

PROGRAM DETAILS

BCA -Bachelor of Computer Applications

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Faculty	Computing and IT (FCIT)
School	School of Computer Applications (SCA)
Program	BCA-Bachelors of Computer Applications
Dean of Faculty	Dr. Shweta Marigoudar
Director of School	Mr. Rajashekhar G.C.

1	Title of the Award	BCA-Bachelor of Computer Applications
2	Modes of Study	Full Time
3	Awarding Institution /Body	GM University
4	Joint Award	Not Applicable
5	Teaching Institution	Faculty of Computing and IT (FCIT)
6	Date of Program Specifications	November -2024
7	Date of Course Approval by the Academic Council of GMU	---
8	Next Review Date:	---
9	Program Approving Regulating Body and Date of Approval	---
10	Program Accredited Body and Date of Accreditation	---
11	Grade Awarded by the Accreditation Body	---
12	Program Accreditation Validity	---
13	Program Benchmark	N/A
14	Program Overview The Bachelor's in Computer Applications (BCA) is a comprehensive undergraduate program designed to provide students with a strong foundation in computer science and its practical applications. This program is specifically crafted to meet the increasing demand for skilled professionals in the field of information technology. The typical duration of a BCA program is three years, divided into six semesters. Each semester covers a set of core and elective courses, ensuring a well-rounded education in computer applications. The BCA curriculum encompasses a broad range of subjects to equip students with both theoretical knowledge and practical skills. Key areas of study include: 1. Programming Languages: Students learn popular programming languages such as Java, C++, Python, and others, enabling them to develop software applications efficiently.	

	Database Management Systems (DBMS): Understanding the principles of database design, implementation, and management is crucial, and students gain proficiency in database systems like MySQL, Oracle, and SQL Server. Data Structures and Algorithms: This area focuses on problem-solving skills, algorithm analysis, and the implementation of data structures, critical for efficient software development. Web Development: Students acquire skills in web technologies, including HTML, CSS, JavaScript, and server-side scripting languages, preparing them for roles in web application development. Networking and Security: An understanding of computer networks, protocols, and security measures is vital in the digital age. BCA students are introduced to concepts such as network design, cyber security, and ethical hacking. Operating Systems: The study of operating systems, including their design and functionality, ensures that students have a deep understanding of the software that manages computer hardware. Software Engineering: This area covers software development methodologies, project management, and quality assurance, imparting knowledge about the entire software development lifecycle. Practical Exposure: BCA programs often include practical sessions, labs, and projects to provide hands-on experience. Students typically work on real-world projects to apply their theoretical knowledge and develop problem-solving skills. Internship and Industry Exposure: Many BCA programs incorporate internships or industry exposure programs, allowing students to gain practical experience in a professional setting. This helps bridge the gap between academic learning and industry requirements. Career Opportunities: Upon completion of the BCA program, graduates are well-prepared for various roles, including software developer, web developer, database administrator, system analyst, and more. The program opens doors to diverse opportunities in the rapidly evolving IT industry.
15	Program Educational Objectives (PEOs) for BCA Program: Technical Proficiency: Graduates of the BCA program will demonstrate a high level of technical competence in computer science, including proficiency in programming languages, software development methodologies, and the ability to design and implement robust computing solutions. Problem-Solving and Critical Thinking: BCA graduates will excel in problem-solving and critical thinking, applying logical reasoning and analytical skills to identify, analyze, and solve complex computing challenges effectively. They will be adept at adapting to new technologies and methodologies to address emerging issues in the field. Effective Communication and Collaboration: BCA program alumni will possess strong communication skills, enabling them to convey technical concepts clearly to both technical and non-technical audiences. They will excel in collaborative environments, working seamlessly with diverse teams to achieve common goals and contribute to the success of projects.

16	Program Outcomes for Bachelor's Program in Computer Applications: 1. Software Development Proficiency: • <i>Outcome:</i> Graduates will demonstrate proficiency in designing, implementing, and testing software systems using contemporary programming languages and development tools. 2. Problem-Solving and Critical Thinking: • <i>Outcome:</i> Graduates will excel in problem-solving and critical thinking, applying logical reasoning and analytical skills to identify, analyze, and solve complex computing challenges. 3. Effective Communication and Collaboration: • <i>Outcome:</i> Alumni will possess strong communication skills, conveying technical concepts clearly to both technical and non-technical audiences and excelling in collaborative environments. 4. Database Management and Optimization: • <i>Outcome:</i> Graduates will possess specialized skills in database management, encompassing the design, implementation, and optimization of databases to ensure efficient data storage and retrieval. 5. Web Application Development Proficiency: • <i>Outcome:</i> Graduates will demonstrate proficiency in developing dynamic and interactive web applications, utilizing modern web technologies, frameworks, and design principles. 6. Software Security Awareness: • <i>Outcome:</i> Graduates will be aware of software security principles, implementing measures to protect against common vulnerabilities and ensuring the integrity and confidentiality of information. 7. Project Management Skills: • <i>Outcome:</i> Graduates will showcase skills in project management, effectively coordinating and leading teams in the successful completion of software projects. 8. Continuous Learning and Adaptability: • <i>Outcome:</i> Graduates will foster a mindset of continuous learning and adaptability, staying abreast of emerging technologies and methodologies in the dynamic field of computer applications.
17	Program Specific Outcomes (PSOs) for BCA Program: 1. Advanced Software Development Proficiency: <i>PSO:</i> Graduates will demonstrate advanced proficiency in software development, designing and implementing complex applications using contemporary programming languages and development tools. Indicators include the ability to apply advanced programming paradigms, design patterns, and optimization techniques to enhance code quality and maintainability. 2. Specialized Database Management Skills: <i>PSO:</i> Graduates will exhibit specialized skills in database management, including the design, optimization, and administration of databases for diverse application domains. Indicators include

	the ability to design normalized database schemas, optimize queries for improved performance, and implement security measures to safeguard sensitive information. 3. Advanced Web Application Development Competence: <i>PSO:</i> Graduates will demonstrate advanced competence in developing dynamic and interactive web applications using modern technologies and frameworks. Indicators include the ability to design responsive and user-friendly interfaces, implement server-side logic, and apply security best practices to protect against common web vulnerabilities.
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Programme Structure

A. Definition of Credit:

1 Hr. Lecture (L) per week	1 Credit
2 Hr. Tutorial (T) per week	1 Credit
2 Hr. Practical (P) per week	1 Credit

Sl. No.	Program -Category	Credits
1	Program-Core courses, elective Courses, open electives	100/130
2	Technical Skills	10 (SDTCD)
3	Life Skills	3(CASP)
4	Innovation and Entrepreneurial Skills	3(CIPI)
5	Environmental Awareness and Community Services	3(SA)
6	Athletics, Sports, Yoga, Gymnasium	3(SA)
7	Cultural & Literary Activities	3(SA)
8	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	2(SA&SP)
9	Placement Training	3(CASP)
Total		130+30=160

3-year degree program: 100 + 30= 130

4 Year Honours Program: 130+30= 160

18. Courses and Credits:

Semester-1			
Sl. No.	Course Code	Course Title	Credits
1	UL24FHK11/ UL24FHH11	Kannada Shravana-1 / Hindi – Katha Saritha	2
2	UL24FHE11	English Insight-1	2
3	UC24CA1104	Fundamentals of Computer	3
4	UC24CA1105	Programming in C	3
5	UC24CA1106	C Programming Lab	2
6	UC24CA1107	Introduction to Linux	3
7	UC24CA1108	Linux Lab	2
8	UM24BC1142	OEC-1 Banking Fundamentals	3
9	UC24HGT11	Technical Skills	0
10	UC24HGL12	Life Skills	00
11	UC24HGE13	Innovation and Entrepreneurial Skills	0
12	UC24HGV14	Environmental Awareness and Community Services	0
13	UC24HGA15	Athletics, Sports, Yoga, Gymnasium	01
14	UC24HGC16	Cultural & Literary Activities	0
15	UC24HGR17	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	0
16	UC24HGP18	Placement Training	0
Total			21

Semester-2			
Sl. No.	Course Code	Course Title	Credits
1	UL24FHK21 UL24FHH21	Kannada Shravana-2 / Hindi – Katha Sourabha	2
2	UL24FHE21	English Insight-2	2
4	UC24CA1204	Data Structure using C	3
5	UC24CA1205	Data Structure Lab	2
6	UC24CA1206	Object Oriented Concepts using Java	3
7	UC24CA1207	Java Lab	2
8	UM24BC1241	OEC-2 Managing Work Force	3
9	UC24HGT21	Technical Skills	02
10	UC24HGL22	Life Skills	00
11	UC24HGE23	Innovation and Entrepreneurial Skills	00
12	UC24HGV24	Environmental Awareness and Community Services	01
13	UC24HGA25	Athletics, Sports, Yoga, Gymnasium	01
14	UC24HGC26	Cultural & Literary Activities	00
15	UC24HGR27	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	00
16	UC24HGP28	Placement Training	00
Total			21

Semester-3			
Sl. No.	Course Code	Course Title	Credits
1	UC24CA2301	Data Base System Concepts	3
2	UC24CA2302	Data Base System Lab	2
3	UC24CA2303	Python Programming	3
4	UC24CA2304	Python Lab	2
5	UC24CA2305	Operating System	3
6	UC24CA2306	Discrete Mathematics	3
7	UM24BC2341	OEC-3 Advertising Skills	3
8	UC24HGT31	Technical Skills	02
9	UC24HGL32	Life Skills	01
10	UC24HGE33	Innovation and Entrepreneurial Skills	00
11	UC24HGV34	Environmental Awareness and Community Services	00
12	UC24HGA35	Athletics, Sports, Yoga, Gymnasium	00
13	UC24HGC36	Cultural & Literary Activities	01
14	UC24HGR37	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	01
15	UC24HGP38	Placement Training	00
Total			24

Semester-4			
Sl. No.	Course Code	Course Title	Credits
1	UC24CA2401	Artificial Intelligence	3
2	UC24CA2402	Artificial Intelligence Lab	2
3	UC24CA2403	Algorithm Design	3
4	UC24CA2404	Algorithm Design Lab	2
5	UC24CA2405	Computer Network	3
6	UC24CA2441 UC24CA2442 UC24CA2443	Professional Elective-1	3
7	UC24HGT41	Technical Skills	02
8	UC24HGL42	Life Skills	01
9	UC24HGE43	Innovation and Entrepreneurial Skills	01
10	UC24HGV44	Environmental Awareness and Community Services	01
11	UC24HGA45	Athletics, Sports, Yoga, Gymnasium	00
12	UC24HGC46	Cultural & Literary Activities	01
13	UC24HGR47	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	00
14	UC24HGP48	Placement Training	01
Total			22

Semester-5			
Sl. No.	Course Code	Course Title	Credits
1	UC24CA3501	Web Technology	3
2	UC24CA3502	Web Technology Lab	2
3	UC24CA3503	C# and Dot Net Framework	3
4	UC24CA3504	C# Lab	2
5	UC24CA3505	Software Engineering	3
6	UC24CA3541 UC24CA3542 UC24CA3543	Professional Elective-2	3
7	UC24HGT51	Technical Skills	02
8	UC24HGL52	Life Skills	01
9	UC24HGE53	Innovation and Entrepreneurial Skills	01
10	UC24HGV54	Environmental Awareness and Community Services	00
11	UC24HGA55	Athletics, Sports, Yoga, Gymnasium	01
12	UC24HGC56	Cultural & Literary Activities	00
13	UC24HGR57	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	01
14	UC24HGP58	Placement Training	01
Total			23

Semester-6			
Sl. No.	Course Code	Course Title	Credits
1	UC24CA3601	Full Stack Development with Integrated Lab	3+1=4
2	UC24CA3641 UC24CA3642 UC24CA3643	Professional Elective-3	3
3	UC24CAD01	Dissertation	5
4	UC24HGT61	Technical Skills	02
5	UC24HGL62	Life Skills	00
6	UC24HGE63	Innovation and Entrepreneurial Skills	01
7	UC24HGV64	Environmental Awareness and Community Services	01
8	UC24HGA65	Athletics, Sports, Yoga, Gymnasium	01
9	UC24HGC66	Cultural & Literary Activities	01
10	UC24HGR67	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	00
11	UC24HGP68	Placement Training	01
Total			19

Semester-7			
S. No.	Course Code	Course Title	Credits
1	UC24CAC71	Research Methodology and IPR	03
2	UC24CAR72	Research Paper - 1	03
3	UC24CAI73	Internship	08
4	UC24HGT71	Technical Skills	00
5	UC24HGL72	Life Skills	00
6	UC24HGE73	Innovation and Entrepreneurial Skills	00
7	UC24HGV74	Environmental Awareness and Community Services	00
8	UC24HGA75	Athletics, Sports, Yoga, Gymnasium	00
9	UC24HGC76	Cultural & Literary Activities	00
10	UC24HGR77	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	00
11	UC24HGP78	Placement Training	00
Total			14

Semester-8			
S. No.	Course Code	Course Title	Credits
1	UC24CAI81	Industrial Excursion	03
2	UC24CAR82	Research Paper - 2	03
3	UC24CAD02	Dissertation	10
4	UC24HGT81	Technical Skills	00
5	UC24HGL82	Life Skills	00
6	UC24HGE83	Innovation and Entrepreneurial Skills	00
7	UC24HGV84	Environmental Awareness and Community Services	00
8	UC24HGA85	Athletics, Sports, Yoga, Gymnasium	00
9	UC24HGC86	Cultural & Literary Activities	00
10	UC24HGR87	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	00
11	UC24HGP88	Placement Training	00
Total			16

List of **Professional Elective-1** Offered

1. Cyber Security
2. Network Security
3. Cloud Computing

List of **Professional Elective-2** Offered

1. Artificial Intelligence and Machine Learning
2. Artificial Neural Network
3. Big Data Analytics

List of **Professional Elective-3** Offered

1. Ethical Hacking
2. Data Science
3. Internet of Things

List of **Open Elective Course** Offered

1. **Semester – 1:** Fundamentals of Computers (UC24CA1131)
2. **Semester – 2:** Introduction to C Programming (UC24CA1231)
3. **Semester – 3:** E-Commerce (UC24CA2331)

19	Program Delivery and Program Attainment The program comprises several courses, each delivered according to the specifications outlined in the course documents. At the conclusion of each course, both course attainments and program attainments are computed. These attainments undergo analysis during Course Assessment Board and Program Assessment Board meetings, leading to recommendations for enhancements in subsequent offerings.
20	Teaching and Learning Methods 1. Face to Face Lectures using Audio-Visuals 2. Laboratory work/Fieldwork/Workshop 3. Project Based Learning 4. Problem Based Learning 5. Group Exercises/Assignments 6. Demonstrations 7. Guest Lectures 8. Industry Visit 9. Workshops, Group Discussions, Debates, Presentations 10. Project Work 11. Project Exhibitions 12. Technical Competitions
21	Attendance A minimum of 85% attendance is essential to appear for semester end examinations. Condoning of attendance shortage is as per the Academic Regulations of BCA Programme.

22	Assessment and Grading 1. Every course will be assessed for a weight of 100 2. There are 4 components: a. Quiz -15% b. Class Tests: 25% c. Application Based open assignments/ Activity/project-based learning/problem-based learning and any such assessment: 20% d. Semester End Examination: 40% 3. Based on total marks scored grade is Awarded. If marks scored is: • 91 and above O (outstanding); 81-90: A+ (Excellent); 71-80: A (Very Good); 61-70: B+ (Good); 51-60: B (Above Average); 40 -50: C (Average); below 40: D (Not satisfactory) • If one scores D grade, the candidate is required to re-register for the course (for core courses only, students can exercise their choice in case of electives or open electives –means they can re-register or register for a different elective course) and earn the required credits • A minimum of overall 40% is required for completion of course by acquiring minimum grade (pass) with a minimum of 40% in each component. 4. End of each semester –grade card will be issued with SGPA displayed
23	Award of Degree Every student registering for the program need to complete a minimum of 130 credits for the award of Bachelor's degree and 160 credits for the award of honors degree. Award of Degree Certificate: Students will be issued consolidated grade card with CGPA displayed and GM University Degree Certificate. Award of Gold Medal: A student with highest CGPA (Not less than 9.0 on a scale of 10) in the class without getting a D grade in any course over 6/8 semester and completing the program within the specified period of 3/4 years (6/8 semesters) will be awarded Gold Medal.
24	Student Support for Learning 1. Course Notes 2. Reference Books in the Library 3. Magazines and Journals 4. Internet Facility 5. Computing Facility 6. Laboratory Facility 7. Workshop Facility 8. Staff Support 9. Lounges for Discussions 10. Any other support that enhances their learning
25	Quality Control Measures 1. Review of Course Notes 2. Review of Question Papers and Assignment Questions 3. Student Feedback

	4. Moderation of Assessed Work
	5. Opportunities for students to see their assessed work
	6. Review by external examiners and external examiners reports
	7. Staff Student Consultative Committee meetings
	8. Student exit feedback
	9. Course Assessment Board (CAB)
	10. Programme Assessment Board (PAB)

26. Mapping of POs with Cos.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Course-1												
CO1												
CO2												
CO3												
CO4												
CO5												
CO6												
Course-2												
CO1												
CO2												
CO3												
CO4												
CO5												
CO6												