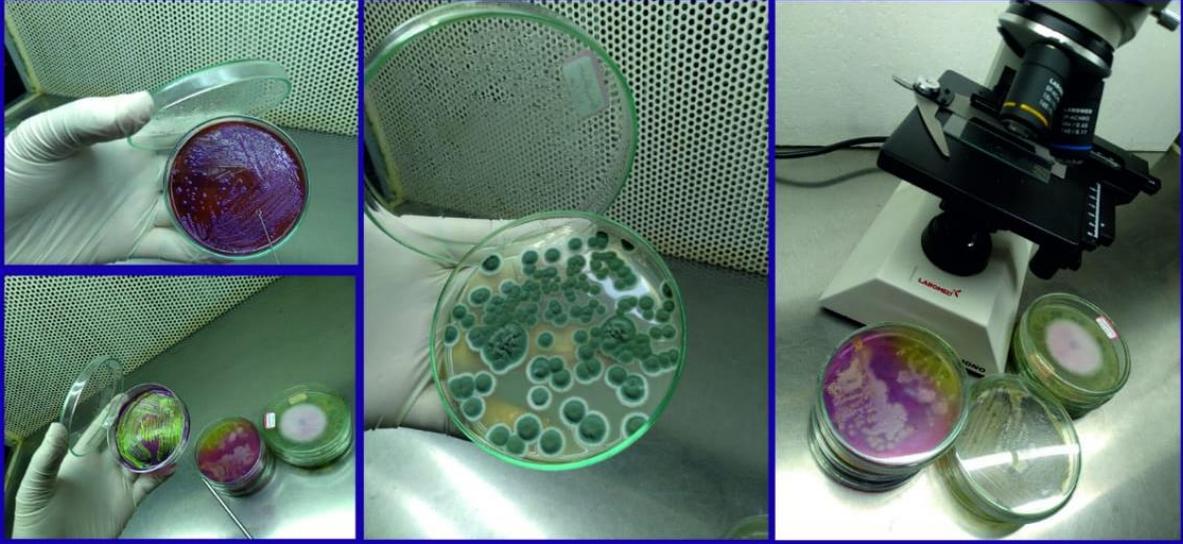


# MICROBIOLOGY- DEPARTMENT MANUAL

## Department of Microbiology



***Vision:*** “To Prepare Men & Women For the service of the country”.

***Mission:*** “Ramaiah college of Arts, Science & Commerce shall deliver global quality education by Nurturing conducive learning environment for a better tomorrow through continuous improvement & customization”.

***Objectives:***

- To provide skill based scientific and technical knowledge to students.
- To train students in the field of Microbiology, provide value based education with innovative research.
- To undertake research activities relevant to present day needs.

### **Department Profile:**

The Department of Microbiology was established in 1999 conducts both undergraduate and postgraduate courses. Microbiology is an important wide ranging subject comprises of various sub-disciplines in biosciences which covers wide variety of subjects including Virology, bacteriology, mycology, phycology, parasitology, human health, environmental, agricultural, industrial applications and also includes complete knowledge in molecular biology, genetic engineering, bioinformatics.

Highly qualified faculty members assigned with various theory and practical, emphasize on 'learning' of the students. The lectures lay emphasis on Knowledge content (topics in the curriculum), Utility value - application in real life, latest developments etc. The Department is undertaking research projects of national importance in the field of microbiology and attracted funds from various agencies. Through the consistent effort of our faculty we have obtained many University ranks, 90-100% results both in UG and PG courses consistently. Our students have been placed in various companies and many of them are pursuing their higher education in various universities in India and abroad. We encourage students in doing research, present papers in National and international conferences, publish their findings in Journals of repute and also participate in co-curricular and extracurricular activities.

The Department has very good infrastructural facilities to carry out teaching and research activities. Three laboratories for teaching, one lab for research with separate Algae and Fungal growth rooms and have been provided with all the facilities required for their growth. Laboratories are equipped with microscopes, thermocycler, UV spectrophotometer, autoclaves, hot air ovens, Bacteriological incubators, BOD incubators, shaker incubators, laminar air flow units, Electrophoresis units, blotting apparatus, trans illuminator, TLCinstruments, deep freezers, cooling centrifuge, refrigerators, soxhlet apparatus.

### **Programs Offered:**

1. BSc (Microbiology/Biotechnology/Chemistry)  
**Eligibility:** Pass in II PUC/ Intermediate/ Std. 12 examination of any equivalent board in Science stream with a Biology
2. BSc (Microbiology/Genetics/Biochemistry)  
**Eligibility:** Pass in II PUC/ Intermediate/ Std. 12 examination of any equivalent board in Science stream with a Biology
3. MSc: Microbiology  
**Eligibility:**
  - B.Sc. Degree of Bangalore University or any other University equivalent there to with any LIFE SCIENCE subject securing 50% marks in aggregate of all Optional Subjects.
  - Candidates who have passed B.Sc., Biotechnology/ B.Sc. Biotechnology (integrated) and secured 50% marks in the aggregate.
  - Candidates who have passed B.Sc. Hons in Biotechnology, Microbiology, Botany, Zoology or Biology are also Eligible with 50% marks in aggregate of all optional subjects.
  - The following Graduates are also Eligible (in absence of I, II, III above) with 50% marks in the aggregate.  
Bachelor in Agricultural Sciences/ Dairy Sciences/ Horticulture/ Forestry/ Fisheries/ Pharmacy/ Engineering(Bio-Technology)/ Medicine/ Dental/ Agricultural Engineering/ Clinical Lab Techniques

- **Add on courses:**

1. *Basic techniques in Molecular Biology*
2. *Basic techniques in DNA Cloning*
3. *Basic tools in Bioinformatics*
4. *Basic tools in Bacterial Genomics*
5. *Concepts and methods in molecular virology*
6. *Analytical techniques in Bacterial Proteomics*

- **Add-on coursefor interdisciplinary department-**

*Wine Production technology/ Mushroom Production Technology*

- **Training course:**

*Food Safety and Management System- Auditing and Process*

## Syllabus (Paper titles)

### Microbiology (UG)

| Semester   | Title of the Paper  | Lectures/<br>week | Practical<br>s/ week |
|------------|---|-------------------|----------------------|
| I semester | MBP-101: Basic Microbiology and Control of Microorganisms     | 04                |                      |
|            | MBP-102: Basic Microbiology Practical.                        |                   | 03                   |
| II sem     | MBP-201: Microbial Taxonomy and Culture techniques            | 04                |                      |
|            | MBP-202: Microbial Taxonomy and culture techniques            |                   | 03                   |
| III sem    | MBP-301: Microbial Physiology and Microbial Genetics.         | 04                |                      |
|            | MBP-302: Microbial Physiology and Microbial Genetics.         |                   | 03                   |
| IV sem     | MBP401: Molecular Biology, Genetic engineering and Biophysics | 04                |                      |
|            | MBP402: Molecular Biology, Genetic engineering.               |                   | 03                   |
| V sem      | MBP 501: Agricultural and Environmental MB                    | 3                 |                      |
|            | MBP502: Agricultural and Environmental MB                     |                   | 3                    |
|            | MBP 503: Food and Dairy MB                                    | 3                 |                      |
|            | MBP 504: Food and Dairy MB                                    |                   | 3                    |
| VI Sem     | MBP 601: Immunology and Medical MB                            | 3                 |                      |
|            | MBP 602: Immunology and Medical MB                            |                   | 3                    |
|            | MBP 603: Industrial MB and Microbial Technology               | 3                 |                      |
|            | MBP 604: Industrial MB and Microbial Technology               |                   | 3                    |

### MSc. Microbiology- Syllabus

| Semester | Paper code | Title  |
|----------|------------|--|
| I        | MBH—101    | Bacteriology & Virology                                      |
|          | MBH—102    | Eukaryotic Microbiology                                      |
|          | MBH—103    | Microbial Physiology & Biochemistry                          |
|          | MBH—104    | Microbial Techniques   |
|          | MBS-105    | Biostatistics  |
|          | MBP—106    | Bacteriology, Virology & Eukaryotic Microbiology             |
|          | MBP—107    | Microbial Physiology, Biochemistry & Microbial Techniques    |
| II       | MBH—201    | Microbial Genetics   |
|          | MBH—202    | Molecular Biology  |
|          | MBH—203    | Environmental Microbiology                                   |
|          | MBH—204    | Food Microbiology  |
|          | MBs- 205   | Bioinformatics   |
|          | MBP—206    | Microbial Genetics & Molecular Biology                       |
|          | MBP—2067   | Environmental Microbiology & Food Microbiology               |
| III      | MBH—301    | Medical Microbiology   |
|          | MBH—302    | Immunology   |
|          | MBH—303    | Recombinant DNA Technology                                   |
|          | MBO—304    | Open elective  |
|          | MBP—305    | Medical Microbiology and Immunology                          |
|          | MBP—306    | RDT and Bioinformatics                                       |
| IV       | MBH—401    | Agricultural Microbiology                                    |
|          | MBH—402    | Industrial Microbiology                                      |
|          | MBH—403    | Microbial Technology   |
|          | MBP—404    | Agricultural, Industrial Microbiology & Microbial Technology |
|          | MBP—405    | Project  |

#### Course Outcome:

- Students will have an opportunity to work at any science laboratories. They can also work in microbiology based industries like pharmacy, food, dairy, breweries, distilleries, enzyme, etc.
- Students upon studying Microbiology can also play an important role in public health conducting epidemiology.
- Career options also include positions in academia, research, food department, forest department, Forensic science department, Health department, Agriculture, biotechnological and pharmaceutical industries.

### Faculty Profile:

| SI No | Name of the Faculty   | Designation                | Qualification       | Total Experience In years |
|-------|-----------------------|----------------------------|---------------------|---------------------------|
| 1     | Dr. Pushpa H          | Associate Professor<br>HOD | MSc ,<br>MPhil, PhD | 22                        |
| 2     | Dr. SnehaLatha V      | Assistant Professor        | MSc PhD             | 17                        |
| 3     | Dr. Vemula Vani       | Assistant Professor        | MTech PhD           | 15                        |
| 4     | Dr. Prasanna Srinivas | Assistant Professor        | MSc MPhil<br>PhD    | 24                        |
| 5     | Mrs. Soumya Shanbhag  | Assistant Professor        | MSc, SLET           | 12                        |
| 6     | Dr. Nirmala Devi D    | Assistant Professor        | MSc, Phd,<br>SLET   | 5                         |
| 7     | Dr. Nishitha K P      | Assistant Professor        | MSc, PhD            | 2.6                       |
| 8     | Dr. Manjunath A S     | Assistant Professor        | MSc PhD             | 10                        |
| 9     | Dr. Akshatha K N      | Assistant Professor        | MSc PhD             | 3                         |
| 10    | Dr. Ashok Kumar H G   | Assistant Professor        | MSc PhD             | 13.6                      |
| 11    | Dr. Bhargavi SD       | Assistant Professor        | MSc PhD             | 5.6                       |
| 12    | Dr. SwetaTalreja      | Assistant Professor        | MSc PhD             | 5.6                       |
| 13    | Dr. Divyashree BC     | Assistant Professor        | MSc, PhD            | 13                        |

### Policies of the department:

**a. Attendance;** According to Bangalore University and Bengaluru Central University rules 75% attendance is compulsory for the students to attend the Examination.

**b. Internal assessment:**Continuous internal assessment

#### **Internal Assessment- Marks distribution (UG)**

##### **Theory: 30 Marks**

1. Internal Tests- 15
2. Written assignment- 10
3. Attendance- 05

##### **Practical- 15 marks**

1. Internal Test- 10
2. Attendance- 05

## **Internal assessment- Marks distribution (PG)**

### **Theory: (30)**

- (a) Tests – 10
- (b) Seminar-10
- (b) Assignments - 05
- (c) Attendance - 05

### **Practical: (30)**

- (a) Tests – 10
- (b) Attendance- 10
- (b) Class Records – 10

**c. Mentoring system:** Effective mentoring system is being followed where in each mentor has been assigned 25 students. Mentor monitors, guides & counsels the students in their academic, personal & extracurricular activities

**d. Parent teacher meeting:** The start of the academic programme is by the Orientation to the students & interaction between & teachers regarding the college & its activities. The parent's teachers meeting will be held regarding the progression of their wards.

**e. Department Library:** Each department has departmental library caters the need of the staff & the students. The students will be issued the books for reference during the examinations.

**f. Lab Instruction:** Lab general instructions & safety measures are affixed in each laboratory. The instrumentation manual is affixed near respective instruments. In case of emergency first aid box & fire extinguishers manual is also affixed.

**g. Projects:** The in-house projects & external are assigned to the students & guided by the departmental staff.

**h. Exam:** Each semester for the theory two internal tests & one preparatory exam & One model exam for the practical are conducted. Practical examination is arranged in the department and all the necessary documents related to practical examination is also stored in the department.

Before entering the examination hall, the students are given strict instruction such as not to carry cell phones, books, chits & files with them. A thorough check is made by the internal squads of the college.

### **Rules & responsibilities of students:**

- The students are advised to follow the proper dress code and cell phones are strictly prohibited in the college campus.
- Students should be regular to Lectures and Practical in time.
- Ragging is strictly prohibited in College campus.
- Students should not indulge in malpractice of any sort.
- Students should not damage the college property and they are also responsible to keep the College campus clean.
- Students should not indulge in any sort of malpractice during the examination.

### **Instruction to parents & guardians:**

- The parents should monitor their wards such that they attend the classes regularly.
- They have to respond & acknowledge the proctor letter sent to them by the proctors.
- The parents are requested to meet the respective proctors regularly to monitor the progress their wards

### Best Practices:

- **Space audit:** Due to the lack of separate research lab space auditing has been done so that the labs are utilized for research purpose whenever the Lab is free and also after working hours.
- Monitoring the academic performance of students by continuous internal assessments.
- Encouraging students to publish paper in journals and conferences and to attend workshops.
- Segregating degradable, non-degradable and toxic lab waste and training the support staff in doing such segregation.
- Frequent Bacterial Examination of Water of all the water filters at RCASC
- Industrial visits
- Regular monitoring of student's attendance
- Academic audit
- Organizing workshops, seminars, conferences on thrust areas.
- Exposing the members to various industrial application of Microbiology through Industrial visits.
- Encouraging students to publish paper in journals and conferences and to attend workshops.
- Collaborative and interdisciplinary research project.
- Conducting quiz, debate, Poster presentations, power point presentation, essay writing programmes to students to increase the interest on the subject.

**Salient features of the department:**

- Well qualified, skilled and dedicated faculty.
- Advanced teaching and learning resources.
- Career guidance and placement cell for students.
- Collaborations with various institutes and industries for research projects in India and abroad.
- Encouraging students to take up in-house projects and to participate and present papers in national and international conferences, and to publish paper in national and international peer reviewed journals.
- Value added course- Certificate courses for enhancing the placement opportunity to the students as per the industrial requirements
- Well-equipped laboratories for academic and research activities
- organizing various hands-on workshops, lecture workshops, faculty development programs, seminars, symposiums, in-house, and national conferences
- 100% results in university examinations consistently with many university ranks.

**DEPARTMENT OF MICROBIOLOGY**

**LIST OF UNIVERSITY RANK HOLDERS**

| Sl. No. | Year      | Course                         | Name of the student        | Bangalore University Rank |
|---------|-----------|--------------------------------|----------------------------|---------------------------|
| 1       | 2001-2004 | BSc- Microbiology/Bot/Biochem  | Ms. MudithaPincha          | IV                        |
| 2       | 2006-2008 | MSc- Microbiology              | Ms. Prasanna               | II                        |
| 3       | 2008-2010 | MSc Microbiology               | Ms. Sohini Gosh            | IV                        |
| 4       | 2009-2012 | BSc- Microbiology/BT/Chemistry | Ms. AnishaKajanchi         | VI                        |
| 5       | 2011-2013 | MSc- Microbiology              | Ms. Nayana Borah           | I                         |
| 6       | 2012-2015 | BSc- Microbiology/Gen/Biochem  | Ms. Saileyee Roy Chowdhary | X                         |
| 7       | 2013-2015 | MSc- Microbiology              | Ms. AsfiaSulthana          | IV                        |
| 8       | 2014-2016 | MSc- Microbiology              | Ms. Swetha P               | II                        |
| 9       | 2015-2017 | MSc- Microbiology              | Ms. Jeeva Raj              | II                        |
| 10      | 2016-2018 | MSc- Microbiology              | Ms. Kavya S                | I                         |
| 11      | 2016-2018 | MSc- Microbiology              | Mrs. Deepa VH              | II                        |
| 12      | 2016-2018 | MSc- Microbiology              | Ms. Chitralkha Sen Roy     | III                       |
| 13      | 2016-2018 | MSc- Microbiology              | Ms. Noor Misba             | V                         |
| 14      | 2017-2019 | MSc- Microbiology              | Ms. Poojitha S Pai         | I                         |
| 15      | 2017-2019 | MSc- Microbiology              | Ms. Gayathri V             | II                        |
| 16      | 2017-2019 | MSc-Microbiology               | Ms. Sushmitha S            | V                         |