

DEPARTMENT OF COMPUTER APPLICATIONS

FACULTY OF SCIENCE

4 Years in BACHELOR OF COMPUTER APPLICATION
(Honours) Programme

Prospectus and Admission Guidelines
Academic Year 2024-25



THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA
VADODARA-390002, GUJARAT, INDIA



H. H. Maharaja Sayajirao Gaekwad-III

MISSION STATEMENT

**Vision and mission as perceived by
H. H. Maharaja Sayajirao Gaekwad-III**

“The progress of a nation requires that its people should be educated. Knowledge is a necessity of man. It instills in him a desire to question and to investigate, which leads him on the path of progress. Education, in the broadest sense, must be spread everywhere. Progress can only be achieved by the spread of education. Cooperation is necessary to achieve any worthy end and this readiness to cooperate will not be found in people if they are not educated.”

From the Head's Desk

Addressing the grave need of quality education in Computer Applications, Faculty of Science introduced a 3 years UG Programme viz. BCA (Bachelor of Computer Applications) in the year 2000 on a higher payment basis. As, the demand continued to grow in the IT, so keeping in tune with time the department introduced a full time 2 years post graduation programme M.Sc. (IT), in the year 2017. The programme covers all the current and emerging areas in the field of Information Technology.

The department has four fully equipped computer laboratories with a total capacity of 160 computers. It has its own departmental library with a rich collection of books, journals and periodicals. Class rooms of department are equipped with all the facilities for teaching. Department has been dedicated to facilitating increased opportunities for cross disciplinary, inter disciplinary and Trans disciplinary fields of computing.

I welcome you all on behalf of the department and my own behalf to join the journey of becoming a computer professional and to be potential candidate for various job opportunities in the most demanding career of current times.

Best wishes for you're all the academic endeavours.

Prof. Prashant K. Mehta
Head (Offg.)

Department of Computer Applications

The University

The Maharaja Sayajirao University of Baroda, formerly known as the Baroda College, was founded by Late His Highness Shrimant Maharaja Sayajirao Gaekwad of Baroda in the Year 1881. The efforts of establishing a University at Baroda were also initiated by him in 1908. Although Shrimant Sayajirao Gaekwad conceived a residential university at Baroda, it became a reality only during the rule of Late His Highness Shrimant Pratapsinhrao Gaekwads. The Maharaja Sayajirao University of Baroda came into existence on 29th April 1949.

Faculty of Science

With the formation of the university, The Silver Jubilee Science Institute, a part of the Baroda College, was reconstituted as the Faculty of Science. Foundation stone of the Silver Jubilee Science Institute was laid by Sir Issac Rufus, then Viceroy and Governor General of India, in the year 1926 and the construction was completed in 1933.

Since 1949, the Faculty offers courses leading to B. Sc., M. Sc. and Ph. D. degrees in Botany, Chemistry, Geography, Geology, Mathematics, Physics, Statistics and Zoology. The Faculty added thereafter two more Departments: Departments of Biochemistry and Microbiology, both of which provide postgraduate programmes to students. From year 2000, faculty started offering self financed programmes at both UG and PG level. The Faculty has made significant strides in various disciplines of science that attracts students from all over India and other countries and it is a cosmopolitan centre of education.

Department of Computer Applications

Addressing the grave need of quality education in computer applications at undergraduate level in the Country in general and Gujarat in particular, Faculty of Science introduced 3 year undergraduate Programme leading to Bachelor of Computer Applications (BCA) degree in year 2000 on a higher payment basis. In the last 17 years, since its inception, the programme has earned a very good reputation in the state of Gujarat and is regarded as the most advanced BCA programme in this part of the country. From year 2010 the BCA programme has been restructured according to Choice Based Credit System (CBCS). **From the current academic year, the department introduces Bachelor of Computer Application (Honours) Programme of 4 years duration as per NEP 2020.**

In year 2017 Faculty of Science introduced M. Sc. Information Technology, that is specially designed for the graduates in computer/IT discipline in CBCS pattern.

In order to provide the platform to strengthen the existing academic programs and to initiate and promote research activities in the field of Computer Applications, University established Department of Computer Applications through a senate resolution in 2013. The aims and objectives of this department are given below:

- ❖ To provide platform to strengthen the existing two academic programmes and to start new programmes in the field of computer applications.
- ❖ To undertake and promote research activities in computer applications and related areas. To obtain grants from funding agencies for various academic/ research initiatives.
- ❖ To support the education of computer science in the faculty as well as University.
- ❖ Intends to support development and maintenance of software intensive systems for automation of services and operations of Faculty and University.

ADMISSION PROCEDURE

All the interested students must register themselves on the Gujarat government site for common registration for UG/PG/Ph.D. programmes. **The link is <http://gcas.gujgov.edu.in>.** *The Registration and choice filling starts on April 1st 2024.*

They must select “The Maharaja Sayajirao University of Baroda- Faculty of Science- Bachelor of Computer Applications”.

Candidates are also required to apply for entrance test **by visiting the link <https://admission.msubaroda.ac.in>.**

Only those students who have registered on the above Gujarat government portal and also registered for entrance test for Bachelors in Computer Applications program on the MSU admission portal will be eligible for appearing in the entrance exam. The date and time for the entrance examination will be declared on the University site in due course of time. The entrance test will be held at The M S University of Baroda in offline mode only.

The Registration and choice filling starts on April 1st 2024.

The candidate must follow the steps mentioned on the GCAS portal.

Step 1: Registration with profile filling.

Step 2: Choice selection of College/Department as well as Course/courses.

Step 3: Complete marks filling and online payment of registration fees within 2 weeks after declaration of results by GSHSEB and submit the final application on the GCAS portal.

- Step 4: Verification of all the original documents at nearest Government designated Help Centers within 3 weeks after declaration of the GSHSEB-HSC RESULT.
- Step 5: Eligible students must appear for the Entrance test conducted by the Department of Computer Applications, Faculty of Science, The M. S. University of Baroda.
- Step 6: Declaration of provisional merit list as per government rules.
- Step 7: Any Grievances regarding provisional merit list must be reported within 2 days of declaration of provisional merit list to the grievance cell of The M S University of Baroda.
- Step 8: Final merit list and allotment of colleges/universities for the admission will be declared as per government rules.
- Step 9: Payment of fees within 2 days of declaration of final admission list as per the instructions by University.
- Step 10: After expiry of 2 days meant for fee payment, subsequent Admission list will be declared based on the vacant seats in respective categories. Admission will be confirmed only after completion of the entire admission process including fee payment.

The application form is to be filled online only. A student willing to apply for more than one bachelor Programs should submit separate application for each and the application form fee in such cases will have to be paid separately for each course/program. The students who have applied and fulfill the criteria of minimum qualifications for eligibility can appear in the entrance examination. A written Entrance Test will be conducted for deciding admission to each programme. The admissions will be strictly based on the merit of marks obtained in written Entrance Test.

Maximum intake

220 (including 20 seats for EWS) + 20 Seats for NRI Sponsored/Special Category at Department of Computer Applications, Faculty of Science.

Course Name	Sanc. seats	PH- 5%	Ex- Serviceman - 1%	Kashmir Migrants- 1%	Gen- 51%	SC- 7%	ST- 15%	SEBC - 27%	Supernumeric Seats- EWS	EWS- Female- 33%
Bachelor of Computer Application	200	10	2	2	102	14	30	54	20	7
BCA-Special	20	1	0	0	10	1	3	5	0	0

ELIGIBILITY CRITERIA

Following eligibility criteria is to be fulfilled:

1. A candidate must have successfully passed H.S.C. (General/ Science/ Vocational) Examination or equivalent examination in the current academic year or up to three years prior to the current academic year with regular mode and having **English** as one of the subjects.

The minimum marks/ grade points in qualifying examination shall be as follows:

i. For General category candidates

40% or equivalent grade points and 5% relaxation for SEBC candidate

ii. For SC/ST candidates

Must have passed qualifying examination.

2. Candidates who have appeared for final year of the qualifying examination may also apply and appear in the Entrance Test. However, their admission will be confirmed only on the submitting original marksheet of the qualifying examination and fulfillment of eligibility requirement, at the time of Admission.

CRITERIA FOR CASTE-WISE RESERVATION AND OTHER QUOTA

Government of Gujarat rules for the reservation quota will be applied: SC: 7%, ST: 15%, SEBC: 27%, General: 51%. All original certificates should be produced at the time of document verification and admission.

- a) If any relevant certificate is not produced at the time of admission, the student will NOT be considered for particular reservation category.

A student, irrespective of her/his reservation category, for admission, will be first considered for GENERAL category.

- b) The **SC and ST students of other than the Gujarat state** should produce a certificate from competent authority of Government of Gujarat if their original certificate DO NOT indicate that their caste / Tribe is recognized under such category in Gujarat also.
- c) The **SEBC category** are required to produce a valid **non creamy layer certificate** from competent authority (**The issue date of non creamy layer certificate should not be later then the last date of application. Please note that non creamy layer certificate is valid for only 3 years from the last date of application**).
- d) There will be **10 %** supernumerary seat (**additional seats over and above the total number of seats**) reservation of the total seats (200) for **Economically Weaker Sections (EWS)**. Within this 10% quota, **33%** seats shall be further sub-reserved for female students belonging to the same Economically Weaker Sections (**The issue date of EWS certificate should not be later then the last date of application**).
- e) **Reservation for physically disabled students: 5%** seats of the total seats (to be included under each different category with in the limit of total reservation under a particular reservation category like SC/ST/SEBC/GEN) are reserved for the persons with benchmark disability in accordance with the provisions of the section 32 of the rights of persons with Disabilities ACT, 2016. They should produce a **current/recent year certificate of Civil Surgeon** stating the type of disability, extent (%) of disability and state (Progressive/ non-progressive) of disability. Only those students who have **minimum 40% disability** are eligible to be considered for the reservation.
- f) **Reservation for Defence & Ex/In- Servicemen: 1%** seats of the total seats (to be included under each different category with in the limit of total reservation under a particular reservation category like SC/ST/SEBC/GEN) are reserved for wards of Defence & Ex/In-Servicemen.
- g) **Reservation for Kashmiri Migrants: 1% of General seat reservation quota.**
- h) **Advantage to Sports Persons:** Please note that the benefit to sports persons is granted **ONLY** if the student has participated/ awarded medals in State level or higher level competitions.
- Students who participated at State level: **3%** marks to be added to their eligibility marks
 - Students who won medal at State level or participated at National level: **5%** marks to be added to their eligibility marks
 - Students who have won medal at National level or participated / won medal at International level granted **direct admission**.
- i) If the **seats remain vacant** after stipulated admission rounds in the SC or ST reservation categories, then these seats can be **interchanged** among SC and ST.
- j) After granting admission to all the students of any reserve category on respective

reserve seats, if the reserved category seats remain vacant then these seats shall be transferred to General (Unreserved) category seats.

Supernumerary seats which remain vacant shall NOT be transferred to any other category.

Admission Fees is to be paid through online mode only.
CASH/CHEQUE OR ANY OTHER MODE OF TRANSACTION
NOT ACCEPTED

INSTRUCTIONS TO THE CANDIDATES

1. **The admissions will be strictly based on the merit of the entrance test.** Just fulfilling the eligibility criteria DOES NOT GUARANTEE admission.
2. The admission to the course is PROVISIONAL and subjected to various scrutinies till the unique Permanent Registration Number (PRN) of the candidate is generated.
3. **If the information provided by the candidate is incorrect or if any unfair practice is followed or the candidate is unable to submit any of the required certificates in the stipulated time period, his/ her admission is liable to cancellation.**
4. **Maintenance of Stipulated Attendance of Students (Ordinance 183)** The following shall be the minimum attendance necessary:
 - a. In a semester an overall attendance of **at least 80%** of the number of lectures delivered and tutorials, seminars etc. arranged in all subjects.
 - b. In a semester an overall attendance of **at least 80%** of the days allotted for practical classes and laboratory work in each subject.
5. General rules governing the conduct of students in the university:
 - i. A student must do nothing either inside or outside the University that will interfere with its orderly working and discipline.
 - ii. This comprehensive rule covers most cases that are likely to arise. It forbids:
 - a. Impolite or unseemly behavior in classroom or University premises during working hours of the College and the Faculty.
 - b. Attempt to persuade other students to abstain themselves from regular classes.
 - c. Damage to or defacement of University furniture, fittings and property.
 - d. Disobedience of notifications or instructions issued by the Principals/Deans/Heads of the Departments and Members of the staff duly authorized.

- iii. As per UGC regulation, stipulated attendance (Ordinance 183) is required for permitting students to appear for final examination. If unavoidably absent on account of health, urgent private affairs or other reasons, they must be prepared to state the exact reason for absence.
- iv. Students are expected to behave with courtesy towards the members of the staff, their fellow students and all visitors to the Institution.
- v. Sexual harassment will lead to severe punishments like suspension, rustication from the University / College/ Institution. Disciplinary action is as prescribed under The M. S. University of Baroda rules.
- vi. Ragging is prohibited on MSU Campus, ragging is a criminal offence and is liable to severe punishment, including suspension, rustication and imprisonment.
- vii. **Compulsory Thalassemia Blood Screening:** Thalassemia blood testing is made compulsory by Government of Gujarat. Final Eligibility of any student for admission to any course to this University will be granted ONLY after she/ he submits report of the Thalassemia blood screening. Students are encouraged to get the test done and submit the report at the time of Admission. Those students, who already have a Thalassemia Test Report done earlier, need not get it done again. They can submit copy of earlier report.

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GRADE POINT SYSTEM

- A system comprising of 7 grade points (4 to 10) will be followed for evaluating a candidate in every course. Both mid-semester and end-semester exams are counted for final grade points.

Grade Points	Description	Percentage of Marks	Division/Grade	Range
10	Outstanding	90% - 99%	First / O	Above 9.01
9	Excellent	80% - 89%	First / A	8.01 – 9.00
8	Very Good	70% - 79%	First / B	7.01 – 8.00
7	Good	60% - 69%	First / C	6.01 – 7.00
6	Fair	50% - 59%	Second /D	5.01 – 6.00
5	Average	40% - 49%	Pass / E	4.01 – 5.00
4 – 0	Dropped	Below 40%	F	Below 4.00

CGPA	Class
CGPA < 4	Fail
4 = CGPA < 5	Pass Class
5 = CGPA < 6	2nd Class
6 = CGPA < 7	1st Class
CGPA ≥ 7	Distinction

Grade Point Average = $\sum (\text{Credit} \times \text{Grade Point}) / \text{Total Credits}$

AWARD OF CLASS

Marks-sheets of semester I to VII of BCA (Honours) will simply indicate result as either Pass or Fail or ATKT but not the class which will be indicated in the last Semester mark sheet.

Cumulative Grade Point Average (CGPA) is computed as:

CGPA = $\sum (\text{Semester credits} \times \text{GPA}) / \text{Total Semester Credits}$

The sum is taken over from Sem-I to Sem-VIII for BCA

CRITERION FOR BCA (Honours) DEGREE AWARD

For obtaining BCA (Honours) degree (New pattern as per NEP 2020), a candidate has to earn a total of 176 credits during the programme.

Syllabus for the Entrance Test

- I. The question paper of the entrance test will be in English and Gujarati languages.
Candidates will be allowed to answer in either language.
- II. All questions will be of multiple-choice type.
- III. There is negative marking. Each correctly answered question carries 2 marks, and wrongly answered question carries – 0.5 marks.

The syllabus for the entrance test would be as follows:

Section	Syllabus	Weightage
Aptitude	Ratio-Proportion, Trigonometry, Height & distances, Area-Volume, HCF & LCM , Profit and Loss , Averages, Roots & Percentages, Partnerships, Simple Interest and Compound Interest, Time and Distance	25
Logical Reasoning	Series Completion, Coding and Decoding, Blood Relation, Analogy	25
English Language	Synonyms and Antonyms, Fill in blanks, comprehension, Sentence Correction	15
Computer Awareness	MS Office (Word, Excel, PowerPoint), Internet Basics, basics of hardware and software	20
General Awareness		15
Marks		100

Sample Question Paper

1.	In the game of Hockey, each team has ____ players on the field at any one time A) 11 B) 13 C) 9 D) 10
2.	The average of 11, 23, K is 40, the value of K is A) 86 B) 35 C) 120 D) 12
3.	From what location are the 1st computer instructions available on boot up? A)ROM BIOS B)boot.ini C) CPU D) CONFIG.SYS
4.	The LCM of 24, 39, 60 and 150 is A) 7800 B) 15600 C) 3900 D) 5200
5.	Wimbledon is associated with A) Football B) Basketball C) Tennis D) Cricket
6.	In a certain code KNIFE is written as \$3%#5 and LAKE is written as 7@\$5. How is FAIL written in that code? A) %\$#7 B) \$@%7 C) #@%7 D) \$% @7
7.	A train travels 82.6 km/hour. How many meters will it travel in 15 minutes? A) 20.65 B) 2065 C) 206.50 D) 20650
8.	Who was known as Iron man of India? A)Govind Ballabh Pant B)Jawaharlal Nehru C) Jawaharlal Nehru D) Sardar Vallabhbhai Patel
9.	The brain of any computer system is A)ALU B)CPU C)Memory D)control unit
10.	$(95.6 \times 910.3) \div 92.56256 = 9?$ A) 13.14 B) 12.43 C) 12.96 D) 13.34
11.	Insert the missing number 857, 969, 745, 1193 , ? A) 2093 B) 1400 C) 297 D) 2089
12.	Nothing happened at the meeting, _____ it? A)didn't B)did C)does D)do
13.	We a lovely three weeks in the south of Spain last year. A)Took B)spent C)did D)passed
14	SKEPTICAL : DOUBT A) Resolute : Determination

	B) Pristine : Grace C) Tainted : Honour D) Stringent : Suggestions
15	75% of 48 is A) 64 B) 36 C) 48 D) 0.36
16	Did you remember _____ the parcels? A)post B)posting C)to post D)posted
17	Landscape is? A) A font style B)Page Layout C) Paper Size D)Page Orientation
18	The Student _____not reach on time _____of the transport strike. can-as A) could-because B) will-despite C) may-account D) should-for
19	What is the theme of 2016 World Health Day (WHD)? A)Healthy heart beat, Healthy blood pressure B)Beat Diabetes C)Healthy blood pressure D)Save lives: Make hospitals safe in emergencies
20	Which is not a font style? A)Bold B)Italic C)Superscript D)Regular

Written Test

Date and Time : Visit the GCAS portal and university website

Maximum Marks : 100 marks

Note:

- 1. Candidate must visit the University website for the date and time of Entrance test.**
- 2. There will be 25% negative marking for wrong answers.**
- 3. The entrance examination would be conducted through OMR sheet in OFFLINE mode.**
- 4. Candidates must reach the exam venue with all the relevant documents well in advance to avoid last time rush and to ease the formalities.**

Outline of the 4 Years BCA (Honours)* Programme (As per NEP 2020 Pattern)

(For the Academic Year 2024-25 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	Fundamentals of Computers and PC Tools and Programming with Python Lab	Minor (DSC) Lab		2+2	4
BCAXXX	Foundational Mathematics (Linear Algebra and Calculus)	MDC	4		4
BCAXXX	Fundamentals of Language and Communication	AEC*	2	0	2
BCAXXX	Essentials of Technical Communication Skills	AEC*	1	1	2
BCAXXX	Fundamentals of Public Speaking	AEC*	2	0	2
BCAXXX	Essentials of Personality Development	AEC*	2	0	2
BCAXXX	Introduction to Human Values	AEC*	2	0	2
BCAXXX	Digital Electronics	SEC	2		2
BCAXXX	Environmental Studies	IKS- I*	2		2
BCAXXX	The Constitution of India	IKS- I*	2		2
Total Credits			17	5	22

* Selection of only one course under IKS- I and AEC is allowed.

Semester-II

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Programming with C and C++	Major (DSC)	3	1	4
BCAXXX	Database Management Systems	Major (DSC)	3	1	4
BCAXXX	Computer Organization and Architecture	Minor (DSE)	3	1	4
BCAXXX	Discrete Mathematical Structures	MDC	4		4
BCAXXX	Developing Communication Skills in English	AEC*	2	0	2
BCAXXX	Mastering Technical Communication Skills	AEC*	2	0	2
BCAXXX	Improving Public Speaking Skills	AEC*	2	0	2
BCAXXX	Strategies for Personality Development	AEC*	2	0	2
BCAXXX	Professional Ethics and Human Values	AEC*	2	0	2
BCAXXX	Exploratory Data Analysis	SEC	1	1	2
BCAXXX	Disaster Management	VAC- I*	2		2
BCAXXX	Cyber Law and Ethics	VAC- I*	2		2
BCAXXX	Human Values and Ethics	VAC- I*	2		2
Total Credits			17	5	22

* Selection of only one course under VAC-I and AEC is allowed.

Semester-III

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Data Structures and Algorithms with C and C++	Major (DSC)	3	1	4
BCAXXX	Client-Side Web Development	Major (DSC)	3	1	4
BCAXXX	Operating Systems	Major (DSC)	3	1	4
BCAXXX	Introduction to Psychology	MDC*	3	1	4
BCAXXX	Business Economics	MDC*	3	1	4
BCAXXX	Introduction to Financial Accounting	MDC*	3	1	4
BCAXXX	To be selected from AEC pool of the university	AEC	2		2
BCAXXX	Personality Development	SEC*	1	1	2
BCAXXX	IT Skills & Data Analysis	SEC*		2	2
BCAXXX	Health & Wellness, Yoga Education, Sports and Fitness	IKS- II*	1	1	2
BCAXXX	E-Waste Management	IKS- II*	2		2
BCAXXX	Natural Resource Management	IKS- II*	2		2
BCAXXX	Traditional Knowledge Intellectual Property and People's Right	IKS- II*	2		2
Total Credits			15/18	7/6	22

* Selection of only one course under IKS-II, SEC and MDC is allowed.

Semester-IV

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Fundamentals of Software Engineering	Major (DSC)	3	1	4
BCAXXX	Data Communication and Computer Networks	Major (DSC)	3	1	4
BCAXXX	Object Oriented Programming with Java	Major (DSC)*	3	1	4
BCAXXX	Programming with .NET Framework and C#	Major (DSC)*	3	1	4
BCAXXX	Server-Side Web Development	Minor (DSE)	3	1	4
BCAXXX	To be selected from AEC pool of the university	AEC	2		2
BCAXXX	Career Skills	SEC*	1	1	2
BCAXXX	Information Literacy	SEC*	1	1	2
BCAXXX	Oratory Skills in English Language and Leadership	VAC- II*	1	1	2
BCAXXX	Fundamentals of Carbon Neutrality	VAC- II*	2		2
BCAXXX	Constitutional Values and Fundamental Duties	VAC- II*	2		2
Total Credits			17/18	4/5	22

* Selection of only one course under Major (DSC), Minor (DSE), SEC and VAC- II is allowed.

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	Computer Graphics and Animation	Minor (DSE)- I*	3	1	4
BCAXXX	Software Project Management	Minor (DSE)- I*	3	1	4
BCAXXX	Microprocessor and Interfacing	Minor (DSE)- I*	3	1	4
BCAXXX	Cryptography and Network Security	Minor (DSE)- I*	3	1	4
BCAXXX	Linux System Administration	Minor (DSE)- I*	3	1	4
BCAXXX	Software Architecture	Minor (DSE)- I*	3	1	4
BCAXXX	Augmented Reality and Virtual Reality	Minor (DSE)- I*	3	1	4
BCAXXX	Agile Methodologies	Minor (DSE)- I*	3	1	4
BCAXXX	Embedded System Design	Minor (DSE)- I*	3	1	4
BCAXXX	Management Information Systems and E-Commerce	Minor (DSE)- I*	3	1	4
BCAXXX	NoSQL Databases	Minor (DSE)- I*	3	1	4
BCAXXX	Software Defined Networks	Minor (DSE)- I*	3	1	4
BCAXXX	Software Testing and Quality Assurance	Minor (DSE)- I*	3	1	4
BCAXXX	Advanced Python	Minor (DSE)- II*	3	1	4
BCAXXX	Advanced Java Technologies	Minor (DSE)- II*	3	1	4
BCAXXX	Advanced Programming with .NET Framework and C#	Minor (DSE)- II*	3	1	4
BCAXXX	Programming with Go	Minor (DSE)- II*	3	1	4
BCAXXX	Programming with Rust	Minor (DSE)- II*	3	1	4
BCAXXX	Introduction to Statistical Analysis using R	Minor (DSE)- II*	3	1	4
BCAXXX	Innovation and Entrepreneurships	SEC *	1	1	2
BCAXXX	Critical and Logical Thinking Development	SEC *	1	1	2
Total Credits			17	5	22

* Selection of only one course under Minor DSE- I, and Minor DSE- II is allowed.

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)	3	1	4
BCAXXX	Mobile Application Development with React Native	Major (DSC)	3	1	4
BCAXXX	Web Development with React and Node.js	Minor (DSE)- III*	3	1	4
BCAXXX	Full Stack Java Development and Spring Boot	Minor (DSE)- III*	3	1	4
BCAXXX	Network Programming	Minor (DSE)- III*	3	1	4
BCAXXX	Multimedia Systems and Applications	Minor (DSE)- III*	3	1	4
BCAXXX	Secure Coding	Minor (DSE)- III*	3	1	4
BCAXXX	To be selected from AEC pool of the university	AEC	2		2
BCAXXX	Internship/ Summer Internship	Internship **	1	3	4
Total Credits			15	7	22

* Selection of only one course under Minor DSE- III is allowed.

** Students can undergo Summer Internship in the summer vacation after their IVth OR VIth Semester.

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	Blockchain Technology and Applications	Major (DSC)	3	1	4
BCAXXX	Game Development using Unity 3D	Minor (DSE) – IV*	3	1	4
BCAXXX	Systems Programming	Minor (DSE) – IV*	3	1	4
BCAXXX	Soft Computing	Minor (DSE) – IV*	3	1	4
BCAXXX	Quantum Computing	Minor (DSE) – IV*	3	1	4
BCAXXX	Advanced Algorithms	Minor (DSE) – IV*	3	1	4
BCAXXX	Automata Theory and Compiler Design	Minor (DSE) – IV*	3	1	4
BCAXXX	Parallel Programming	Minor (DSE) – IV*	3	1	4
BCAXXX	Real Time Systems	Minor (DSE) – IV*	3	1	4
BCAXXX	Swarm Intelligence and Nature Inspired Computation	Minor (DSE) – IV*	3	1	4
BCAXXX	Information Theory and Coding	Minor (DSE) – IV*	3	1	4
BCAXXX	Semantic Web	Minor (DSE) – IV*	3	1	4
BCAXXX	Introduction to DevOps	Minor (DSE) – IV*	3	1	4
BCAXXX	Cloud Native Applications and Micro-services	Minor (DSE) – IV*	3	1	4
BCAXXX	Industrial Project	OJT	1	5	6
Total Credits			13	9	22

* Selection of only one course under Minor DSE- IV is allowed.

Semester-VIII

Course Code	Course Title	Course Type	L	P	Credits
BCAXXX	Advance practices-I (DSE-V)	Major (DSE)	3	1	4
BCAXXX	Advance practices-II(DSE-VI)	Major (DSE)	3	1	4
BCAXXX	Big Data Analytics	Major (DSE)- V*	3	1	4
BCAXXX	Internet of Things	Major (DSE)- V*	3	1	4
BCAXXX	Mobile Application Development	Major (DSE)- V*	3	1	4
BCAXXX	Deep Learning	Major (DSE)- V*	3	1	4
BCAXXX	Angular JS	Major (DSE)- V*	3	1	4
BCAXXX	React JS	Major (DSE)- V*	3	1	4
BCAXXX	Power BI	Major (DSE)- V*	3	1	4
BCAXXX	Human Computer Interaction	Minor (DSE)- VI*	3	1	4
BCAXXX	System Modelling and Simulation	Minor (DSE)- VI*	3	1	4
BCAXXX	Mobile Computing and Wireless Communications	Minor (DSE)- VI*	3	1	4
BCAXXX	Digital Image Processing with MATLAB	Minor (DSE)- VI*	3	1	4
BCAXXX	Natural Language Processing	Minor (DSE)- VI*	3	1	4
BCAXXX	Reinforcement Learning	Minor (DSE)- VI*	3	1	4
BCAXXX	Generative AI	Minor (DSE)- VI*	3	1	4
BCAXXX	Data Warehousing and Business Intelligence	Minor (DSE)- VI*	3	1	4
BCAXXX	Industrial Project	OJT	1	5	6
Total Credits			13	9	22

* Selection of only one course under Minor DSEV- and Minor DSE- VI is allowed.

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

Semester	Major	Minor	MDC	AEC	SEC	VAC/IKS	OJT/RP	Total Credits
	(DSC/E)	(DSC/E)						
I	8	4	4	2	2	2	-	22
II	8	4	4	2	2	2	-	22
III	12	0	4	2	2	2	-	22
IV	12	4	-	2	2	2	-	22
V	12	8	-	-	2	-	-	22
VI	12	4	-	2	4	-	-	22
VII	12	4					6	22
VIII	12	4					6	22
TOTAL	88	32	12	10	14	8	12	176
Total (%)	50.00	18.18	6.82	5.68	7.95	4.55	6.82	100.00

Legends

- 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)
- Indian Knowledge System (IKS)
- On Job Training (OJT)
- Research Project (RP)/Internship
- Theory/Practical

*Subject to modifications by the University

Regulations for 4 year BCA (Honours) Degree Program (For Academic year 2023-24 onwards)

(As per New Education Policy 2020)

Department of Computer Applications is offering a BCA (Honours) programme of 4-year duration with multiple entry and exit points and re-entry options as per New Education Policy 2020. This 4-year BCA programme requires a minimum 176 credits to earn by the students to complete this program.

1. Maximum duration of a programme (ATKT Rules)

Maximum duration for completion of BCA (Honours) program will be 7 years.

Note: To progress to the 3rd Semester of BCA, students need to pass all the examinations of 1st Semester. Similarly, to progress to 5th Semester of BCA, students need to pass all the examinations till 3rd Semester and to progress to 7th Semester of BCA, students need to pass all the examinations till 5th Semester.

2. Awarding Certificates, Diplomas and Degrees

Certificate in Computer Application: Students who opt to exit after completion of the first year and have secured 44 credits will be awarded the Certificate in Computer Application. Thus, for example, if a student of BCA(Honours) programme opts to exit after successful completion of the first year, the student will be awarded “Certificate in Computer Application”.

Diploma in Computer Application: Students who opt to exit after completion of the second year and have secured 88 credits will be awarded the Diploma in Computer Application in the principal discipline. Thus, for example, if a student of BCA programme opts to exit after successful completion of two years, the student will be awarded Diploma in Computer Application.

Bachelor of Computer Application: Students of 3-year BCA programme who successfully complete 3 years, OR a student of 4-year BCA programme who opts to exit after completion of the third year and have secured 132 credits will be awarded the Bachelor of Computer Application.

Bachelor of Computer Application (Honours): Students of 4-year BCA (Honours) programme who successfully complete 4 years and secured 176 Credits will be awarded the Bachelor of Computer Application (Honours).

The following table summarizes the **Credit Requirement for Exit** from 4-year BCA (Honours) programme -

Year	Semester	Credits	Degree Awarded	Stage of Exit	Mandatory Credits to be secured for the Award
1	I	22	Certificate in Computer Application	After successful completion of 1 st Year	44
	II	22			
2	III	22	Diploma in Computer Application	After successful completion of 1 st and 2 nd Years	88
	IV	22			
3	V	22	Bachelor of Computer Application	After successful completion of 1 st , 2 nd and 3 rd Years	132
	VI	22			
4	VII	22	Bachelor of Computer Application (Honours)	After successful completion of 1 st , 2 nd , 3 rd and 4 th Years	176
	VIII	22			

3. Re-entry Option

A student who has opted to exit before the successful completion of a BCA (Honours) programme will have an option to re-enter the programme within three years and complete the programme within the stipulated maximum period for the programme.

A student can avail Re-entry option only once during the tenure of the programme.

4. Break from the study

Students may be permitted to take a break from the study during the period of the programme but the total duration for completing the program shall not exceed the maximum duration of the programme.

5. Credit-hours for different types of courses

A course offered in a program can be a theory course/ laboratory course/ a combination of theory, tutorial, and laboratory course/ field work/ workshop/ seminar/ internship/ project/ dissertation.

- Theory Course: 15 hours of teaching per credit
- Tutorial: 15 hours of engagement per credit
- Laboratory course/ Field Work/ Workshop : 30 Hours of activities per credit.
- Seminars: 15 hours of participation in seminar activity per credit in a semester.
- Internship/Project/ Dissertation: These are the full time courses requiring a student to carry out 7-8 hours of activity per day.

6. Online Courses

Students are allowed to earn credits through online/ MOOC courses approved by the Departments as per the University regulations under MDC, AEC, and VAC courses.

7. Evaluation

The components of assessment and their weightage for different type of courses will be as given below.

Evaluation Method	Theory	Laboratory/ Skill enhancement	AEC/ VAC Courses	Internship/ Project/ Dissertation	Seminar	Viva
Internal written test	-	-	-	-	-	-
External/ Semester-end written test	50	-	-	-	-	-
Continuous evaluation*	50	100	100	30	-	-
Presentations	-	-	-	20	100	-
Reports/ Dissertation	-	-	-	30	-	-
Viva-Voce	-	-	-	20	-	100
Total	100	100	100	100		100

Facilities

The Faculty

The experienced teachers from the university and professionals from the IT industry are involved in teaching the courses. This help in providing the academic excellence with professional expertise to the students of the programme. In addition the reputed personalities from all over the country will be invited to deliver lectures from time to time.

Computer Laboratory

Well-equipped computer laboratories are available to the students of the BCA programme. All the computers in these laboratories have high configuration and are connected to a LAN, which provides a networked environment to the students. A wireless access to the network is also available through Wi-Fi. Qualified instructors give the practical training. The laboratory contains all necessary software, and audio-visual teaching aids to impart the training more effectively.

The Internet facility with high bandwidth is also available to the students at no extra cost so that they can have an access to the unlimited wealth of information on the net.

Library

The students have an access to the University Library, which is one of the biggest libraries in the country. The library contains a large number of books and journals, and excellent reading room facility. The library also subscribes a large number of periodicals on various subjects. In addition to this, a separate library with reading room is available for the BCA students having large number of books, which contains all the prescribed books as well as large number of specialized reference books on various aspects of information technology. This library also subscribes important periodicals in the subject to keep the students abreast with latest happenings in the field.

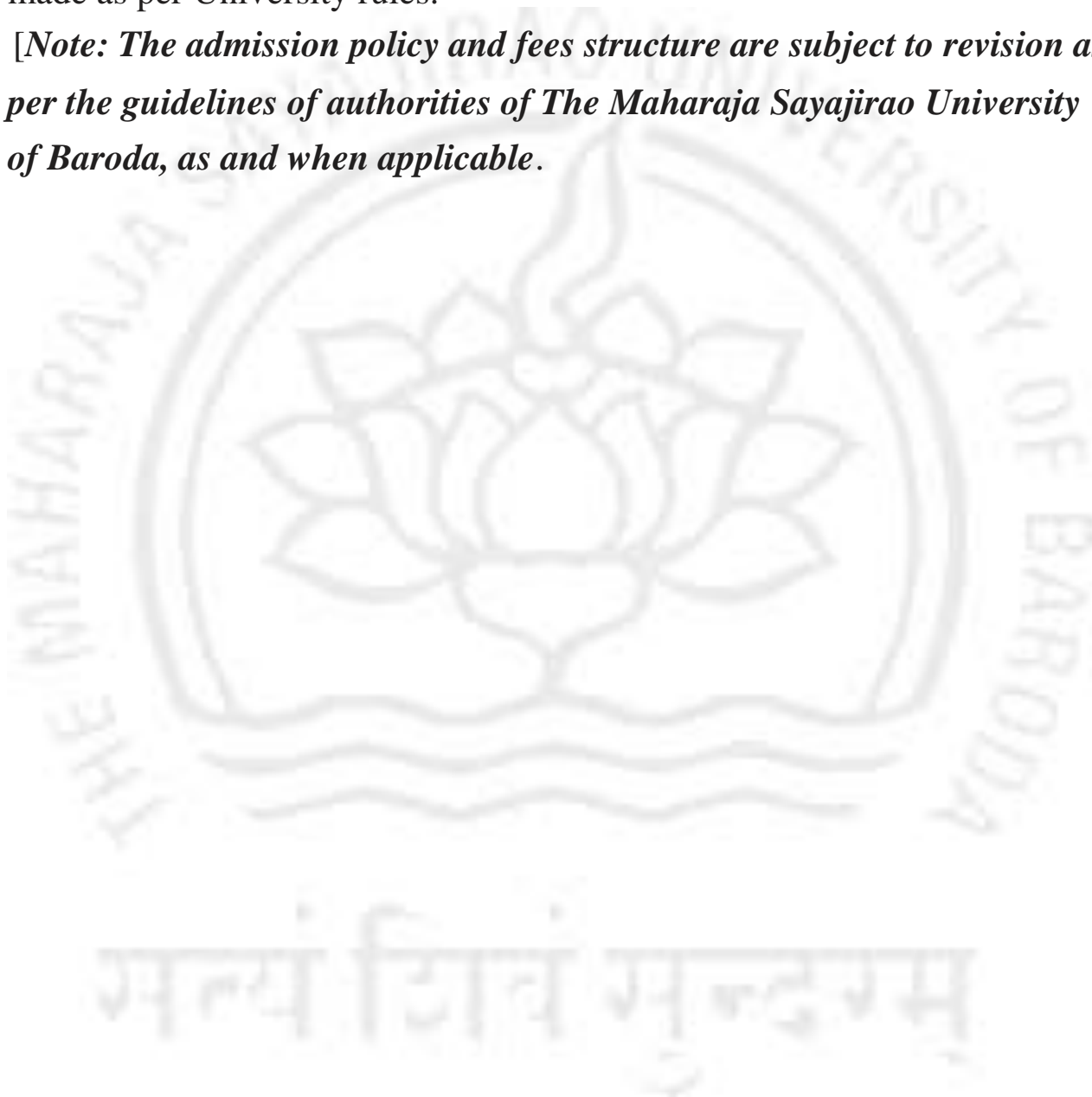
Tentative Fee Structure

Category	Annual Fee (Rs.) **	Semester Exam Fee (Rs.)	Faculty/University Development & Maintenance Fund (Rs.)
Higher General Payment	47640/-	As Per University Rules	As Per University Rules
Special	1,09,040/-		

****This is tentative fee structure and is likely to be revised by the university.**

Refund of Fee On cancellation of admission, the refund of the fees will be made as per University rules.

[Note: The admission policy and fees structure are subject to revision as per the guidelines of authorities of The Maharaja Sayajirao University of Baroda, as and when applicable.]



Activities

Seminars/ Workshops

ETCA 2020: National Seminar on Emerging Trends in Computer Applications



ETCA 2020 (National Seminar) on Emerging Trends in Computer Applications was organized by the Department during 28th & 29th February 2020. The Key Note Speaker was Prof. Manindra Agrawal, Dy. Director IIT Kanpur, along with various other eminent speakers.

Cyberia

Cyberia: Unleash the geek within

Cyberia provides an arena for the youth of today and serve as a platform to exhibit their technical acumen to the world and compete with like-minded peers thus strengthen & enhance their technical skills to be future-proofed for their I.T careers. It is not an event, it is an experience which gives you a taste of the current cyber world.



Science Week

The science week and open house was celebrated in the DCA on Science Day. The students had participated in the events with the great enthusiasm. Several events were organized such as Bug Hunt, Sketch Code and Game/Quiz as well as Technical Video Shows is there. Whole department was decorated by the students on the theme of Science and Technology and it was observed that students have very good creative talent to reveal. It included making watch from the scrap material like e-waste, making decorative objects based on the concepts of information technology and also Rangoli were drawn by the students which are also appreciated by the eminent personalities of the university.



Student's Progression

The students who have passed BCA and M.Sc (IT), from here are placed in many reputed organizations of India, as well as abroad. Some of them are listed here:

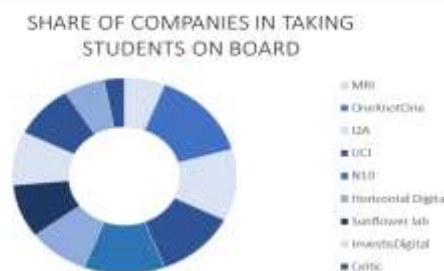
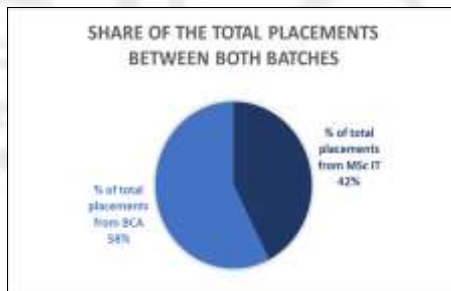
Minebrat private limited, GeekConnects Technologies, Codemaster, Narola Infotech, Civica India Pvt. Ltd., ETech Global Services, Ajackus consultancy, Bank of America, Allscripts, BSPL, lauren information technologies pvt ltd, New Oceanic Hotel, Oracle, Techovarya solutions Pvt LTD, Bigscal Technologies Pvt Ltd, KMK Consulting Inc, Dots & Coms, alliancetek(us based company), Whitehar Jr(As professional course teaching expert), Alite Projects, continuum india pvt. Ltd.

Many students are opting to go abroad for further studies or research.

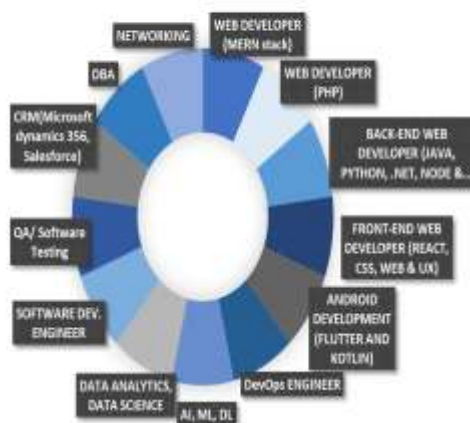


Student Placements

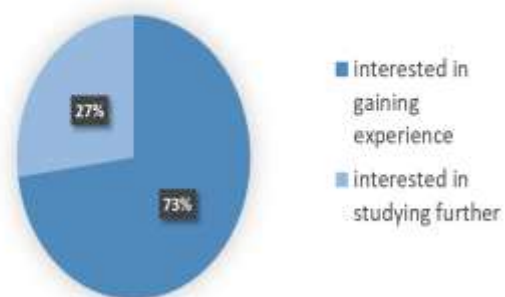
The key focus of the placement committee is to prepare students for their placement and internships. Keep in the students well prepared for what they are likely to face in the corporate world is the responsibility of every academic institute, and the team here at Department of Computer Applications, MSU takes every necessary step to train and guide the students. We are conducting training sessions of soft skills to enhance student's communication skills, group discussion, presentation skills and interview skills. Overall, these programs provided an insight in to the job domains and prepared the job aspirants to face the challenges of the future. The students were assigned mentors for guidance and a series of aptitude tests were conducted to improve the problem-solving skills.



SKILLS OF THE STUDENTS TRAINED AT THE DEPARTMENT



INCLINATION AND APTITUDE OF OUR STUDENTS



Website: www.msubaroda.ac.in
The M. S. University of Baroda Admission Portal
admission@msubaroda.ac.in

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The information contained herein is for general guidelines only.

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Dr. Hetal Roy, Dr. Arpita Desai: Teacher Supervisors

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Ms. Bharati M Pamnani, Dr. Rupal Shah: CBCS Coordinator

E-mail: cbscoordinator-science@msubaroda.ac.in

Office Superintendent: Mr. K M Damor

Ph: 0265 2795329 (office)

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सत्यं शिवं सुन्दरम्

“The full-blown lotus growing out of the lake symbolises the emergence of the mind and its triumph over matter. The flame rising from the center of the lotus is the flame of the human knowledge, spreading light and learning for the coming generations. The motto inscribed below the lotus defines the purpose and existence of life which is love of beauty, goodness and intellectual curiosity.”

महाराजा सयाजीराव विश्वविद्यालय गीत

अमे वडोदराना विद्यापीठना सपना सारवनारा
अमे ज्योत जलावी सृष्टी नवली सहसा सर्जनहारा.

अमे गगमकुसुम कर धरनारा
अमे मगन मगन थई फरनारा
अगन बाथ अमे भरनारा
अमे दैन्यतिमिरने हरनारा.

श्री सयाजी विद्यापीठना ज्ञानदीपने धरनारा
सत्यं शिवं सुन्दरम् नो मंत्र अनंतर भणनारा.

सयाजीराव महाराज