Environmental Studies Skill Enhancer Introduction to Web Technology Ability Enhance	L ourse 3 3 2 2 d Cour 2 nent C 3	T (CC) 0 0 0 0 0 rse (V	P 0 0 0 0 0 0 VAC) 0 se (SE	3 3 2 2 2 3 CC)	3 3 2 2 2	(CIE) Max 40 40 40 40 40 40 40	(SEE) Max 60 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100 100 100	3 3 3 3 3 3 3		
BCA-102A BCA-122A BCA-124A ASH-MAT-116A BT-CE-104A BCA-106A	Core C Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II Value Added Environmental Studies Skill Enhancer Introduction to Web Technology Ability Enhance English Language and Communication-2	L ourse 3 3 2 2 d Cour 2 ment C 3 ment c	T (CC) 0 0 0 0 rse (V 0 Cours	P 0 0 0 0 0 VAC) 0 se (SE 0 se (A	3 3 2 2 2 (CC) 3 ECC)	3 3 2 2 2	(CIE) Max 40 40 40 40 40 40	(SEE) Max 60 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100 100	3 3 3 3 3		
BCA-102A BCA-122A BCA-124A ASH-MAT-116A BT-CE-104A BCA-106A ASH-HUM-118A	Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II Value Added Environmental Studies Skill Enhancer Introduction to Web Technology Ability Enhance English Language and Communication-2 Multi Disciplin	L ourse 3 3 2 2 d Cour 2 ment C 3 ment c	T (CCC) 0 0 0 0 0 0 0 0 0 Course (V	P 0 0 0 0 0 VAC) 0 see (SF 0 0 see (AM	3 3 2 2 2 (CC) 3 ECC)	3 3 2 2 2	(CIE) Max 40 40 40 40 40 40 40	(SEE) Max 60 60 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100 100 100	3 3 3 3 3 3 3		
BCA-102A BCA-122A BCA-124A ASH-MAT-116A BT-CE-104A BCA-106A ASH-HUM-118A	Core C Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II Value Addee Environmental Studies Skill Enhancer Introduction to Web Technology Ability Enhance English Language and Communication-2 Multi Disciplin Indian Knowledge System	L ourse 3 3 2 2 d Cour 2 ment C 3 ment C 2 ary C	T (CCC) 0 0 0 0 0 0 0 0 0 Course (V 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P 0 0 0 0 0 VAC) 0 see (SE 0 0 ee (MII 0	3 3 2 2 2 (CC) 3 ECC)	3 3 2 2 2	(CIE) Max 40 40 40 40 40 40 40	(SEE) Max 60 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100 100 100	3 3 3 3 3 3 3		
BCA-102A BCA-122A BCA-124A ASH-MAT-116A BT-CE-104A BCA-106A ASH-HUM-118A ASH-HUM-119A	Core C Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II Value Added Environmental Studies Skill Enhancer Introduction to Web Technology Ability Enhance English Language and Communication-2 Multi Disciplin Indian Knowledge System Practicum	L ourse 3 3 2 2 d Cour 2 ment C 3 ment C 2 ary C	T (CCC) 0 0 0 0 0 Course 0 Course 0 course 0 course 0 course 0	P 0 0 0 0 0 0 VAC) 0 se (SE 0 0 e (MII 0 0 CC)	3 3 2 2 2 (CC) 3 ECC) 2 2 (CC)	3 3 2 2 2	(CIE) Max 40 40 40 40 40 40 40 40	(SEE) Max 60 60 60 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100 100 100 100	3 3 3 3 3 3 3 3		
BCA-102A BCA-122A BCA-124A ASH-MAT-116A BT-CE-104A BCA-106A ASH-HUM-118A ASH-HUM-119A	Core C Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II Value Added Environmental Studies Skill Enhancer Introduction to Web Technology Ability Enhance English Language and Communication-2 Multi Disciplin Indian Knowledge System Practicum Programming with Python Lab	L ourse 3 3 2 2 d Cour 2 nent C 3 ment (2 ary C 2 n Cour 0	T (CCC) 0 0 0 0 0 Course 0 Course 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P 0 0 0 0 0 0 0 0 0 0 se (SE 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 3 2 2 2 (CC) 3 ECC) 2 2 OC)	3 3 2 2 2 2	(CIE) Max 40 40 40 40 40 40 40 40 40 40	(SEE) Max 60 60 60 60 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100 100 100 100 100 100	3 3 3 3 3 3 3 3 3		
BCA-102A BCA-122A BCA-124A ASH-MAT-116A BT-CE-104A BCA-106A ASH-HUM-118A ASH-HUM-119A BCA-192A BCA-194A	Core C Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II Value Added Environmental Studies Skill Enhancer Introduction to Web Technology Ability Enhance English Language and Communication-2 Multi Disciplin Indian Knowledge System Practicum Programming with Python Lab Office and Spreadsheet Tools Lab	L ourse 3 3 2 2 d Cour 2 nent C 3 ment C 2 ary C 2 1 Cour 0 0	T (CC) 0 0 0 0 0 Course (V 0 0 0 course (F 0 0 0 0	P 0 0 0 0 0 0 VAC) 0 e (SE 0 0 PC) 4 4	3 3 2 2 2 (C) 3 EC) 2 2 0C)	3 3 2 2 2 2 2 2	(CIE) Max 40 40 40 40 40 40 40 40 50 50	(SEE) Max 60 60 60 60 60 60 50 50	Marks (CIE+SEE) Max 100 100 100 100 100 100 100 100 100	3 3 3 3 3 3 3 3 3 3 3 3		
BCA-102A BCA-122A BCA-124A ASH-MAT-116A BT-CE-104A BCA-106A ASH-HUM-118A ASH-HUM-119A	Core C Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II Value Adder Environmental Studies Skill Enhancer Introduction to Web Technology Ability Enhance English Language and Communication-2 Multi Disciplin Indian Knowledge System Practicum Programming with Python Lab Office and Spreadsheet Tools Lab Web Technology Lab	L ourse 3 3 2 2 d Cour 2 ment C 3 ment C 2 ary C 2 1 Cour 0 0 0	T (CC) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P 0 0 0 0 0 0 0 0 0 0 0 ee (SE 0 0 0 0 0 0 0 0 4 4 4	3 3 2 2 2 2 (C) 3 EC) 2 (C) 2 4 4 4	3 3 2 2 2 2 2 2 2 2 2	(CIE) Max 40 40 40 40 40 40 40 40 50 50 50	(SEE) Max 60 60 60 60 60 60 50 50 50	Marks (CIE+SEE) Max 100 100 100 100 100 100 100 100 100 1	3 3 3 3 3 3 3 3 3		
BCA-102A BCA-122A BCA-124A ASH-MAT-116A BT-CE-104A BCA-106A ASH-HUM-118A ASH-HUM-119A BCA-192A BCA-194A BCA-174A	Core C Operating System Programming with Python Office and Spreadsheet Tools Basics of Mathematics-II Value Added Environmental Studies Skill Enhancer Introduction to Web Technology Ability Enhance English Language and Communication-2 Multi Disciplin Indian Knowledge System Practicum Programming with Python Lab Office and Spreadsheet Tools Lab	L ourse 3 3 2 2 d Cour 2 nent C 3 ment C 2 ary C 2 1 Cour 0 0	T (CC) 0 0 0 0 0 Course (V 0 0 0 course (F 0 0 0 0	P 0 0 0 0 0 0 VAC) 0 e (SE 0 0 PC) 4 4	3 3 2 2 2 (C) 3 EC) 2 2 0C)	3 3 2 2 2 2 2 2	(CIE) Max 40 40 40 40 40 40 40 40 50 50	(SEE) Max 60 60 60 60 60 60 50 50	Marks (CIE+SEE) Max 100 100 100 100 100 100 100 100 100	3 3 3 3 3 3 3 3 3 3 3		

Note 1: The Industrial Internship shall be of 4 credits duration of 45-60 days after the 2nd semester. If a student takes exit after 2nd semester with Under Graduate Certificate in Computer Applications (Data Sceince), marks of Industrial Internship shall be counted in 2nd semester itself.

	Scheme of Studies and Examin	ation	s (w	e.f.	Sess	ion	2024 - 2	025)		
	Bachelor of Computer App									
Course Code	Course Title		Period(s)		Hours/ Week	Credit (s)	Continuous Internal Examination	Semester End Exanination	Total Marks	Duration of Exam (Hours)
					-		(CIE)	(SEE)	(CIE+SEE)	<u>a</u>
		L	T	P			Max	Max	Max	
	Core C	ourse	(CC))						
ASH-MAT-215A	Probability and Statistics	3	0	0	3	3	40	60	100	3
BCA-112A	Data Structures using C++	3	0	0	3	3	40	60	100	3
BCA-203A	Database Management System	3	0	0	3	3	40	60	100	3
BCA-221A	Introduction to Data Science	3	0	0	3	3	40	60	100	3
	Skill Enhancer	nent C	cours	e (SI	EC)					
BCA-223A	Fundamentals of R Programming	3	0	0	3	3	40	60	100	3
	Ability Enhance		Cour	se (A						
BBA-217A	Personality Development	2	0	0	2	2	40	60	100	3
BBA-21/A	Practicum						40	00	100	,
DCA 271 A	Data Structures Lab	Г		<u> </u>		_	50	50	100	_
BCA-271A		0	0	4	4	2	50	50	100	3
BCA-273A	Database Management System Lab	0	0	4	4	2	50	50	100	3
BCA-291A	R Programming Lab	0	0	4	4	2	50	50	100	3
	Total	17	0	12	29	23	390	510	900	
	Scheme of Studies and Examinations (w.e.f. Session 2024 - 2025)									
								025)		
	Scheme of Studies and Examin Bachelor of Computer App						ter – IV		I	
Course Code		olicat		(DS	S) Se		Continuous 4 Internal – Examination N	Semester End Exanination	Total Marks	ration of Exam (Hours)
Course Code	Bachelor of Computer App	olicat	ions	(DS		mes	ter – IV			Duration of Exam (Hours)
Course Code	Bachelor of Computer App Course Title	Pe L	riod((DS	S) Se	mes	Continuous 4 Internal – Examination N	Semester End Exanination	Marks	Duration of Exam (Hours)
Course Code	Bachelor of Computer App	Pe L	riod((DS	S) Se	mes	Continuous Laternal Laternal Examination NI	Semester End Examination	Marks (CIE+SEE)	Duration of Exam (Hours)
Course Code BCA-222A	Bachelor of Computer App Course Title	Pe L	riod((DS	S) Se	mes	Continuous Laternal Laternal Examination NI	Semester End Examination	Marks (CIE+SEE)	Duration of Exam (Hours)
BCA-222A BCA-224A	Course Title Core C Statistical Foundation for Data Science Data Mining and Warehousing	Pe L ourse	riod((s) P 0 0	E Hours/ Week	Credit (s)	Continuous Continuous (CIE) Max 40 40	XEM Semester End Examination	Marks (CIE+SEE) Max 100 100	3
BCA-222A	Course Title Core C Statistical Foundation for Data Science Data Mining and Warehousing Data Visualization using Python	Pe L ourse 3 3	riod((DS) (s) P 0 0 0	Se Hours/Week	Credit (s)	Continuous Continuous Calc Amax Amax Amazen Continuous Amax Amazen Am	SEMESTEL END SEMESTEL END Examination	Marks (CIE+SEE) Max	3
BCA-222A BCA-224A BCA-226A	Course Title Core C Statistical Foundation for Data Science Data Mining and Warehousing Data Visualization using Python Value Added	Pe L ourse 3 3 1 Cour	T (CC)	(DS) (s) P 0 0 0	S) Se Hours/Week	Credit (s)	Continuous Calculation Calculation Calculation Calculation Additional Accordance of the continuous of the calculation of t	Semester End (SEE) Max 60 60 60	Marks (CIE+SEE) Max 100 100 100	3 3 3
BCA-222A BCA-224A	Course Title Core C Statistical Foundation for Data Science Data Mining and Warehousing Data Visualization using Python Value Added Quantitative Aptitude	Pe L ourse 3 3 1 Course 2	T (CC) 0 0 0 0 0 0 0 0	(s) P 0 0 0 VAC) 0	S) Se Honra/ Meek	Credit (s)	Continuous Continuous (CIE) Max 40 40	SEMESTEL END SEMESTEL END Max 60	Marks (CIE+SEE) Max 100 100	3
BCA-222A BCA-224A BCA-226A BCA-202A	Course Title Core C Statistical Foundation for Data Science Data Mining and Warehousing Data Visualization using Python Value Added Quantitative Aptitude Skill Enhancer	Pe L ourse 3 3 1 Cour 2 nent C	T (CC) 0 0 0 course (Course)	(s) P 0 0 0 VAC) 0	S) Se yeen/smoH 3 3 2 CC)	3 3 3 2	Continuous Continuous Coutinuous COE Max 40 40 40 40	Semester End Semester End 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100	3 3 3
BCA-222A BCA-224A BCA-226A	Course Title Course Title Core C Statistical Foundation for Data Science Data Mining and Warehousing Data Visualization using Python Value Addee Quantitative Aptitude Skill Enhancer Full Stack Development-1 (MERN)	Pe L ourse 3 3 1 Cour 2 nent C 3	T (CC) 0 0 0 Course ((DS) P 0 0 0 VAC) 0 e (SH	S) Se yeen yeen	3 3 3 2 2 3	Continuous Calculation Calculation Calculation Calculation Additional Accordance of the continuous of the calculation of t	Semester End (SEE) Max 60 60 60	Marks (CIE+SEE) Max 100 100 100	3 3 3
BCA-222A BCA-224A BCA-226A BCA-202A BCA-215A	Course Title Core C Statistical Foundation for Data Science Data Mining and Warehousing Data Visualization using Python Value Added Quantitative Aptitude Skill Enhancer Full Stack Development-1 (MERN) Discipline specific	Pe L ourse 3 3 1 Cour 2 nent C 3 Electi	T (CC) 0 0 0 Course 0 ve C	(DS) P 0 0 0 VAC) 0 0 se (SH 0	S) Se yeek 3 3 3 2 CC) 3 c(DSI	3 3 3 2 2 3 3 ()	Continuous Con	60 60 60 60 60 60 60 60 60 60 60 60 60 6	Marks (CIE+SEE) Max 100 100 100 100	3 3 3 3
BCA-222A BCA-224A BCA-226A BCA-202A	Course Title Core C Statistical Foundation for Data Science Data Mining and Warehousing Data Visualization using Python Value Addee Quantitative Aptitude Skill Enhancer Full Stack Development-1 (MERN) Discipline specific Elective-I	Pe L ourse 3 3 1 Cour 2 nent C 3 Electi 3	T (CC) 0 0 0 Course (ve C) 0	(DS) P 0 0 0 VAC) 0 0 course 0	S) Se yeen yeen	3 3 3 2 2 3	Continuous Continuous Coutinuous COE Max 40 40 40 40	Semester End Semester End 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100	3 3 3
BCA-222A BCA-224A BCA-226A BCA-202A BCA-215A	Course Title Core C Statistical Foundation for Data Science Data Mining and Warehousing Data Visualization using Python Value Added Quantitative Aptitude Skill Enhancer Full Stack Development-1 (MERN) Discipline specific	Pe L ourse 3 3 1 Cour 2 nent C 3 Electi 3	T (CC) 0 0 0 Course (ve C) 0	(DS) P 0 0 0 VAC) 0 0 course 0	S) Se yeek 3 3 3 2 CC) 3 c(DSI	3 3 3 2 2 3 3 ()	Continuous Con	60 60 60 60 60 60 60 60 60 60 60 60 60 6	Marks (CIE+SEE) Max 100 100 100 100	3 3 3 3
BCA-222A BCA-224A BCA-226A BCA-202A BCA-215A BCA-266A	Course Title Course Title Core Course Title Statistical Foundation for Data Science Data Mining and Warehousing Data Visualization using Python Value Added Quantitative Aptitude Skill Enhancer Full Stack Development-1 (MERN) Discipline specific Elective-I Practicum	Pe L ourse 3 3 1 Cour 2 uent C 3 Electi 3	T (CC) 0 0 0 course (Course (C	P 0 0 0 VAC) 0 see (SH 0 0 CC)	S) Se yaaa MosamoH 3 3 3 2 CC) 3 c (DSE) 3	(s) 3 3 3 3 2 2 3 3 (i) 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Continuous	(SEE) Max 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100 100	3 3 3 3 3 3
BCA-222A BCA-224A BCA-226A BCA-202A BCA-215A BCA-266A	Course Title Course Title Core C Statistical Foundation for Data Science Data Mining and Warehousing Data Visualization using Python Value Adder Quantitative Aptitude Skill Enhancer Full Stack Development-1 (MERN) Discipline specific Elective-I Practicum Data Mining and Warehousing Lab	Pe L ourse 3 3 1 Cour 2 nent C 3 Electi 3 Cour 0	T (CC) 0 0 0 course (Course (C	(DS) (S) P 0 0 0 VAC) 0 se (SE) 0 PC) 4	3 3 3 3 2 2 CC) 3 4 4	(s) 3 3 3 3 2 2 3 3 2 2	Continuous Continuous COUT COUTON COUT	(SEE) Max 60 60 60 60 60	Marks (CIE+SEE) Max 100 100 100 100 100 100	3 3 3 3 3 3
BCA-222A BCA-224A BCA-226A BCA-202A BCA-2015A BCA-266A BCA-294A BCA-294A BCA-274A	Course Title Course Title Core C Statistical Foundation for Data Science Data Mining and Warehousing Data Visualization using Python Value Addee Quantitative Aptitude Skill Enhancer Full Stack Development-1 (MERN) Discipline specific Elective-I Practicum Data Mining and Warehousing Lab Data Visualization using Python Lab	Pe L ourse 3 3 Cour 2 nent C 3 Electi 3 Cour 0 0	T (CC) 0 0 0 course (V) 0 ve C 0 0 0 0 ve C 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(DS) (S) P 0 0 0 VAC) 0 0 CC) 4 4	3 3 3 2 2 CC) 3 4 4 4	3 3 3 2 2 2 2 2	Continuous Con	60 60 60 60 60 60 60 60 60 60 60 60 60 6	Marks (CIE+SEE) Max 100 100 100 100 100 100 100 100	3 3 3 3 3 3 3 3

Note 2: The Industrial Internship shall be of 4 credits duration of 45-60 days after the 4th semester. If a student takes exit after 4th semester with Under Graduate Diploma in Computer Applications (Data Science), marks of Industrial Internship (either done after 2nd or 4th semester) shall be counted in 4th semester itself.

Scheme of Studies and Examinations (w.e.f. Session 2024 - 2025)														
Bachelor of Computer Applications (DS) Semester – V														
Course Code	Course Title		Course Title Period(s) Period(s)				Period(s)		Credit (s)	Continuous Internal Examination	Semester End Exanination	Total Marks	Duration of Exam (Hours)	
						H					(CIE)	(SEE)	(CIE+SEE)	Ĭ.
		L	L T P		1		Max	Max	Max	"				
	Core Course (CC)													
BCA-212A	Data Communication and Computer Networks	3	0	0	3	3	40	60	100	3				
BCA-321A	Data Privacy and Ethics	3	0	0	3	3	40	60	100	3				
BCA-323A	Big Data Analytics	3	0	0	3	3	40	60	100	3				
	Discipline specific	Electi	ve C	ourse	(DSI	()								
BCA-363A	Elective-II	3	0	0	3	3	40	60	100	3				
	Skill Enhancen	ient C	ours	e (SI	C(C)									
BCA-371A	Seminar	0	0	2	2	1	100		100	3				
	Practicum	Cour	se (I	PC)										
BCA-391A	Big Data Analytics Lab	0	0	4	4	2	50	50	100	3				
BCA-393A	Elective-II Lab	0	0	4	4	2	50	50	100	3				
	Industrial In	ternsl	hip (I	NTR)									
BCA-377A	Industrial Internship	0	0	0	0	4	100		100	3				
	Total	12	0	10	22	21	460	340	800					

Note 3: If a student pursues 3 years UG Programme without taking Exit option, the Industrial Internship (either done after 2nd or 4th semester) will be taken into account in 5th semester.

Scheme of Studies and Examinations (w.e.f. Session 2024 - 2025)													
Bachelor of Computer Applications (DS) Semester – VI													
Course Code	Course Title	Period(s)		Period(s)		Period(s)		Hours/ Week	Credit (s)	Continuous Internal Examination	Semester End Exanination	Total Marks	Duration of Exam (Hours)
					H		(CIE)	(SEE)	(CIE+SEE)) I			
		L	T	P			Max	Max	Max				
	Core Course (CC)												
BCA-322A	Business Intelligence and Analytics	3	0	0	3	3	40	60	100	3			
BCA-324A	Cloud Services for Data Analytics	3	0	0	3	3	40	60	100	3			
	Discipline specific	Electi	ve C	ourse	(DSI)							
BCA-366A	Elective-III	3	0	0	3	3	40	60	100	3			
	Skill Enhancer	nent C	ours	e (SI	C)								
BBA-304A	Entrepreneurship and Startups	2	0	0	2	2	40	60	100	3			
	Practicum	Cour	se (I	PC)									
BCA-392A	Business Intelligence and Analytics Lab	0	0	4	4	2	50	50	100	3			
BCA-394A	Cloud Services for Data Analytics Lab	0	0	4	4	2	50	50	100	3			
BCA-376A	Minor Project	0	0	8	8	4	50	50	100	3			
	Total	11	0	16	27	19	310	390	700				
Grand T	Total (Exit with 3 years Degree)	93	0	70	163	132	2400	2900	5300				

	Scheme of Studies and Examinations (w.e.f. Session 2024 - 2025)									
	Bachelor of Computer Applications (DS) Semester – VII (Honours)									
Course Code	Course Title		Period(s)		Hours/ Week	Credit (s)	Continuous Internal Examination	Semester End Exanination	Total Marks	Duration of Exam (Hours)
					H		(CIE)	(SEE)	(CIE+SEE)	Dm
		L	T	P			Max	Max	Max	
	Honour (Cours	e (H(C)						
BCA-451A	Design and Analysis of Algorithm	3	0	0	3	3	40	60	100	3
BCA-465A	Elective-IV	3	0	0	3	3	40	60	100	3
	Value Added	Cour	$\overline{}$	VAC)					1	
BT-ME-112A	Design Thinking and Innovation	2	0	0	2	2	40	60	100	3
	Practicum		$\overline{}$							
BCA-471A	Design and Analysis of Algorithm Lab	0	0	4	4	2	50	50	100	3
BCA-473A	Major Project-1	0	0	20	20	10	50	50	100	3
	Total	8	0	24	32	20	220	280	500	
	Scheme of Studies and Examin	_+i	- (ſ	Carr	:	2024 2	025)		
	Bachelor of Computer Application									
Course Code	Course Title		riod(Hours/Week	Credit (s)	Continuous Internal Examination	Semester End	Total Marks	Duration of Exam (Hours)
					H		(CIE)	(SEE)	(CIE+SEE)	Jur.
		L	T	P			Max	Max	Max	
	Honour Course (HC)									
BCA-466A	Data Visualization using Tableau	3	0	0	3	3	40	60	100	3
BCA-468A	Elective-V	3	0	0	3	3	40	60	100	3
	Practicum	Cour	se (I	PC)						
BCA-492A	Data Visualization using Tableau Lab	0	0	4	4	2	50	50	100	3
BCA-474A	Major Project-2	0	0	20	20	10	50	50	100	3
	Total	6	0	24	30	18	180	220	400	
Grand 7	Total (4 years Honours Degree)	107	0	118	225	170	2800	3400	6200	

	Scheme of Studies and Examinations (w.e.f. Session 2024 - 2025)													
Bach	Bachelor of Computer Applications (DS) Semester – VII (Honours with Research)													
Course Code	Course Title	Period		Period(s)		ours/Week Credit (s)		Continuous Internal Examination	Semester End Exanination	Total Marks	Duration of Exam (Hours)			
					H		(CIE)	(SEE)	(CIE+SEE)	Dur				
		L	T	P			Max	Max	Max					
	Honour (Cours	e (H(C)										
BCA-455A	Research Methodology	3	0	0	3	3	40	60	100	3				
BCA-467A	Elective-IV	3	0	0	3	3	40	60	100	3				
	Value Added	l Cour	rse (\	VAC)										
BT-ME-112A	Design Thinking and Innovation	2	0	0	2	2	40	60	100	3				
	Practicum	Cour	se (I	PC)										
BCA-491A	Elective-IV Lab	0	0	4	4	2	50	50	100	3				
BCA-473A	Major Project-1	0	0	20	20	10	50	50	100	3				
	Total	8	0	24	32	20	220	280	500					
	Scheme of Studies and Examin													
Bach	elor of Computer Applications (DS)	Sen	iest	er –	VIII	(Ho			earch)					
Course Code	Course Title	Period(s)		Period(s)		Period		(s)	Hours/ Week	Credit (s)	Continuous Internal Examination	Semester End Exanination	Total Marks	Duration of Exam (Hours)
					H		(CIE)	(SEE)	(CIE+SEE)	Dur				
		L	T	P			Max	Max	Max					
	Practicum	Cour	se (I	PC)										
	Dissertation	0	0	36	36	18	100	100	200	3				
BCA-476A	Dissertation	_	-			_								
BCA-476A	Total	0	0	36	36	18	100	100	200					

Abbreviations Used:

Abbreviation	Full Form	Description
CC	Core Course	Compulsory core course for the programme, CC will be a theory course of 3 credits
PC	Practicum Course	Compulsory practical course (software lab) of 2 credits
INTR	Industrial Internship	 A student can do industrial internship of 45-60 days duration after the 2nd or 4th semester. It will be of 4 credits. If a student pursues 3 year UG Programme without taking Exit option, this internship (either done after 2nd or 4th semester) will be taken into account in 5th semester. If a student takes Exit after 2 years in UG Programme, this internship (either done after 2nd or 4th semester) will be taken into account in 4th semester. If a student takes Exit after 1 year in UG Programme, the mandatory internship done after 2nd semester will be taken into account in 2nd semester.
SEC	Skill Enhancement Course	These courses aim at imparting knowledge, practical skills, hands-on training and competencies, soft skills, etc. to enhance the employability of students.

AEC	Ability Enhancement Courses	These courses aim at enabling the students to achieve competency in the English language with special emphasis on communication skills.
VAC	Value-Added Course	This course aims to instil in students (i) Universal Human Values, (ii) Environmental Studies (iii) Quantitative Aptitude.
MDC	Multi-Disciplinary Course	These courses are based on introductory knowledge in a subject which is different from the main discipline of study to gain knowledge across the disciplines. Students are not allowed to choose or repeat courses already undergone at the Senior Secondary Level (Class XII) or disciplines of study under this category. Provided further that if a Multidisciplinary Course (MDC) across the discipline cannot be offered by a Department/ Institute, due to its constraints and available resources, then i) A subject from the same discipline can be offered as a MDC course if that subject also belongs to the list of subjects of some other discipline. ii) MDC can be opted out of Massive Open Online Courses (MOOCs) from NPTEL, SWAYAM. It shall be of minimum 2 credits.
DSE	Discipline-specific Elective Course	A discipline-specific elective course is a course aimed at imparting options for varied knowledge and skills in the specialized fields of a discipline/subject.
нс	Honour Course	An honour course in the 4 th year of the Honours or Honours with Research Degree Programme.

List of Discipline-specific Elective Courses:

Elective No.	Semester	Course Code	Elective Course Name
Elective-I	IV	BCA-266A(i)	Artificial Intelligence
Liective-i	1 V	BCA-266A(ii)	Internet of Things
Elective-II	V	BCA-363A(i)	Machine Learning
Elective-II	v	BCA-363A(ii)	Image Processing
Elective-III	VI	BCA-366A(i)	Software Engineering
Elective-III	V1	BCA-366A(ii)	Time Series Analysis
	VII	BCA-465A(i)	Introduction to Deep Learning
Elective-IV	(Honours)	BCA-465A(ii)	Natural Language Processing
Liective-iv	VII	BCA-467A(i)	Introduction to Deep Learning
	(Honours with Research)	BCA-467A(ii)	Natural Language Processing
Elective-V	VIII	BCA-468A(i)	Web Mining
Elective- v	(Honours)	BCA-468A(ii)	Cryptography and Network Security

Note 4: Relative weightage of Continuous Internal Evaluation (CIE) and Semester End Examination (SEE), criteria of passing marks, evaluation procedure, and other guidelines are as per the Ordinance of Under Graduate Degree Programmes: Bachelor of Computer Applications, Bachelor of Computer Applications (Cloud Technology and Information Security), Bachelor of Computer Applications (Data Science).