

Bachelor in Computer Application
BCA/ BCA (Honours) /BCA (Honours with Research)

**ALL INDIA COUNCIL FOR TECHNICAL
EDUCATION**

**SANKALCHAND PATEL UNIVERSITY,
VISNAGAR**

Faculty of Computer Science



Structure, Teaching Scheme and Syllabus

Program Code: CS101

In effect from: 2025-26

Programme Outcomes (PO):

1. Communicate effectively in diverse groups and exhibit leadership qualities.
2. Apply knowledge of Mathematics and science in solving computational problems.
3. Understanding of professional and ethical responsibility.
4. Understand the Computing concepts and their applications using the acquired basic knowledge.
5. Fundamental of programming and conduct practical.
6. Use the techniques, skills, and modern Software tools for software development.
7. Identify and analyze software application problems in multiple aspect including coding, testing and implementation in industrial applications.
8. Design, develop and verify software systems to meet desired needs within realistic constraints ensuring quality, reliability, security in addition to satisfying economical, ethical, social and environmental constraints.
9. Apply Enterprise level application software for design of diverse software products.
10. Apply team building skill and problem solving technique.
11. Ability to become error handling in minor or major level programming.
12. Understand the concept of Case study base learning and implement in application development.

Program Educational Objectives (PEOs):

1. To acquaint students about problem solving technique in IT and Computer Science world.
2. To impart knowledge about various sub domains related to the field of computer science and applications.
3. To apply principles of system analysis, design, development and project management.
4. To build and lead cross-functional teams, upholding the professional responsibilities & ethical values.

Program Specific Outcomes (PSOs):

1. Prepare professionally trained in the areas of Project Based learning (PBL) in various areas like Software Development , software engineering, web designing , Web Development, networking and many more.
2. Encourage learners to communicate effectively and motivate for Research project work.
3. Understand to employ modern computer languages and applications for their successful career, to create platforms to become an entrepreneur and a relish for higher studies.

Faculty of Computer Science

Program Name: Bachelor of Computer Applications

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: I

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
21-CAM101-1C	Mathematics Foundations	CC	3	3	0	0	3	18	50	09	25	-	-	-	-	75
21-SEC101-1C	Problem Solving Techniques- I	SEC	6	4	0	4	8	18	50	18	50	09	25	09	25	150
21-CAM102-1C	Computer Architecture	CC	5	4	0	2	6	18	50	18	50	-	-	09	25	125
21-AEC101-1C	General English	AEC	2	2	0	0	2	09	25	09	25	-	-	-	-	50
21-MDE101-1C	Indian Knowledge System	MDE	2	2	0	0	2	09	25	09	25	-	-	-	-	50
21-VAC101-1C	Environmental Science and sustainability	VAC	2	2	0	0	2	09	25	09	25	-	-	-	-	50
21-AEC102-1C	French Language - I	AEC	0	2	0	0	2	-	-	-	-	-	-	-	-	-
TOTAL			20	19	0	6	25		225		200		25		50	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: II

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
22-CAM103-1C	Probability and Statistics	CC	3	3	0	0	3	18	50	09	25	-	-	-	-	75
22-CAM104-1C	Database Management System	CC	4	3	0	2	5	18	50	09	25	-	-	09	25	100
22-CAM105-1C	Operating Systems	CC	3	2	0	2	4	09	25	09	25	-	-	09	25	75
22-SEC102-1C	Problem Solving Techniques– II	SEC	6	4	0	4	8	18	50	18	50	09	25	09	25	150
22-SEC103-1C	Graphic Designing Tools	SEC	2	0	0	4	4	-	-	-	-	09	25	09	25	50
22-VAC102-1C	Indian Constitution	VAC	2	2	0	0	2	09	25	09	25	-	-	-	-	50
22-AEC103-1C	French Language - II	AEC	0	2	0	0	2	-	-	-	-	-	-	-	-	-
TOTAL			20	16	0	12	28		200		150		50		100	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: III

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
23-CAM201-2C	Ecommerce	CC	3	3	0	0	3	18	50	09	25	-	-	-	-	75
23-CAM202-2C	Data Structure with oops	CC	5	3	0	4	7	18	50	09	25	09	25	09	25	125
23-SEC201-2C	Python Programming	SEC	4	2	0	4	6	09	25	09	25	09	25	09	25	100
23-CAM203-2C	System Analysis and Design	CC	3	2	0	2	4	09	25	09	25	-	-	09	25	75
23-DSE201-2C 23-DSE202-2C 23-DSE203-2C	Web Designing – I/ Basics of Data Analytics using Spreadsheet/ Feature Engineering	DSE	3	2	0	2	4	09	25	09	25	-	-	09	25	75
23-VAC201-2C	NSS	VAC	2	1	0	2	3			09	25	09	25	-	-	50
TOTAL			20	13	0	14	27		175		150		75		100	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications

Abbreviation Name: BCA

Semester: IV

Program Code: CS101

With Effect From: 2025-26

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
24-CAM204-2C	Entrepreneurship and Startup Ecosystem	CC	2	1	1	0	2	09	25	09	25	-	-	-	-	50
24-CAM205-2C	Advance Database Management System	CC	5	3	0	4	7	18	50	09	25	09	25	09	25	125
24-CAM206-2C	Software Engineering	CC	3	3	0	0	3	18	50	09	25	-	-	-	-	75
24-CAM207-2C	Java Programming	CC	5	3	0	4	7	18	50	09	25	09	25	09	25	125
24-DSE204-2C 24-DSE205-2C 24-DSE206-2C	Web Designing – II/ Data Visualization/ Introduction to ML	DSE	3	2	0	2	4	09	25	09	25	-	-	09	25	75
24-SEC202-2C	Design Thinking and Innovation	SEC	2	2	0	0	2	09	25	09	25	-	-	-	-	50
TOTAL			20	14	1	10	25		225		150		50		75	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications

Abbreviation Name: BCA

Semester: V

Program Code: CS101

With Effect From: 2025-26

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
25-DSE301-3C 25-DSE302-3C 25-DSE303-3C	Web Development using C#/ Introduction to Data Science/ Neural Network	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
25-DSE304-3C 25-DSE305-3C 25-DSE306-3C	Advance Java Programming/ Time Series Analysis/ Digital Image Processing	DSE	4	2	0	4	6	09	25	09	25	09	25	09	25	100
25-DSE307-3C 25-DSE308-3C 25-DSE309-3C	Web Programming using PHP/ Machine Learning/ Natural Language Processing	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
25-SEC301-3C	Computer Network	SEC	2	2	0	0	2	09	25	09	25	-	-	-	-	50
25-SEC302-3C	Capstone Project	SEC	4	0	0	8	8	-	-	-	-	18	50	18	50	100
TOTAL			20	10	0	20	30		150		100		125		125	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: VI

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
26-CAM301-3C	Generative AI	CC	4	2	0	4	6	09	25	09	25	09	25	09	25	100
26-DSE310-3C	Framework-Based Development in PHP / Big Data Analytics / Deep Learning for Computer Vision	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
26-DSE311-3C																
26-DSE312-3C																
26-DSE313-3C	Advance Python/ Exploratory Data Analysis/ Predictive Analysis	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
26-DSE314-3C																
26-DSE315-3C																
26-AEC301-3C	Soft Skills	AEC	2	2	0	0	2	09	25	09	25	-	-	-	-	50
26-SEC303-3C	Major Project	SEC	4	0	0	8	8	-	-	-	-	18	50	18	50	100
TOTAL			20	10	0	20	30		150		100		125		125	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications (Honours)

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: VII

(Specialization – Full Stack Development)

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
27-MDE401-4C	Digital Marketing	MDE	3	3	0	0	3	09	25	09	25	-	-	09	25	75
27-CAM401-4C	Web Development using CMS	CC	5	3	0	4	7	18	50	09	25	09	25	09	25	125
27-DSE401-4C	Mobile App UI/UX Development	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
27-DSE402-4C	Control System by Github	DSE	3	2	0	2	4	09	25	09	25	-	-	09	25	75
28-SEC401-4C	Dissertation Work (evaluation in Eight semester)	SEC	0	0	0	0	0	-	-	-	-	-	-	-	-	-
27-SEC402-4C	Summer Internship	SEC	4	0	0	8	8	-	-	-	-	18	50	18	50	100
TOTAL			20	11	0	18	29		150		100		100		150	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications (Honours)

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: VII

(Specialization – AI & ML)

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
27-MDE402-4C	Social Network Analysis	MDE	3	3	0	0	3	09	25	09	25	-	-	09	25	75
27-CAM402-4C	Optimization of ML	CC	5	3	0	4	7	18	50	09	25	09	25	09	25	125
27-DSE403-4C	Explainable AI	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
27-DSE404-4C	Evolutionary Algorithm	DSE	3	3	0	0	3	18	50	09	25	-	-	-	-	75
28-SEC401-4C	Dissertation Work (evaluation in Eight semester)	SEC	0	0	0	0	0	-	-	-	-	-	-	-	-	-
27-SEC402-4C	Summer Internship	SEC	4	0	0	8	8	-	-	-	-	18	50	18	50	100
TOTAL			20	12	0	16	28		175		100		100		125	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications (Honours)

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: VII

(Specialization – Data Science)

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
27-MDE403-4C	Advanced Statistical methods for Data Science	MDE	3	3	0	0	3	09	25	09	25	-	-	09	25	75
27-CAM403-4C	Python for Data Science	CC	5	3	0	4	7	18	50	09	25	09	25	09	25	125
27-DSE405-4C	Business Intelligence & Analytics	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
27-DSE406-4C	Data Mining & Warehousing	DSE	3	3	0	0	3	09	25	09	25	-	-	09	25	75
28-SEC401-4C	Dissertation Work (evaluation in Eight semester)	SEC	0	0	0	0	0	-	-	-	-	-	-	-	-	-
27-SEC402-4C	Summer Internship	SEC	4	0	0	8	8	-	-	-	-	18	50	18	50	100
TOTAL			20	12	0	16	28		150		100		100		150	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications (Honours With Research)

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: VII

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
27-CAM404-4C	Advanced Data Analysis Tools	CC	4	2	0	4	6	09	25	09	25	09	25	09	25	100
27-CAM405-4C	Research Methodology - I	CC	4	4	0	0	4	18	50	18	50	-	-	-	-	100
27-CAM406-4C	Research Internship Report and Viva - Voce	CC	4	0	0	8	8	-	-	-	-	18	50	18	50	100
27-DSE407-4C	Research Methodology – II	DSE	4	2	0	4	6	09	25	09	25	09	25	09	25	100
27-DSE408-4C	Applied Research in Computer Application	DSE	4	3	0	2	5	18	50	09	25	-	-	09	25	100
TOTAL			20	11	0	18	29		150		125		100		125	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications (Honours)

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: VIII

(Specialization – Full Stack Development)

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
28-DSE409-4C	Mobile Application Development	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
28-DSE410-4C	Full Stack Development using React and Node	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
28-DSE411-4C	Cloud Database Hosting	DSE	2	2	0	0	2	09	25	09	25	-	-	-	-	50
28-SEC401-4C	Dissertation Work	SEC	8	0	0	16	16	-	-	-	-	36	100	36	100	200
TOTAL			20	8	0	24	32		125		75		150		150	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications (Honours)

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: VIII

(Specialization – AI & ML)

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
28-DSE-412-4C	Speech Recognition	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
28-DSE-413-4C	Augmented Reality & Virtual Reality	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
28-DSE-414-4C	Security aspects of ML	DSE	2	2	0	0	2	09	25	09	25	-	-	-	-	50
28-SEC401-4C	Dissertation Work	SEC	8	0	0	16	16	-	-	-	-	36	100	36	100	200
TOTAL			20	8	0	24	32		125		75		150		150	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications (Honours)

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: VIII

(Specialization – Data Science)

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
28-DSE415-4C	Advanced Data Visualization	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
28-DSE416-4C	Cloud Computing for Data Analytics	DSE	5	3	0	4	7	18	50	09	25	09	25	09	25	125
28-DSE417-4C	Data Security & Privacy	DSE	2	2	0	0	2	09	25	09	25	-	-	-	-	50
28-SEC401-4C	Dissertation Work	SEC	8	0	0	16	16	-	-	-	-	36	100	36	100	200
TOTAL			20	8	0	24	32		125		75		150		150	500

Faculty of Computer Science

Program Name: Bachelor of Computer Applications (Honours With Research)

Program Code: CS101

Abbreviation Name: BCA

With Effect From: 2025-26

Semester: VIII

Course Code	Course Title	Type of Course	Credits	Hours Per Week				Theory(Marks)				Practical(Marks)				Total Marks
				L	T	P	Total	University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
								Min	Max	Min	Max	Min	Max	Min	Max	
28-SEC401-4C	Dissertation (For Research Track) *	SEC	20	0	0	40	40	-	-	-	-	90	250	90	250	500
TOTAL			20	0	0	40	40						250		250	500