

**S. P. Mandali's**  
**Ramnarain Ruia Autonomous College**  
*(Affiliated to University of Mumbai)*



**Syllabus for**

**Program: MSc Part I**

**Program Code: RPSBCH**

(As per the guidelines of National Education Policy 2020-  
Academic year 2023-24)

## GRADUATE ATTRIBUTES

S. P. Mandali's Ramnarain Ruia Autonomous College has adopted the Outcome Based Education model to make its science graduates globally competent and capable of advancing in their careers. The Bachelors Program in Science also encourages students to reflect on the broader purpose of their education.

| GA          | GA Description   |
|-------------|--|
|             | <b>A student completing Master's Degree in Science program will be able to:</b>  |
| <b>GA 1</b> | Demonstrate in depth understanding in the relevant science discipline. Recall, explain, extrapolate, and organize conceptual scientific knowledge for execution and application and also to evaluate its relevance.  |
| <b>GA 2</b> | Critically evaluate, analyse, and comprehend a scientific problem. Think creatively, experiment and generate a solution independently, check and validate it and modify if necessary.  |
| <b>GA 3</b> | Access, evaluate, understand, and compare digital information from various sources and apply it for scientific knowledge acquisition as well as scientific data analysis and presentation.   |
| <b>GA 4</b> | Articulate scientific ideas, put forth a hypothesis, design and execute testing tools and draw relevant inferences. Communicate the research work in appropriate scientific language.  |
| <b>GA 5</b> | Demonstrate initiative, competence, and tenacity at the workplace. Successfully plan and execute tasks independently as well as with team members. Effectively communicate and present complex information accurately and appropriately to different groups.   |
| <b>GA 6</b> | Use an objective, unbiased and non-manipulative approach in collection and interpretation of scientific data and avoid plagiarism and violation of Intellectual Property Rights. Appreciate and be sensitive to environmental and sustainability issues and understand its scientific significance and global relevance. |
| <b>GA 7</b> | Translate academic research into innovation and creatively design scientific solutions to problems. Exemplify project plans, use management skills, and lead a team for planning and execution of a task.  |
| <b>GA 8</b> | Understand cross disciplinary relevance of scientific developments and relearn and reskill so as to adapt to technological advancements.   |

## PROGRAM OUTCOMES

| PO    | Description<br><b>A student completing Master's Degree in Science program in the subject of Biochemistry will be able to:</b>  |
|-------|--|
| PO 1  | Acquire necessary knowledge and skills to undertake a career in research, either in industry or in an academic set up.   |
| PO 2  | Compare and contrast the breadth and depth of scientific knowledge in the broad range of fields including Protein biochemistry, Bioenergetics, Diagnostic Biochemistry, Hormonal Biochemistry, Molecular Biology, Nutritional Biochemistry, and Nanotechnology.  |
| PO 3  | Extrapolate and comprehend the regulatory role of metabolic processes and understand the underlying cause of metabolic disorders   |
| PO 4  | Acquire thorough knowledge of Biochemical Techniques, Advanced Immunology, Physiology, Genetic Engineering, and Biotechnology  |
| PO 5  | Describe and express the biochemical basis of human diseases, protein structure and conformation, non-invasive diagnostics, clinical research, and its importance in drug development. Usage of this knowledge further for multitude of laboratory applications. |
| PO 6  | Integrate and apply the techniques in Biophysics, Analytical Biochemistry, Clinical biochemistry, Microbiology, Molecular Biology and Basics in Bioinformatics   |
| PO 7  | Gain proficiency in laboratory techniques in both Biochemistry and Molecular Biology, and be able to apply the scientific method to the processes of experimentation and Hypothesis testing  |
| PO 8  | Develop and enhance skills & improve employability through academic, research and internship opportunities   |
| PO 9  | Gain exposure to basic research through the provision of PG research based project.  |
| PO 10 | Learn to work as a team as well as independently to compile and interpret Biological data, carry out Research investigations and draw conclusions  |

**CREDIT STRUCTURE MSc**

| Semester | Mandatory    | Elective | RM | OJT/FP | RP/ Internship | Cum.Credits |
|----------|--------------|----------|----|--------|----------------|-------------|
| 1        | 14 (3+1)*3+2 | 4(3+1)   | 4  | 0      | 0              | 22          |
| 2        | 14 (3+1)*3+2 | 4(3+1)   | 0  | 4 FP   | 0              | 22          |

## On Job Training / Field Project

**Academic year 2023-24**

### COURSE OUTCOMES:

| COURSE<br>OUTCOME | DESCRIPTION<br>A student completing this course will be able to:   |
|-------------------|--|
| <b>CO 1</b>       | Adapt work habits and attitudes necessary for job success.   |
| <b>CO 2</b>       | Develop communication, interpersonal and other critical skills in the job interview process.   |
| <b>CO 3</b>       | Test the theoretical learning in practical situations by accomplishing the tasks assigned during the internship period.  |
| <b>CO 4</b>       | Apply various soft skills such as time management, positive attitude and professional skills during performance of the tasks assigned in internship organization |
| <b>CO 5</b>       | Choose career avenue prior to degree completion  |
| <b>CO 6</b>       | Evaluate interests and abilities in their field of study.  |
| <b>CO 7</b>       | Determine the challenges and future potential for his / her internship organization in particular and the sector in general.                                     |
| <b>CO 8</b>       | Acquire employment contacts leading directly to a full-time job following post-graduation from college.  |

| Course<br>Code | Course/ Unit Title<br>Internship<br>RPSBCH303   | Credits/<br>Hours<br>4 / 60<br>Hours |
|----------------|---|--------------------------------------|
|                | <p><b>On Job Training / Field Project –</b></p> <p>Duration – 60 Hours</p> <p>A hardcopy of the report on the work carried out during the on-job training / field project should be made and submitted before practical examination.</p> <p>A PowerPoint presentation on the summary of the report should be presented which will be assessed during the practical examination.</p> |                                      |

## Modality of Assessment: Semester II

### ON-JOB TRAINING / FIELD PROJECT

| Particular   |   | Marks      |
|--------------|---|------------|
| a)           | Project Work (Contents Submitted in the bound form) | 60         |
| b)           | Presentation to external examiner                   | 20         |
| c)           | Viva- voce  | 20         |
| <b>TOTAL</b> |   | <b>100</b> |

x

RAMNARAIN RUIA AUTONOMOUS COLLEGE