

PROGRAMME PROJECT REPORT

BACHELOR OF COMPUTER APPLICATIONS (BCA)

Mode of Delivery: OPEN AND DISTANCE & ONLINE

Dr C V Raman University (CVRU) Centre for Distance and Online Education is fully equipped and committed to delivering quality higher education online while maintaining academic standards comparable to the corresponding conventional programme. The BCA programme will meet the local, regional, and national needs and aspirations of learners seeking contemporary education in computer applications, programming, data, software development, and emerging digital technologies. The programme is envisioned to provide an accessible national learning platform that builds strong foundations in computing while preparing students for technology-enabled careers, entrepreneurship and progression to higher education.

A) Programme's Mission & Objectives:

Mission Statement:

To develop competent, responsible and future-ready graduates with sound foundations in computer applications, programming, digital technologies, communication and problem-solving capabilities to contribute effectively to the information technology sector, entrepreneurial ventures and society.

Objectives:

- Build strong foundations in computer applications, programming and computational thinking.
- Develop problem-solving, logical reasoning, communication and professional capabilities.
- Strengthen practical skills in programming, databases, operating systems, software development and digital tools.
- Develop readiness for data science, artificial intelligence, cloud computing, Internet of Things and other emerging technologies.
- Foster innovation, ethical use of technology, entrepreneurship and life-long learning.

B) Relevance of the programme with University's Mission and Goals:

The University's mission seeks transformative social impact through innovation, creativity and entrepreneurship, anchored in creating transformative education experiences for students, collaborative environment and societal impact regionally, nationally and globally. The ODL & OL BCA Programme directly advances this Mission by extending quality undergraduate computer education beyond the physical boundaries of the University.



1






The University's emphasis on innovation, technology and entrepreneurship has particular relevance to the BCA, where learners can develop programming ability, computational thinking, digital creativity and application-oriented problem-solving. Open and Distance & Online delivery can further create a collaborative learning environment connecting learners from different regions and socio-economic backgrounds. The multi-disciplinary character of the University also provides opportunities to enrich computer education through exposure to business, communication, data, artificial intelligence, cloud computing and other emerging domains.

The University has valuable hands-on experience in running BCA through conventional and distance-learning systems and possesses established academic, computing and learner-support systems. This experience provides a strong institutional foundation for offering the ODL & OL BCA with academic credibility, technology-enabled support and confidence in the quality of delivery.

C) Nature of prospective target group of learners:

CVRU has a strong case in favour of offering the BCA through ODL & OL Mode. Located in a tribal-dominated and developing region, the University has gained the trust of its people over decades through its contribution to higher education. The ODL & OL BCA can provide access to learners who, because of geographical, economic, family and livelihood constraints, may not be able to pursue conventional campus education.

The programme can particularly benefit learners from smaller towns, rural and tribal areas seeking an affordable pathway to computer education and technology-enabled employment without relocating from their communities. At the same time, its online character opens the programme to learners across India, including working youth, aspiring software and IT professionals, entrepreneurs and students seeking a flexible undergraduate computing education.

D) Appropriateness of programme to be conducted in Open and Distance & Online Learning mode to acquire specific skills and competence:

Teaching and learning in computer applications is highly compatible with technology-enabled delivery. Learners can acquire conceptual knowledge and practical computing skills through digital platforms, interactive demonstrations, coding environments, virtual laboratories, guided programming exercises, projects, assignments and online academic interaction.

The ODL & OL BCA can combine synchronous and asynchronous learning through the LMS, e-content, live coding demonstrations, discussion forums, programming exercises, virtual/remote computing tools, software projects and continuous assessment. Particular


Dean Academic
Dr. C.V. Raman University
Kargi Road, Kota, Bilaspur (C.G.)


2


Vice Chancellor
Dr. C.V. Raman University
Bilaspur (C.G.)





emphasis can be placed on learner engagement, programming proficiency, problem-solving, data handling, software development and application of concepts.

Given the educational needs of the region, the growing demand for digital skills and the University's established experience in technology and distance education, the BCA is a strong fit for delivery through the Open and Distance & Online Mode. Faculty designated for the programme can leverage the University's digital infrastructure and academic support systems to provide structured learning and learner support.

E) Instructional Design:

Curriculum Design, Detailed Syllabi & Duration of Programme:

The B.C.A. programme shall be delivered in fully ODL & OL mode through the University's Learning Management System (LMS) approved by the statutory authority of the University in accordance with the University Grants Commission (Open and Distance Learning Programme and Online Programme) Regulations, 2020, as amended from time to time. Delivery shall combine synchronous online counselling/webinars/live lectures with asynchronous discussion forums, e-Tutorials, e-Content, formative assessment and self-study in the prescribed four-quadrant framework. Online application processing, learner authentication, fee payment, counselling, academic support and programme delivery shall be provided through online platform approved by the University. The detailed course syllabi approved by the statutory bodies of the University, together with the course-wise credit-hour mapping and online delivery workload given in this PPR, shall form an integral part of the instructional design.

Credit Points:

All courses offered by us carry a certain value in terms of credit-points. A credit point is a way of expressing the learning hours required to study a certain unit, in a course. Generally, one credit point is considered equivalent to about 30 learning hours. These learning hours could mean the time spent in Synchronous Online Counselling / Webinars / Interactive Live Lectures, Discussion Forum / Asynchronous Mentoring, e-Tutorial, e-Content, Self-Study including assessment, assignments, programming exercises, projects, participation in discussions, listening to audios and viewing especially prepared videos. Thus, a 2-credit course corresponds to about 60 learning hours, a 4-credit course to 120 hours, a 6-credit course to 180 hours and an 8-credit course to 240 hours. Programme structure for BCA is clearly mentioned below:

Handwritten signatures: Kalay, Arun, and another signature.

Handwritten signature: Shakti

Dean Academic
Dr. C.V. Raman University
Kargi Road, Kota, Bilaspur (C.G.)



**AS PER UGC ODL & OL REGULATION 2020 FOR DELIVERY OF COURSES IN ONLINE
MODE WILL BE FOLLOWED BY UNIVERSITY**

Credit value of the course	No. of Weeks	Synchronous Online Counselling / Webinars / Interactive Live Lectures (hours)	Discussion Forum / Asynchronous Mentoring (hours)	e-Tutorial (hours)	e-Content (hours)	Self-Study hours including Assessment etc.	Total Hours of Study (30 hours per credit)
2	6	6	12	10	10	22	60
4	12	12	24	20	20	44	120
6	14	14	28	30	30	66	180
8	16	16	32	40	40	88	240

BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)

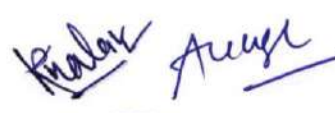
Duration - 36 Months (3 Years)
per University eligibility norms)

Eligibility – 10+2 or equivalent (as

PROPOSED SCHEME OF EXAMINATION

Code	Name of the	Credit	Total Marks	Theory		Practical's / project Report		Assignments/viva voce	
				Max	Min	Max	Min	Max	Min
FIRST SEMESTER									
1BCA1	Fundamentals of Computer Programming	4	100	35	12	50	17	15	5
1BCA2	Fundamentals of Python	4	100	35	12	50	17	15	5
1BCA3	Discrete Mathematics	4	100	70	23	-	-	30	10
1BCA4	Entrepreneurship Development	4	100	70	23	-	-	30	10
1BCA5	Hindi Bhasha avam Sanrachana	4	100	70	23	-	-	30	10
Total aggregate required to pass		20	500	280	126	100	36	120	43
SECOND SEMESTER									
2BCA1	Advance Python	4	100	35	12	50	17	15	5
2BCA2	Object Oriented programming in C++	4	100	35	12	50	17	15	5
2BCA3	Digital Electronics	4	100	70	23	-	-	30	10









Dean Academic
Dr. C.V. Raman University
Kargi Road, Kota, Bilaspur (C.G.)

Vice Chancellor
Dr. C.V. Raman University
Bilaspur (C.G.)

2BCA4	English language and Indian culture	4	100	70	23	-	-	30	10
2BCA5	Environmental Studies	4	100	70	23	-	-	30	10
Total aggregate required to pass		20	500	280	126	100	36	120	43
THIRD SEMESTER									
3BCA1	Data Structure using C++	4	100	35	12	50	17	15	5
3BCA2	Advance Excel	4	100	35	12	50	17	15	5
3BCA3	Data Communication	4	100	70	23	-	-	30	10
3BCA4	Office Automation & Internet	4	100	35	12	50	17	15	5
3BCA5	Communication Skill	4	100	70	23	-	-	30	10
Total aggregate required to pass		20	500	245	88	150	54	105	38
FOURTH SEMESTER									
4BCA1	Programming with Java	4	100	35	12	50	17	15	5
4BCA2	Introduction to Database	4	100	35	12	50	17	15	5
4BCA3	Business Research Methods	4	100	70	23	-	-	30	10
4BCA4	Software Quality Assurance and Testing	4	100	70	23	-	-	30	10
4BCA5	Software Engineering	4	100	70	23	-	-	30	10
Total aggregate required to pass		20	500	280	101	100	36	120	43
FIFTH SEMESTER									
5BCA1	Operating System (Linux, windows, Shell Programming)	4	100	35	12	50	17	15	5
5BCA2	Data Science Using Python	4	100	35	12	50	17	15	5
5BCA3	Artificial Intelligence	4	100	70	23	-	-	30	10
5BCA4	Personality Development	4	100	70	23	-	-	30	10
5BCA5	Big Data Analytics	4	100	35	12	50	17	15	5
Total aggregate required to pass		20	500	245	88	150	54	105	38








Dean Academic
 Dr. C.V. Raman University
 Kargi Road, Kota, Bilaspur (C.G.)

5

SIXTH SEMESTER

6BCA1	Cloud Computing	4	100	70	23	-	-	30	10
6BCA2	Quantitative Techniques	4	100	70	23	-	-	30	10
6BCA3	Internet of Thing	4	100	70	23	-	-	30	10
6BCA4	Project & Viva Voce	8	200	140	56	-	-	60	20
Total aggregate required to pass		20	500	350	126	-	-	150	54

Evaluation Scheme:

1. 33% in each applicable theory, practical, project and internal assessment component, with the total aggregate requirement for passing being 36%, subject to the approved scheme of examination.
2. Total project marks are 200 in which 140 marks are for the project report and 60 marks will be for project viva.

Duration:-

The minimum duration of the programme is three years. In accordance with UGC ODL and OL Regulation, 2020 for Online programme, a learner may complete the programme within a maximum duration of six years, i.e. double the minimum duration.

Medium:

English/Hindi shall be the medium of instruction and the examination may be written in Hindi or English as per the medium selected.

Requirement of faculty and supporting staff:

Faculty: For the ODL & OL BCA programme, the CVRU shall designate one Programme Coordinator, one Course Coordinator for each course, and two Course Mentors in the prescribed learner-mentor ratio from appropriately qualified faculty in Computer Applications / Computer Science / Information Technology, in accordance with applicable UGC ODL and OL Regulation, 2020. These functionaries shall coordinate the development and review of e-learning content, online delivery, learner interaction, academic support, practical learning and assessment.

Supporting Staff: The Centre for Distance and Online Education shall maintain adequate administrative and technical support for e-content production, LMS and data management, online admission, examination, result processing and learner support in accordance with the applicable UGC human-resource and technical-support as UGC ODL and OL Regulation, 2020. The existing administrative support structure shall be supplemented by the required technical personnel for effective delivery of the ODL & OL programme.

[Signature]
Dean Academic

Dr. C.V. Raman University
Kargi Road, Kota, Bilaspur (C.G.)

[Signature]
Registrar
6
Kota, Bilaspur

[Signature]
Vice Chancellor
Dr. C.V. Raman University
Bilaspur (C.G.)

Instructional Delivery Mechanism & Usage of Media for Online Learning:

Instructional Delivery Mechanism: The programme shall be delivered through the University's LMS. E-learning material shall be designed and delivered in the UGC four-quadrant approach. The online platform shall support learner registration, content delivery, engagement tracking, assessment, results, analytics and reporting.

Quadrant-I: e-Tutorials, including organized video/audio lectures, animations, simulations, demonstrations, virtual labs, activities and transcription of the video;

Quadrant-II: e-Content, including digital Self-Learning Material / self-learning e-modules, e-books, PPTs, illustrations, case studies, web resources, open-source content, research papers, journals, articles, reference links and supplementary learning resources;

Quadrant-III: Discussion Forum, providing interaction with Course Coordinators and Course Mentors for raising doubts, academic discussion and clarification on a real-time or near real-time basis;

Quadrant-IV: Assessment, comprising MCQs, fill-in-the-blanks, matching questions, short- and long-answer questions, quizzes, assignments, problem-solving exercises, FAQs and clarification of common misconceptions. Academic Counsellors/Course Coordinators shall provide continuous academic and learner support during the programme.

Online Instructional Delivery Mechanisms

Course delivery shall conform to the UGC Regulations, as amended from time to time. The University shall publish an academic calendar on the LMS covering learner induction, synchronous online sessions, discussion forums, release of e-content, assignments, formative assessments, project activities and end-semester examinations. All counselling and academic interaction for the Online programme shall be provided online through scheduled live sessions, discussion forums, e-mail, help desk and other approved digital tools.

Learner Support Services:

Dr. C. V. Raman University Centre for Distance and Online Education shall provide learner support for the ODL & OL BCA programme through a dedicated online help desk, LMS-based notices and dashboards, e-mail, SMS alerts, online guidance and counselling, discussion forums, grievance-redressal mechanisms and remote access to digital library and e-resources. Programme information, e-learning materials, academic calendar, programming/practical resources, assignments, examination notifications and support contacts shall be made available through the University website and LMS. Learner support for Online mode shall be provided directly by the University.


Dean Academic
Dr. C.V. Raman University
Kargi Road, Kota, Bilaspur (C.G.)



Online Counselling & Study Structure:

The online counselling and study structure for the BCA programme is given below:

BCA – ONLINE COUNSELLING & STUDY STRUCTURE											
Bachelor of Computer Applications (B.C.A.) Duration: 3 Years Total Credits: 120											
S. No	Semester	Course Code	Name of the Course	Credits	No. of Weeks	Synchronous Online Counselling / Webinar / Live Lectures (hours)	Discussion Forum / Asynchronous Mentoring (hours)	e-Tutorial (hours)	e-Content (hours)	Self-Study incl. Assessment (hours)	Total Study Hours
1	First Semester	1BCA1	Fundamentals of Computer Programming	4	12	12	24	20	20	44	120
2		1BCA2	Fundamentals of Python	4	12	12	24	20	20	44	120
3		1BCA3	Discrete Mathematics	4	12	12	24	20	20	44	120
4		1BCA4	Entrepreneurship Development	4	12	12	24	20	20	44	120
5		1BCA5	Hindi Bhasha avam Sanrachana	4	12	12	24	20	20	44	120
6	Second Semester	2BCA1	Advance Python Object Oriented programming in C++	4	12	12	24	20	20	44	120
7		2BCA2	Digital Electronics	4	12	12	24	20	20	44	120
8		2BCA3	English language and Indian culture	4	12	12	24	20	20	44	120
9		2BCA4	Environmental Studies	4	12	12	24	20	20	44	120
10		2BCA5	Data Structure using C++	4	12	12	24	20	20	44	120
11	Third Semester	3BCA1	Advance Excel	4	12	12	24	20	20	44	120
12		3BCA2	Data Communication	4	12	12	24	20	20	44	120
13		3BCA3	Office Automation & Internet	4	12	12	24	20	20	44	120
14		3BCA4	Communication Skill	4	12	12	24	20	20	44	120
15		3BCA5	Operating System (Linux, windows, Shell Programming)	4	12	12	24	20	20	44	120
16	Fourth Semester	4BCA1	Data Science Using Python	4	12	12	24	20	20	44	120
17		4BCA2	Artificial Intelligence	4	12	12	24	20	20	44	120
18		4BCA3		4	12	12	24	20	20	44	120

Dean Academic
Dr. C.V. Raman University
Kargi Road, Kota, Bilaspur (C.G.)



BCA – ONLINE COUNSELLING & STUDY STRUCTURE

Bachelor of Computer Applications (B.C.A.) | Duration: 3 Years | Total Credits: 120

S. No.	Semester	Course Code	Name of the Course	Credits	No. of Weeks	Synchronous Online Counselling / Webinars / Live Lectures (hours)	Discussion Forum / Asynchronous Mentoring (hours)	e-Tutorial (hours)	e-Content (hours)	Self-Study incl. Assessment (hours)	Total Study Hours
19		4BCA4	Personality Development	4	12	12	24	20	20	44	120
20		4BCA5	Big Data Analytics	4	12	12	24	20	20	44	120
21	Fifth Semester	5BCA1	Programming with Java	4	12	12	24	20	20	44	120
22		5BCA2	Introduction to Database	4	12	12	24	20	20	44	120
23		5BCA3	Business Research Methods	4	12	12	24	20	20	44	120
24		5BCA4	Software Quality Assurance and Testing	4	12	12	24	20	20	44	120
25		5BCA5	Software Engineering	4	12	12	24	20	20	44	120
26		6BCA1	Cloud Computing	4	12	12	24	20	20	44	120
27	Sixth Semester	6BCA2	Quantitative Techniques	4	12	12	24	20	20	44	120
28		6BCA3	Internet of Thing	4	12	12	24	20	20	44	120
29		6BCA4	Project & Viva Voce	8	-	-	-	-	-	-	-

F) Procedure for admissions, curriculum transaction & evaluation:

Admission Policy for B.C.A. with minimum eligibility & fee structure:

A candidate who has passed 10+2 with Mathematics from a recognised Board shall be eligible for admission to the BCA programme, subject to minimum 45% marks for General category and 40% for SC/ST/OBC categories. Candidates without Mathematics at 10+2 level shall be required to pass a Remedial Course in Mathematics. The entire admission process, including application, document verification, fee payment and communication, shall be conducted online as per UGC ODL and OL Regulation, 2020.

[Signature]
Dean Academic

Dr. C.V. Raman University
Kargi Road, Kota, Bilaspur (C.G.)



[Signature] *[Signature]* *[Signature]*

Fees:

Sl.	Programme	Duration	Fee charged for complete programme
1.	B.C.A.	3 Years	84000/-

Financial Assistance:

E-scholarship is provided to SC/ST students as per norms of the Govt. of Chhattisgarh authorized schemes, other CSR, Raman scholarship will be provided as per the University norms.

Evaluation system:

The system of evaluation in Open and Distance & Online Learning mode shall comprise continuous, formative assessment and summative end-semester assessment using the University LMS and secure examination systems. Theory-oriented courses shall follow the approved 30:70 pattern, with Continuous Assessment carrying 30 per cent weightage and End-Semester/Term-End Examination carrying 70 per cent weightage. Practical-bearing courses and the project shall follow the component-wise distribution shown in the approved scheme of examination, including theory, practical/project and assignment/viva components as applicable. The evaluation system shall include the following:

1. Self-assessment exercises within each unit of study.
2. Continuous evaluation through online course-coordinator marked assignments, quizzes, programming exercises, practical tasks, case/problem analyses, presentations, discussion-forum participation and other approved online activities, including computer/software-based practical activities wherever applicable.
3. Proctored End-Semester Examination / Term-End Examination.
4. Project works.

Learners shall complete and submit the prescribed continuous assessment/TMA responses through the LMS within the notified timelines before appearing in the End-Semester/Term-End Examination. The University shall maintain records of learner engagement and assessment through its LMS/evaluation systems. End-Semester / Term-End Examinations for the ODL & OL BCA programme shall be conducted through technology-enabled secure online testing and/or proctored examination in conformity with UGC norms, with learner identity authentication and appropriate security arrangements to ensure transparency, credibility and academic integrity.

- (a) Internal Assessment (Continuous Assessment i.e. Home Assignment): 30 % weightage for theory-oriented courses.



10



Dr. C.V. Raman University
Karrri Road, Kota, Bilaspur (C.G.)

- (b) End semester examination/Term End Examination - 70 % weightage for theory-oriented courses.

End semester examination/Term End Examination (Summative Assessment)	70
Internal Assessment (Continuous Assessment)	30
Total Marks	100

The University shall conduct End-Semester/Term-End Examinations in the semester system as per the notified academic calendar. For Online mode, examinations shall be conducted through technology-enabled secure online testing and/or proctored examination in conformity with UGC norms, with appropriate identity authentication and security arrangements. Students will be permitted to appear subject to the conditions that:

- 1) Registration for the programme, in which they wish to appear is valid,
- 2) Minimum Time to pursue these courses is elapsed &
- 3) Submission of required number of assignments in respective courses by the due date.

(c) Project Work

Project work carrying 200 marks shall be completed under the guidance of a University-approved Project Supervisor. Project supervision, submission and academic interaction will be carried out through the LMS. The project report shall be submitted in the prescribed digital format and the viva-voce shall be conducted through a secure online/video-conferencing or other University-approved mode in the presence of an external examiner, with appropriate learner identity verification and safeguards for the integrity of assessment.

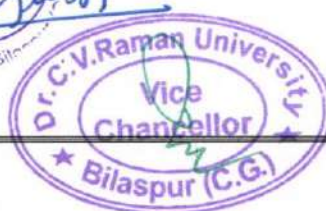
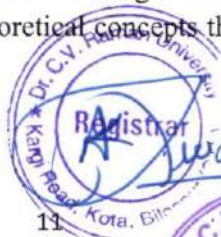
G) Requirement of the laboratory support and library resource:

Dr. C. V. Raman University recognizes the importance of providing effective laboratory exposure and practical learning opportunities to all students, particularly in the context of online and blended modes of education. To strengthen practical education and ensure accessibility of laboratory resources, the University is utilizing **Virtual Labs, an initiative of the Ministry of Education, Government of India, under the National Mission on Education through ICT (NME-ICT).**

Dr. C. V. Raman University is already established as a **Nodal Centre of Virtual Labs**, which facilitates access to a wide range of online laboratory experiments and simulations for students across various disciplines. Through this initiative, students can perform experiments virtually, understand theoretical concepts through interactive simulations, and



Dean Academic
Dr. C.V. Raman University
Kargi Road, Kota, Bilaspur (C.G.)



enhance their practical knowledge without the limitations of physical laboratory infrastructure, time, and geographical constraints.

The requirement of laboratory support through Virtual Labs is essential for providing:

1. Access to Practical Learning for All Students:

Virtual Labs ensure that every student of Dr. C. V. Raman University has equal access to laboratory experiments and practical demonstrations, irrespective of their mode of study, including online learners.

2. Enhanced Practical Skill Development:

Students can perform simulated experiments repeatedly, analyze results, and develop better understanding of concepts, thereby improving their technical and analytical skills.

3. Support for Online and Blended Education:

Virtual Labs provide a reliable platform for conducting practical sessions for students enrolled in online programmes and support the University's commitment towards flexible and technology-enabled education.

4. Availability of Quality Laboratory Resources:

Through the Virtual Lab platform developed under NME-ICT, students gain access to expert-designed experiments, simulations, and learning resources aligned with academic curricula.

5. Reduction of Infrastructure Constraints:

Virtual Labs supplement physical laboratories by providing continuous access to experiments and practical exercises, helping overcome limitations related to laboratory capacity, equipment availability, and scheduling.

6. Improved Learning Outcomes:

The integration of Virtual Labs with classroom teaching enhances conceptual clarity, encourages self-learning, and prepares students with practical competencies required for higher studies and professional environments.

As a Nodal Centre of Virtual Labs, Dr. C. V. Raman University is committed to extending the benefits of this initiative to all its students and ensuring that they receive adequate laboratory support through digital platforms. The University will continue to promote the effective utilization of Virtual Labs as an integral component of practical education and experiential learning.

Dean Academic
Dr. C.V. Raman University
Kargi Road, Kota, Bilaspur (C.G.)



12



H) Cost estimates of the programme and the provision:

The BCA curriculum has been offered earlier; however, for Online mode the programme delivery system and e-learning resources require continuous development and upgradation in accordance with applicable UGC requirements. The current cost estimate of Rs. 25,40,000/- includes development/upgradation of four-quadrant e-learning material, audio-video production, LMS, online learner support, programme delivery, assessment/proctoring and maintenance. A provision of Rs. 25,50,000/- has been made for the programme.

I) Quality assurance mechanism and expected programme outcomes:

The Centre for Internal Quality Assurance (CIQA), CDOE shall monitor the ODL & OL BCA programme through periodic review of curriculum, e-learning material, LMS delivery, learner engagement, practical activities, assessment and learner-support services. E-learning and practical resources shall be reviewed for four-quadrant design, accessibility, academic integrity, learning outcomes and currency of technology. CIQA shall undertake annual quality review and academic audit, while learner feedback and LMS analytics shall support continuous improvement. The PPR and subsequent revisions shall be implemented after approval by the appropriate statutory authority of the University.

Expected Outcomes of Programme:

- To acquire foundational and application-oriented knowledge of computers, programming, data and software systems.
- To apply programming, database, operating-system, data-science, AI, cloud and related techniques.
- To develop practical computing, analytical problem-solving, software-development and project skills.
- To develop communication, presentation, ethical technology use, entrepreneurship and life-long learning.


Dean Academic
Dr. C.V. Raman University
Kargi Road, Kota, Bilaspur (C.G.)





