DEPARTMENT OF COMPUTER APPLICATIONS

FACULTY OF SCIENCE

M. Sc. Information Technology
Prospectus and Admission Guidelines
Academic Year 2023-24

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.
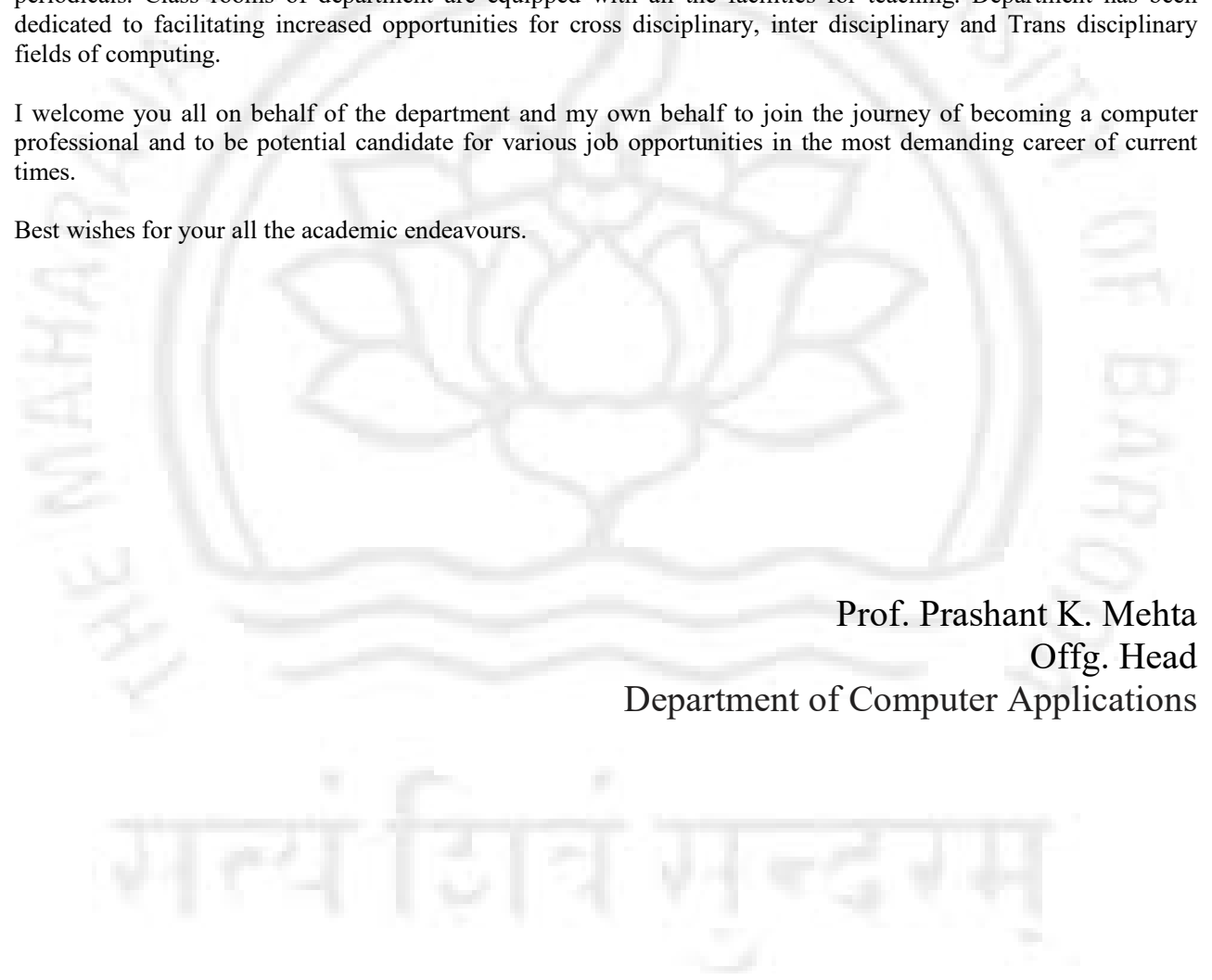
M. Sc. INFORMATION TECHNOLOGY PROGRAMME

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 three fully equipped computer laboratories with a total capacity of 120 computers. It has its own departmental library with a rich collection of book, 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 your all the academic endeavours.

Prof. Prashant K. Mehta
Offg. Head
Department of Computer Applications

SALIENT FEATURES OF M.Sc. IT

❖ It has a very rich content of syllabus which imparts a very good exposure of cutting edge technologies to the students so that they can pursue their career in corporate sector, Govt. and semi govt. organizations, teaching, research and PhD.

❖ Teaching methods for the program will be a combination of conceptual lectures, case study analysis and Practical with hands on projects.

❖ Continuous updating of the curriculum which is relevant to the current scenario and cater to the need of global IT business development.

❖ M.Sc. IT is A widely accepted programme for:
- Government Jobs
- Jobs in public and private sector companies
- Bank jobs
- Career in education/ teaching
- Research and Development sector
- IT Technical Assistant

❖ Many trending and unique courses are included in this programme like:
- E-Commerce
- Cyber Security
- Big Data Systems
- SMAC
- Data Analytics
- Digital Marketing

ADMISSION PROCEDURE

The application form is to be filled online only. A student willing to apply for more than one MSc Program 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 fulfil 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.**

INTAKE CAPACITY: 48 SEATS

ELIGIBILITY CRITERIA

The admission is based on the merit of entrance test only. To appear in **entrance test**, following **eligibility criteria** is to be fulfilled:

1. A student with B. Sc. or an equivalent degree (10+2+3 pattern of education) in the relevant subject from a university in any state or Union Territory of India or a global University/ Education Institution recognized by The Maharaja Sayajirao University of Baroda is eligible. The minimum marks/ grade points in qualifying examination shall be as follows:

   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 fulfilment of eligibility requirement, at the time of Admission.

3. Subject specific eligibility conditions (Other than the minimum eligibility criteria)
M. Sc. (Information Technology) Programme: A candidate fulfilling following conditions will be considered eligible for admission to M.Sc. Information Technology Programme:

Students from the discipline of B.C.A., B.Sc. in Information Technology/ Computer Science/ Computer Applications/ Mathematics/ Statistics/ Bioinformatics/ Information Science/Information Systems/ Electronics.

OR

BE in Information Technology/ Computer Engineering / Computer Science and Engineering/ Electronics and communication Engineering.

OR

Any graduate with PGDCA (Regular) Minimum 50% aggregate marks.

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.

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

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

a) The **SC and ST students of other than the Gujarat state** should produce a certificate from competent authority of Government of Gujarat <u>if their original certificate DO NOT indicate</u> that their caste / Tribeis recognized under such category in Gujarat also.

b) The **SEBC category** is required to produce a valid **non creamy layer certificate** from competent authority.

c) There will be **10 %** supernumerary seat **(additional seats over and above the total number of seats)** reservation of the total seats 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.

d) **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 **<u>current/recent year certificate of Civil Surgeon</u>** 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.

e) **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.

f) **Reservation for Kashmiri Migrants**: **1% supernumerary seat reservation quota (**Additional seats, **NOT** included under each different category with in the limit of total reservation under a particularreservation category like SC/ST/SEBC/GEN**)**.

g) **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.**
   i. Students who participated at State level: **3%** marks to be added to their eligibility marks
   ii. Students who won medal at State level or participated at National level: **5%** marks to be

added totheir eligibility marks

Students who have won medal at National level or participated / won medal at International level: to be granted **Direct admission**.

h) **Reservation for wards of MSU Staff: 01% supernumerary seat reservation quota (**Additional seats, **NOT** included under each different category with in the limit of total reservation under a particular reservation category like SC/ST/SEBC/GEN) **only in Regular Payment Fee Category** for the wards of the permanent or temporary employees of The Maharaja Sayajirao University of Baroda. They should produce relevant documents at the time of 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 PURELY TEMPORARY and subjected to various scrutiny 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. <u>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</u>. 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.

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/Gr Ade	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 = $\sum$ (Credit X Grade Point) / Total Credits

AWARD OF CLASS

Marks-sheets of semester I to III of M. Sc. 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 = ∑ (Semester credits X GPA) / Total Semester Credits
The sum is taken over from Sem-I to Sem-IV for M. Sc.

CRITERION FOR M.Sc. (IT) DEGREE AWARD

For obtaining M.Sc. (IT) degree in any subject, a candidate has to earn minimum 100 credits in allduring the programme.

Course Structure of M.Sc. (IT) Programme

Semester 1

	Course Name	T	P
MIT2109C01	Information Systems & Technologies	3	1
MIT2109C02	Software Engineering	3	0
MIT2111C03	Digital Communications & Networking	3	2
MIT2112C04	Web Technologies	3	2
MIT2112C05/MIT2114C06	Programming in Java/Programming in .Net	3	2
MIT2115C07	Finance and Accounting	3	0
		18	7
	Total		25

Semester 2

	Course Name	T	P
MIT2230C01	Networks and Switching	3	1
MIT2231C02	Platform Technologies	2	1
MIT2232C03	SMAC (Social Mobile Analytics & Cloud)	3	2
MIT2233C04	Introduction to Data Analysis	3	2
MIT2234C05	E-Commerce	3	1
MIT2246C07	Seminar		1
	Elective-I	2	1
		16	9
	Total		25

Semester 3

	Course Name	T	P
MIT2320C01	User Experience Design	2	1
MIT2321C02	Cyber Security	3	1
MIT2322C03	Big Data Systems	3	1
MIT2323C04	Internet of Things	3	1
MIT2324C05	IT Project Management	2	1
MIT2325C06/MIT2326C07	Advanced.Net/Advanced Java	3	2
	Elective II	2	0
		18	7
	Total		25

Semester 4

	Course Name	T	P
MIT2404C02	Industrial Project/Major Project (Live)	0	25
	Total		25

List of Electives

Elective-I

	Course Name	T	P
MIT2235E01	Information Security and Management	2	1
MIT2236E02	Integrated Systems Technologies	2	1
MIT2237E03	Virtual Systems and services	2	1
MIT2238E04	Database Design and administration	2	1
MIT2239E05	Web Application Architecture	2	1
MIT2240E06	Network Administration	2	1
MIT2240E07	Business Intelligence	2	1
MIT2241E08	Wireless Networks	2	1
MIT2242E09	Business Analytics	2	1
MIT2244E10	Digital Marketing	2	1

Elective-II

	Course Name	T	P
MIT2327E01	System integration and Architecture	2	0
MIT2328E02	System Administration	2	0
MIT2330E04	IT Risk Management	3	0
MIT2331E05	Enterprise Resource Planning	2	0
MIT2332E06	Digital Technologies	2	0
MIT2333E07	Knowledge Management	2	0

NATURE OF ENTRANCE TEST

Written test
The following will be the syllabus for the entrance test:

Mathematical foundations, Computer Oriented Numerical Methods, Operations Research, Computer Programming, Object Oriented Concepts, Data and File Structures, Software Engineering, Computer Organization, Operating system concepts, Database management systems, Networking, Network based application programming (including web technologies).

There will be total 100 questions all of which will be of multiple-choice type.

There is negative marking. Each correctly answered question carries 1 mark, and wrongly answered question carries – 0.25 marks.

Candidates are required to print Hall ticket and application form from the University website.
Hall ticket will be available only two days prior to entrance date.

MODEL QUESTION PAPER

Q.1. What will be the value of z for the following code?

```
int x = 7,y = 2;
float z;
z = x / y;
```

(A) 3   (B) 3.5

(C) 4   (D) 3.0

Q.2. Which of the following is not an important characteristic of an algorithm?

(A) Input   (B) Finiteness

(C) Controlled   (D) Definiteness

Q.3. If a super class method is implemented in subclass, it is called

(A) method overriding   (B) method overloading

(C) inheritance   (D) None of these

Q.4. Which of the following is not a database model?

(A) Relational Model   (B) Object Oriented Model

(C) Network Model   (D) Sequence Model

Q.5. Which of the following is true for a file processing system?

(A) Multiple copies of same data exist

(B) Multiple access problems cannot be handled

(C) Lack of Security

(D) All of the above

Q.6. Which of the following is most reliable topology?

(A) Bus   (B) Ring

(C) Star   (D) Mesh

Q.7. On which layer of OSI reference model do HTTP and FTP work?

(A) Application layer   (B) Session layer

(C) Transport   (D) Network layer

Q.8. Which technique is used to implement virtual memory?

(A) paging   (B) defragmentation

(B) partitioning   (D) None of these

Q.9. Which of the following is not a mobile operating system?

(A) UNIX   (B) Android

(C) iOS   (D) Symbian

Q.10. How a sentence "Some persons are arrogant" is represented in first order predicate logic?

(A) $\exists x$ (person(x) $\lor$ arrogant(x))   (B) $\forall x$ (person(x) $\rightarrow$ arrogant(x))

(C) $\exists x$ (person(x) $\land$ arrogant(x))   (D) $\exists x$ (arrogant(x) $\rightarrow$ person(x))

Q.11. Which of the following is a NULL set?

(A) $\{\Phi\}$ (B) { }

(C) Both (A) and (B)   (D) None of these

Q.12. Which component is suitable when multiple clients are required to handle independently and parallel at server?

(A) Servlet   (B) Socket

(C) JSP   (D) All of the above

Q.13. Which of the following is not a server side scripting language?

    (A) HTML   (B) ASP

    (C) CGI   (D) JSP

Q.14. What is usually the criteria of performance in an interactive operating system?

    (A) Response time   (B) Throughput

    (C) Execution time   (D) All of the above

Q.15. How many values can be held by an array A (-1..m, 1..m)

    (A) m   (B) m^2

    (C) m(m+2)   (D) m(m+1)

Written Test

Date   **: 26/06/2023**

Duration of the Written test   **: 1.30 hours**

Exam Time   **: 2:30 p.m. to 4:00 p.m.**

Maximum Marks   **: 100**

Note:

1. **The date of examination is tentative. Candidate must visit the University website for the confirmation of exam dates.**
2. **There will be 25% negative marking for wrong answers.**
3. **The entrance examination would be conducted through OMR sheet in OFFLINE mode.**

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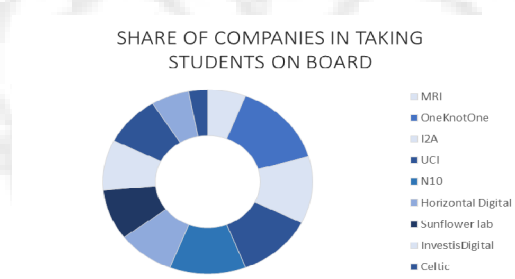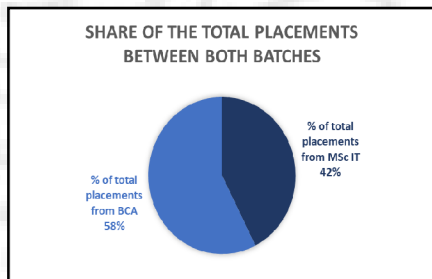
Minebrat private limited, GeekConnects Technologies, Codemaster, Narola Infotech, Civica India Pvt. Ltd., ETech Global Services, Ajackus consultancy, Bank of America, Allscripts, BSPL, lauren information technologies pvt ltd, New Oceanic Hotel, Oracle, Techovarya solutions Pvt LTD, Bigscal Technologies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

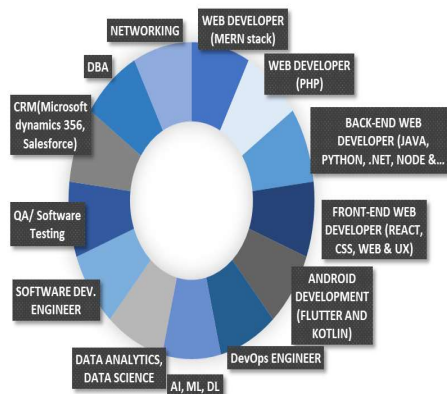Many students are opting to go abroad for further studies or research.
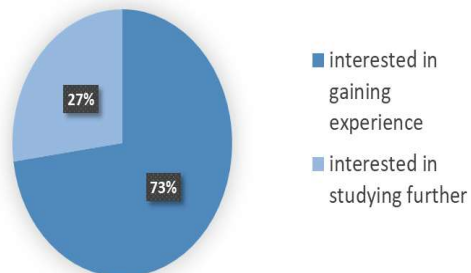
Student Placements

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.

SHARE OF THE TOTAL PLACEMENTS BETWEEN BOTH BATCHES

% of total placements from MSc IT 42%

% of total placements from BCA 58%

SHARE OF COMPANIES IN TAKING STUDENTS ON BOARD

- MRI
- OneKnotOne
- I2A
- UCI
- N10
- Horizontal Digital
- Sunflower lab
- InvestisDigital
- Celtic

SKILLS OF THE STUDENTS TRAINED AT THE DEPARTMENT

- NETWORKING
- WEB DEVELOPER (MERN stack)
- DBA
- WEB DEVELOPER (PHP)
- CRM(Microsoft dynamics 356, Salesforce)
- BACK-END WEB DEVELOPER (JAVA, PYTHON, .NET, NODE &...
- QA/ Software Testing
- FRONT-END WEB DEVELOPER (REACT, CSS, WEB & UX)
- SOFTWARE DEV. ENGINEER
- ANDROID DEVELOPMENT (FLUTTER AND KOTLIN)
- DATA ANALYTICS, DATA SCIENCE
- AI, ML, DL
- DevOps ENGINEER

INCLINATION AND APTITUDE OF OUR STUDENTS

27%

73%

- interested in gaining experience
- interested in studying further

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: 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 /Open House

The science week and open house was celebrated in the Department of Computer Applications 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

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

Contact Details of Department of Computer Applications
E-mail: head-compapp@msubaroda.ac.in
dcamsu@gmail.com
Mob: 7861038112 (during office hours only)

The information contained herein is for general guidelines only.

For further information contact Faculty Administration:

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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.

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