BCA (Honours) 4 Years Programme Structure

(For the Academic Year 2023-24 Onwards)

Semester-I

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Fundamentals of Computers and PC Tools	Major (DSC)	4		4
BCAXXX	Introduction to Programming with Python	Major (DSC)	4		4
BCAXXX	Digital Electronics	SEC	2		2
BCAXXX	Foundational Mathematics (Linear Algebra and Calculus)	Minor (DSC)	4		4
BCAXXX	Value-Added Courses-I	VAC	2		2
BCAXXX	Technical Writing and Professional Communications Lab	AEC		2	2
BCAXXX	Fundamentals of Computers and PC Tools and Programming with Python Lab	Major (DSC) Lab		2+2	4
Total Credits			**16**	**6**	**22**

Value-Added Courses- I

- Understanding India
- Environmental Studies
- Health & Wellness, Yoga Education, Sports and Fitness
- The Constitution of India
- Human Values and Professional Ethics

Semester-II

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Programming with C and C++	Major (DSC)	4		4
BCAXXX	Computer Organization and Architecture	Major (DSC)	4		4
BCAXXX	Database Management Systems	Major (DSC)	4		4
BCAXXX	Discrete Mathematical Structures	Minor (DSC)	4		4
BCAXXX	Value-Added Courses-II	VAC	2		2
BCAXXX	Programming with C & C++ and Database Management Systems Lab	Major (DSC) Lab		2+2	4
Total Credits			**18**	**4**	**22**

Value-Added Courses-II

- Disaster Management
- Indian Knowledge Systems
- Cyber Law and Ethics
- First Aid and Emergency Care

Semester-III

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Data Structures and Algorithms with C and C++	Major (DSC)	4		4
BCAXXX	Operating Systems	Major (DSC)	4		4
BCAXXX	Introduction to Probability and Statistics	SEC	2		2
BCAXXX	Client-Side Web Development with HTML, CSS and JavaScript	Major (DSC)	4		4
BCAXXX	Multidisciplinary Courses-I	MDC	4		4
BCAXXX	Data Structures and Algorithms with C and C++Lab Client-Side Web Development with HTML, CSS and JavaScript Lab	Major (DSC) Lab		2 + 2	4
Total Credits			**18**	**4**	**22**

Multidisciplinary Courses-I

- Introduction to Psychology
- Business Economics

Skill Enhancement Course (Elective)-II

- Digital Electronics
- Introduction to Probability and Statistics

Semester-IV

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Fundamentals of Software Engineering	Major (DSC)	4		4
BCAXXX	Data Communication and Computer Networks	Major (DSC)	3	1	4
BCAXXX	Object Oriented Programming with Java	Major (DSC)	3	1	4
BCAXXX	Server-Side Web Development with PHP and MySQL	Minor (DSC)	2	2	4
BCAXXX	Multidisciplinary Courses-II	MDC	4		4
BCAXXX	(Project Management and Mini Project)/Summer Internship	VAC	1	1	2
Total Credits			**17**	**5**	**22**

Multidisciplinary Courses-II

- Principles of Management
- Numerical Methods
- Managerial Economics

***Students can undergo Summer Internship in the summer vacation after their IVth Semester and earn 2 credits in place of SEC lab Course.**

Semester-V

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Fundamentals of Artificial Intelligence	Major (DSC)	3	1	4
BCAXXX	Design and Analysis of Algorithms	Major (DSC)	3	1	4
BCAXXX	Object-Oriented Software Engineering using UML, Design Patterns, and Java	Major (DSC)	3	1	4
BCAXXX	Discipline Specific Elective-I	Minor (DSE)	3	1	4
BCAXXX	Discipline Specific Elective-II	Minor (DSE)	3	1	4
BCAXXX	Skill Enhancement Course (Elective)-II Lab/Summer Internship*	SEC		2	2*
Total Credits			**16**	**6**	**22**

Discipline Specific Elective-I

- Computer Graphics and Animation
- Software Project Management
- Microprocessor and Interfacing
- Cryptography and Network Security
- Linux System Administration
- Embedded System Design
- Software Architecture
- Multimedia Systems and Applications
- Management Information Systems and E-Commerce
- Augmented Reality and Virtual Reality
- NoSQL Databases
- Software Defined Networks
- Software Testing and Quality Assurance
- Agile Methodologies

Discipline Specific Elective-II

- Advanced Python
- Advanced Java Technologies
- Programming with.NET Framework and C#
- Programming with Go
- Programming with Rust

***Students can undergo Summer Internship in the summer vacation after their IVth Semester and earn 2 credits in place of SEC lab Course.**

Semester-VI

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Introduction to Machine Learning	Major (DSC)	3	1	4
BCAXXX	Distributed Systems	Major (DSC)	4		4
BCAXXX	Android Apps Development with Kotlin	Major (DSC)	4		4
BCAXXX	Personality Development and Soft Sills Lab	SEC		2	2
BCAXXX	Discipline Specific Elective-III	Minor (DSE)	4		4
BCAXXX	Android Apps Development with Kotlin Lab Discipline Specific Electives-III Lab	Minor (DSC/E) Lab		2+ 2	4
Total Credits			**15**	**7**	**22**

Discipline Specific Elective-III

- Web Development with React and Node.js
- Game Development using Unity 3D
- Full Stack Java Development with React and Spring Boot
- Network Programming
- Secure Coding

Semester-VII

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Cloud Computing	Major (DSC)	3	1	4
BCAXXX	Introduction to Data Science using Python	Major (DSC)	3	1	4
BCAXXX	Innovation and Entrepreneurships/Summer Internship	AEC	2		2*
BCAXXX	Discipline Specific Electives-IV	Minor (DSE)	3	1	4
BCAXXX	Discipline Specific Electives-V	Minor (DSE)	3	1	4
BCAXXX	Multidisciplinary Courses-III	MDC	2	2	4
Total Credits			**16**	**6**	**22**

Discipline Specific Electives-IV and V

- Advanced Algorithms
- Systems Programming
- Automata Theory and Compiler Design
- Parallel Programming
- Soft Computing
- Real Time Systems
- Swarm Intelligence and Nature Inspired Computation
- Information Theory and Coding
- Semantic Web
- Quantum Computing
- Big Data Analytics
- Internet of Things
- Introduction to DevOps
- Cloud Native Applications and Micro-services
- Introduction to Cyber Security
- Blockchain Technology and Applications
- Neural Networks and Deep Learning
- Natural Language Processing
- Reinforcement Learning
- Generative AI
- Human Computer Interaction
- System Modelling and Simulation
- Mobile Computing and Wireless Communications
- Digital Image Processing with MATLAB
- Data Warehousing and Business Intelligence

Multidisciplinary Courses-III

- Introduction to Financial Accounting
- UI/UX Design
- Digital Marketing
- Introduction to Bioinformatics
- Optimization Techniques

***Students can undergo Summer Internship in the summer vacation after their VIth Semester and earn 2 credits in place of AEC practices.**

Semester-VIII

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Internship**	Internship	2	20	22
BCAXXX	Major Project**	Project	2	20	22
Total Credits			**2**	**20**	**22**

**Students need to select either Internship or Major Project.

Abbreviations

- Discipline Specific Core Course (Core)
- Discipline Specific Elective Course (Elective)
- Multiple Discipline Course (MDC)
- Ability Enhancement Course (AEC)
- Skill Enhancement Course (SEC)
- Value-Added Course(VAC)
- Project/Internship
- Practical

Credit Framework as per Single Major Subject for Bachelor of Computer Applications (Honours) Programme

Semester	Major (DSC)	Minor (DSC/E)	MDC	AEC	VAC	SEC	Project/ Internship	Total Credits
I	12	4	-	2	2	2	-	22
II	16	4	-	0	2	-	-	22
III	16	0	4	-	-	2	-	22
IV	12	4	4	0	2	0	-	22
V	12	8	-	-	-	2	-	22
VI	8	8	-	-	-	2	-	22
VII	8	8	4	2	-	-	-	22
VIII	-	-	-	-	-	-	22	22
TOTAL	**88**	**40**	**8**	**4**	**6**	**8**	**22**	176
Total (%)	**50.00**	**22.73**	**6.82**	**2.27**	**3.41**	**4.55**	**12.50**	**100.00**