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 -2023
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**	

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.

2. **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.

3. **Data Structures and Algorithms:** This area focuses on problem-solving skills, algorithm analysis, and the implementation of data structures, critical for efficient software development.

4. **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.

5. **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.

6. **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.

7. **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:**

1. 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.

2. 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.

3. 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:

- *Outcome:* Graduates will demonstrate proficiency in designing, implementing, and testing software systems using contemporary programming languages and development tools.

2. Problem-Solving and Critical Thinking:

- *Outcome:* 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:

- *Outcome:* 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:

- *Outcome:* 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:

- *Outcome:* Graduates will demonstrate proficiency in developing dynamic and interactive web applications, utilizing modern web technologies, frameworks, and design principles.

6. Software Security Awareness:

- *Outcome:* 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:

- *Outcome:* Graduates will showcase skills in project management, effectively coordinating and leading teams in the successful completion of software projects.

8. Continuous Learning and Adaptability:

- *Outcome:* 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:

PSO: 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:

PSO: 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:

PSO: 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.

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	UL23FHK11/ UL23FHH11	Kannada Shravana-1 / Hindi – Katha Saritha	2
2	UL23FHE11	English Insight-1	2
3	UC23CA1104	Fundamentals of Computer	3
4	UC23CA1105	Programming in C	3
5	UC23CA1106	C Programming Lab	2
6	UC23CA1107	Introduction to Linux	3
7	UC23CA1108	Linux Lab	2
8	UM23BC1142	OEC-1 Banking Fundamentals	3
9	UC23HGT11	Technical Skills	0
10	UC23HGL12	Life Skills	00
11	UC23HGE13	Innovation and Entrepreneurial Skills	0
12	UC23HGV14	Environmental Awareness and Community Services	0
13	UC23HGA15	Athletics, Sports, Yoga, Gymnasium	01
14	UC23HGC16	Cultural & Literary Activities	0
15	UC23HGR17	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	0
16	UC23HGP18	Placement Training	0
		Total	**21**

		Semester-2	
Sl. No.	**Course Code**	**Course Title**	**Credits**
1	UL23FHK21 UL23FHH21	Kannada Shravana-2 / Hindi – Katha Sourabha	2
2	UL23FHE21	English Insight-2	2
4	UC23CA1204	Data Structure using C	3
5	UC23CA1205	Data Structure Lab	2
6	UC23CA1206	Object Oriented Concepts using Java	3
7	UC23CA1207	Java Lab	2
8	UM23BC1241	OEC-2 Managing Work Force	3
9	UC23HGT21	Technical Skills	02
10	UC23HGL22	Life Skills	00
11	UC23HGE23	Innovation and Entrepreneurial Skills	00
12	UC23HGV24	Environmental Awareness and Community Services	01
13	UC23HGA25	Athletics, Sports, Yoga, Gymnasium	01
14	UC23HGC26	Cultural & Literary Activities	00
15	UC23HGR27	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	00
16	UC23HGP28	Placement Training	00
		Total	**21**

Semester-3			
Sl. No.	**Course Code**	**Course Title**	**Credits**
1	UC23CA2301	Data Base System Concepts	3
2	UC23CA2302	Data Base System Lab	2
3	UC23CA2303	Python Programming	3
4	UC23CA2304	Python Lab	2
5	UC23CA2305	Operating System	3
6	UC23CA2306	Discrete Mathematics	3
7	UM23BC2341	OEC-3 Advertising Skills	3
8	UC23HGT31	Technical Skills	02
9	UC23HGL32	Life Skills	01
10	UC23HGE33	Innovation and Entrepreneurial Skills	00
11	UC23HGV34	Environmental Awareness and Community Services	00
12	UC23HGA35	Athletics, Sports, Yoga, Gymnasium	00
13	UC23HGC36	Cultural & Literary Activities	01
14	UC23HGR37	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	01
15	UC23HGP38	Placement Training	00
Total			**24**

Semester-4			
Sl. No.	**Course Code**	**Course Title**	**Credits**
1	UC23CA2401	Artificial Intelligence	3
2	UC23CA2402	Artificial Intelligence Lab	2
3	UC23CA2403	Algorithm Design	3
4	UC23CA2404	Algorithm Design Lab	2
5	UC23CA2405	Computer Network	3
6	UC23CA2441 UC23CA2442 UC23CA2443	**Professional Elective-1**	3
7	UC23HGT41	Technical Skills	02
8	UC23HGL42	Life Skills	01
9	UC23HGE43	Innovation and Entrepreneurial Skills	01
10	UC23HGV44	Environmental Awareness and Community Services	01
11	UC23HGA45	Athletics, Sports, Yoga, Gymnasium	00
12	UC23HGC46	Cultural & Literary Activities	01
13	UC23HGR47	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	00
14	UC23HGP48	Placement Training	01
Total			**22**

		Semester-5		
Sl. No.	Course Code	Course Title		Credits
1	UC23CA3501	Web Technology		3
2	UC23CA3502	Web Technology Lab		2
3	UC23CA3503	C# and Dot Net Framework		3
4	UC23CA3504	C# Lab		2
5	UC23CA3505	Software Engineering		3
6	UC23CA3541 UC23CA3542 UC23CA3543	**Professional Elective-2**		3
7	UC23HGT51	Technical Skills		02
8	UC23HGL52	Life Skills		01
9	UC23HGE53	Innovation and Entrepreneurial Skills		01
10	UC23HGV54	Environmental Awareness and Community Services		00
11	UC23HGA55	Athletics, Sports, Yoga, Gymnasium		01
12	UC23HGC56	Cultural & Literary Activities		00
13	UC23HGR57	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)		01
14	UC23HGP58	Placement Training		01
		Total		**23**

		Semester-6		
Sl. No.	Course Code	Course Title		Credits
1	UC23CA3601	Full Stack Development with Integrated Lab		3+1=4
2	UC23CA3641 UC23CA3642 UC23CA3643	**Professional Elective-3**		3
3	UC23CAD01	Dissertation		5
4	UC23HGT61	Technical Skills		02
5	UC23HGL62	Life Skills		00
6	UC23HGE63	Innovation and Entrepreneurial Skills		01
7	UC23HGV64	Environmental Awareness and Community Services		01
8	UC23HGA65	Athletics, Sports, Yoga, Gymnasium		01
9	UC23HGC66	Cultural & Literary Activities		01
10	UC23HGR67	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)		00
11	UC23HGP68	Placement Training		01
		Total		**19**

		Semester-7	
S. No.	**Course Code**	**Course Title**	**Credits**
1	UC23CAC71	Research Methodology and IPR	03
2	UC23CAR72	Research Paper - 1	03
3	UC23CAI73	Internship	08
4	UC23HGT71	Technical Skills	00
5	UC23HGL72	Life Skills	00
6	UC23HGE73	Innovation and Entrepreneurial Skills	00
7	UC23HGV74	Environmental Awareness and Community Services	00
8	UC23HGA75	Athletics, Sports, Yoga, Gymnasium	00
9	UC23HGC76	Cultural & Literary Activities	00
10	UC23HGR77	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	00
11	UC23HGP78	Placement Training	00
		Total	**14**

		Semester-8	
S. No.	**Course Code**	**Course Title**	**Credits**
1	UC23CAI81	Industrial Excursion	03
2	UC23CAR82	Research Paper - 2	03
3	UC23CAD02	Dissertation	10
4	UC23HGT81	Technical Skills	00
5	UC23HGL82	Life Skills	00
6	UC23HGE83	Innovation and Entrepreneurial Skills	00
7	UC23HGV84	Environmental Awareness and Community Services	00
8	UC23HGA85	Athletics, Sports, Yoga, Gymnasium	00
9	UC23HGC86	Cultural & Literary Activities	00
10	UC23HGR87	Co-Curricular Activities (Seminar/Conference/Exhibition/Technical Competition)	00
11	UC23HGP88	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 (UC23CA1131)
2. **Semester – 2:** Introduction to C Programming (UC23CA1231)
3. **Semester – 3:** E-Commerce (UC23CA2331)

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												