



# SGRRU

SHRI GURU RAM RAI UNIVERSITY  
DEHRADUN, UTTARAKHAND



## DEPARTMENT OF MICROBIOLOGY INTERNSHIP MODULE

For Undergraduate (UG) & Postgraduate (PG) Students



### DEPARTMENT

Department of Microbiology,  
SGRR University,  
Dehradun



### DURATION

- **UG (B.Sc. Microbiology):**  
4–6 weeks (120–180 hours)
- **PG (M.Sc. Microbiology):**  
6–8 weeks (180–240 hours)



### ELIGIBILITY

- **UG:** Students of B.Sc. Microbiology (Semester IV/VI)
- **PG:** Students of M.Sc. Microbiology (Semester II/IV)



### OBJECTIVES

- To provide hands-on laboratory training in microbiological techniques.
- To enhance students' technical, analytical, and research skills.
- To familiarize students with industrial, clinical, environmental, and food microbiology practices.
- To expose students to Good Laboratory Practices (GLP), biosafety, and quality assurance systems.
- To develop scientific communication, teamwork, and professional ethics.



### LEARNING OUTCOMES

At the end of the internship, students will be able to:

- ✓ Apply microbiological principles in laboratory and industrial settings.
- ✓ Perform aseptic techniques and microbial culture methods.
- ✓ Identify microorganisms using biochemical and molecular methods.
- ✓ Maintain laboratory records and prepare technical reports.
- ✓ Follow biosafety and quality management protocols.
- ✓ Interpret laboratory results and present scientific findings.



### INTERNSHIP AREAS

Students may undertake internships in:

- Clinical Microbiology Laboratories
- Food and Dairy Industries
- Pharmaceutical Industries
- Biotechnology Companies
- Environmental Monitoring Laboratories
- Water Quality Testing Laboratories
- Research Institutes
- Agricultural and Biofertilizer Units
- Public Health Laboratories
- Diagnostic Centres

### TRAINING MODULES

#### Module I

Laboratory Safety and Good Laboratory Practices



- Biosafety levels
- Waste disposal and sterilization
- Laboratory documentation

#### Module II

Basic Microbiological Techniques



- Media preparation
- Sterilization techniques
- Isolation and purification of microorganisms
- Staining techniques
- Microscopy

#### Module III

Identification of Microorganisms



- Morphological characterization
- Biochemical tests
- Antimicrobial susceptibility testing
- Culture preservation

#### Module IV

Advanced Techniques (PG Focus)



- PCR and molecular diagnostics
- DNA/RNA isolation
- Gel electrophoresis
- Bioinformatics basics

#### Module V

Industrial and Applied Microbiology



- Fermentation technology
- Biofertilizer production
- Quality control
- Industrial hygiene
- Environmental monitoring

#### Module VI

Research and Scientific Writing



- Literature review
- Experimental design
- Data analysis
- Report writing
- Poster and oral presentation

### ASSESSMENT SCHEME

| Component                 | Weightage        |
|---------------------------|------------------|
| Attendance and Discipline | 10 Marks         |
| Laboratory Skills         | 20 Marks         |
| Practical Performance     | 20 Marks         |
| Internship Diary/Log Book | 15 Marks         |
| Internship Report         | 20 Marks         |
| Seminar/Presentation      | 15 Marks         |
| <b>Total</b>              | <b>100 Marks</b> |

### INTERNSHIP DELIVERABLES

- Daily Log Book
- Attendance Certificate
- Internship Completion Certificate
- Final Internship Report
- PowerPoint Presentation
- Viva-Voce



### INTERNSHIP BENEFITS

The internship equips students with practical laboratory skills, research experience, industrial exposure, and professional competencies, thereby enhancing their employability, higher education prospects, and readiness for careers in microbiology, biotechnology, healthcare, pharmaceuticals, food industries, agriculture, and research organizations.

### WHY CHOOSE US?

- ✓ Experienced Faculty and Mentorship
- ✓ Well-equipped Laboratories and Infrastructure
- ✓ Exposure to Advanced Techniques
- ✓ Industry and Research Collaborations
- ✓ Holistic Skill Development



### DEPARTMENT OF MICROBIOLOGY

SGRR University, Dehradun,  
Uttarakhand