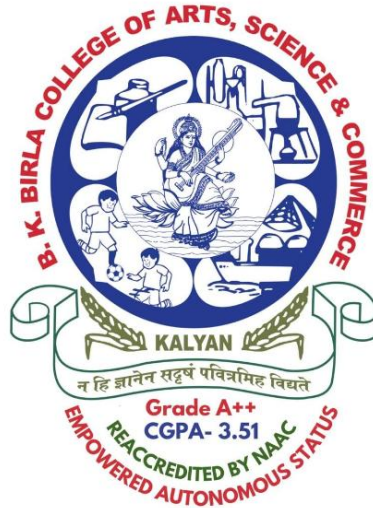


# **B. K. Birla College, Kalyan**

*(Affiliated to University of Mumbai)*



## **Syllabus for BCA Program under AICTE**

**as per NEP 2020 framework**

**Program Code: Information Technology**

(Credit Based Semester and Grading System

Academic year 2024–2025)

## Preamble

The Bachelor of Computer Applications (BCA) program, structured under the guidelines of the All India Council for Technical Education (AICTE), is designed to provide students with comprehensive knowledge and hands-on experience in the field of computer applications. As technology continues to shape the world, this program aims to equip students with essential skills in software development, networking, database management, and emerging technologies like Artificial Intelligence, Cloud Computing, and Data Science.

The BCA curriculum blends theoretical concepts with practical exposure, fostering problem-solving abilities, critical thinking, and creativity. Through this program, students will gain proficiency in a variety of programming languages, software tools, and techniques that are in high demand across industries. The program also emphasizes holistic development by integrating soft skills, ethics, and communication, preparing students for the dynamic challenges of the global IT sector.

## Objectives

- To impart strong foundational knowledge in computer applications and software development.
- To develop problem-solving and analytical thinking through rigorous academic and practical exposure.
- To familiarize students with the latest technological advancements in fields like Artificial Intelligence, Cyber Security, Cloud Computing, and Data Analytics.
- To enhance employability by focusing on industry-relevant skills and practical project experience.
- To nurture soft skills, leadership qualities, and ethical values to foster well-rounded IT professionals.

## Job Prospects

Graduates of the BCA program have a wide array of career opportunities various sectors, including:

• Software Developer	• Web Developer
• System Analyst	• Mobile Application Developer
• Database Administrator	• Cybersecurity Analyst
• Network Administrator	• Cloud Solutions Architect
• Data Analyst	

## Eligibility:

Maharashtra State Candidature Candidates	All India Candidature Candidates	NRI/OCI/PIO, Children of Indian workers in Gulf Countries (CIWGC), Foreign National (FN) Candidates
<p>The candidate, -</p> <p>(i) should be a citizen of India.</p> <p>(ii) should have passed 10+2 examination with eligibility as per the Admission Policy of the Affiliating University and obtained non zero score in MAH - BCA/BBA/BMS/BBM CET-2024 conducted by the Competent Authority; or</p> <p>(iii) should have passed AICTE approved Diploma in Commercial Practice or equivalent.</p>	<p>The candidate, -</p> <p>(i) should be a citizen of India.</p> <p>(ii) should have passed 10+2 examination with eligibility as per the Admission Policy of the Affiliating University and obtained non zero positive score in Common University Entrance Test (CUET) Under Graduate (UG) or obtained non-zero score in MAH - BCA/BBA/BMS/BBM CET2024 conducted by the Competent Authority: Provided that, preference shall be given to the candidate obtained non zero positive score in Common University Entrance Test (CUET) Under Graduate (UG) over the candidates obtained non zero score in MAH - BCA/BBA/BMS/BBM CET2024 conducted by the Competent Authority; or</p> <p>(iii) should have passed All India Council for Technical Education (AICTE) approved Diploma in Commercial Practice or equivalent;</p>	<p>(i) The candidate should have passed 10+2 examination with eligibility as per the Admission Policy of the Affiliating University: or</p> <p>(ii) The candidate should have passed AICTE approved Diploma in Commercial Practice or equivalent.</p> <p>(iii) Any other eligibility criteria or requirements declared from time to time by the appropriate authority as defined under the Act.</p>

## Duration:

Qualification Title	Credit Requirement		Semester	Year
	Minimum	Maximum		
UG Certificate	40	44	2	1
UG Diploma	80	88	4	2
UG Degree	120	132	6	3
UG Honor's	160	176	8	4

## **Program Outcomes (POs)**

**PO1- Technical Knowledge:** Graduates will have a solid foundation in various technical aspects of information technology, including computer programming, database management, network administration, software development, systems analysis, and web development.

**PO2-Problem-Solving Skills:** Graduates will be equipped with the skills necessary to identify, analyze, and solve problems related to information technology. They will be able to apply logical thinking and troubleshooting techniques to address technical issues effectively.

**PO3-System Design and Development:** Graduates will be able to design and develop IT systems to meet specific requirements. They will understand the software development life cycle and possess the ability to create, implement, and maintain software applications.

**PO4-Communication Skills:** Graduates will have strong oral and written communication skills, allowing them to effectively convey technical information to both technical and non-technical stakeholders. They will be able to collaborate with team members and present their ideas clearly.

**PO5-Information Security:** Graduates will understand information security principles and practices. They will be able to identify potential security risks and implement appropriate measures to protect data and systems from unauthorized access or breaches.

**PO6-Project Management:** Graduates will possess basic project management skills, enabling them to plan, execute, and monitor IT projects effectively. They will understand project requirements, allocate resources, and manage project timelines and budgets.

**PO7-Professional Ethics:** Graduates will have a solid understanding of professional and ethical responsibilities in information technology. They will be aware of legal and ethical issues surrounding technology use, including privacy, intellectual property, and cybercrime.

**PO8-Lifelong Learning:** Graduates will recognize the importance of continuous learning and professional development in the rapidly evolving field of information technology. They will have the skills to adapt to new technologies and stay up to date with industry trends.

## **Program Specific Outcomes (PSOs):**

1. **Software Development Skills:** Develop, test, and deploy robust software applications using programming languages, frameworks, and development tools aligned with industry standards.
2. **Data Management and Analytics:** Apply data management techniques, database systems, and analytical tools to extract insights and support decision-making processes.
3. **Cyber Security and Ethics:** Understand and implement principles of cybersecurity, ethical hacking, and secure software practices to protect digital assets.
4. **Emerging Technologies:** Gain proficiency in emerging fields such as Artificial Intelligence, Machine Learning, Data Science, Cloud Computing, and Internet of Things (IoT).

5. **Research and Innovation:** Conduct research and contribute to technological innovation, leveraging advanced skills in computer applications and interdisciplinary knowledge.

### SEMESTER I

S.No.	CourseCode	Course Title	L	T	P	Credit
1	CC	Mathematics Foundation to Computer Science - I	3	0	0	3
2	SEC	Problem Solving Techniques	3	0	2	5
3	CC	Computer Architecture	3	0	2	5
4	AEC	General English - I	1	1	0	2
5	MDE	Indian Knowledge System	2	0	0	2
6	VAC	Environmental Science and Sustainability	2	0	0	2
7	AEC	Foreign Language - French / German	1	1	0	2
8	OE	Principles of Management	1	0	0	1
<b>TOTAL</b>						<b>22</b>

### SEMESTER II

S.No.	CourseCode	Course Title	L	T	P	Credit
1	CC	Mathematics Foundation to Computer Science - II	3	0	0	3
2	CC	Database Mangement System	3	0	2	5
3	CC	Operating System	3	0	1	4
4	SEC	Object Oriented Programming using JAVA	3	0	2	5
5	SEC	Web Technologies	1	0	2	2
6	VAC	Indian Constitution	2	0	0	2
7	AEC	Foreign Language - French / German	1	1	0	2
<b>TOTAL</b>						<b>22</b>

### SEMESTER III

S.No.	Course Code	Course Title	L	T	P	Credit
1	CC201	Probability and Statistics	3	0	0	3
2	CC202	Data Structures	3	0	2	5
3	SEC201	Python Programming	2	0	2	4
4	CC203	Software Engineering	3	0	0	3
5	DSE201*	Basics of Data Analytics using Spreadsheet / Feature Engineering / Web Programming -I	3	0	2	5
6	VAC201	Yoga/Sports/NCC/NSS/Disaster Management	0	0	2	2
<b>TOTAL</b>						<b>22</b>

**DSE201\* - Data Science / AI and ML / Full Stack Development**

**SEMESTER IV**

<b>S.No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
1	CC204	Entrepreneurship and Startup Ecosystem	1	1	0	2
2	CC205	Computer Networks	3	0	4	5
3	CC206	Design and Analysis of Algorithm	3	0	0	3
4	CC207	Artificial Intelligence	3	0	4	5
5	DSE202*	Data Visualization / Introduction to ML / Web Programming -II	1	0	4	3
6	SEC202	Design Thinking and Innovation	1	1	0	2
7	FP	Internship	0	0	2	2
<b>TOTAL</b>						<b>22</b>

**DSE202\* - Data Science / AI and ML / Full Stack Development**

Note:

1. At the end of the Fourth Semester every student shall undergo Summer Training / Internship / Capstone for Eight Weeks in the industry/Research or Academic Institute. This component will be evaluated during the fifth semester.

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