

Core Module
B.Sc. (Hons.) Microbiology - 3 years program

Scheme: 2023-26

Summary of Credits

| Course Category | For 3 years Program |
|-------------------------------------|----------------------------|
| Discipline Core Courses | 60 |
| Discipline Specific Electives (DSE) | 12 |
| Generic Electives | 24 |
| Multi-Disciplinary Courses (MDC) | 10 |
| Ability Enhancement Courses (AEC) | 8 |
| Skill Enhancement Courses (SEC) | 10 |
| Value Added Courses (VAC) | 6 |
| Industrial/Academic Internship | 2 |
| Dissertation | NA |
| Total Credits | 132 |

Curriculum Structure
B.Sc. (H) Microbiology 3 years program

| SEMESTER I | | | | | | | |
|--------------------|--------------------|--|------------------------------|----------|----------|----------|----------------|
| S. No | Course Code | Course Name | Category of Course | L | T | P | Credits |
| 1. | | Fundamentals of Cell Biology | Discipline Core Course 1 | 3 | 0 | 1 | 4 |
| 2. | | Biochemistry & Physiology | Discipline Core Course 2 | 4 | 0 | 0 | 4 |
| 3. | | Introduction to Microbial World | Discipline Core Course 3 | 3 | 0 | 1 | 4 |
| 4. | | Generic Elective (Forensic Science/Maths/Chemistry /Physics/Economics/ Computer Science) | Generic Electives - 1 | | | | 4 |
| 5. | | Ecology and Environment | Ability Enhancement course-1 | 2 | 0 | 0 | 2 |
| 1. | | Introduction to Python programming/ Graphical Tools | Skill Enhancement course- 1 | 1 | 0 | 1 | 2 |
| 2. | | Health and Nutrition/First Aid | Value Added Course-1 | 2 | 0 | 0 | 2 |
| | | | TOTAL | | | | 22 |
| SEMESTER II | | | | | | | |
| S. No. | Course Code | Course Name | Category of Course | L | T | P | Credits |
| 1. | | Microbial Physiology and Metabolism | Discipline Core Course 4 | 4 | 0 | 0 | 4 |
| 2. | | Bacteriology | Discipline Core Course 5 | 3 | 0 | 1 | 4 |
| 3. | | Phycology and Mycology | Discipline Core Course 6 | 3 | 0 | 1 | 4 |
| 4. | | Generic Elective (Forensic Science/Maths/Chemistry /Physics/Economics/ Computer Science) | Generic Electives - 2 | | | | 4 |
| 5. | | Logical Communication | Ability Enhancement course-2 | 1 | 0 | 1 | 2 |

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|----|--|------------------------|-----------------------------|---|---|---|-----------|
| 6. | | Essentials of IT Tools | Skill Enhancement course- 2 | 1 | 0 | 1 | 2 |
| 7. | | Art of Happiness | Value Added Course-2 | 2 | 0 | 0 | 2 |
| | | | TOTAL | | | | 22 |

SEMESTER III

| S. No. | Course Code | Course Name | Category of Course | L | T | P | Credits |
|--------|-------------|--|------------------------------|---|---|---|-----------|
| 1. | | Fundamentals of Molecular Biology | Discipline Core Course 7 | 3 | 0 | 1 | 4 |
| 2. | | Virology | Discipline Core Course 8 | 4 | 0 | 0 | 4 |
| 3. | | Microbial Genetics and Genomics | Discipline Core Course 9 | 3 | 0 | 1 | 4 |
| 4. | | Generic Elective (Forensic Science/Maths/Chemistry /Physics/Economics/ Computer Science) | Generic Electives - 3 | 4 | 0 | 0 | 4 |
| 5. | | Critical Thinking & Writing | Ability Enhancement Course-3 | 2 | 0 | 0 | 2 |
| 6. | | Introduction to Artificial Intelligence | Skill Enhancement Course- 3 | 2 | 0 | 0 | 2 |
| 7. | | NCC/NSS/Social Internship/Vedic Mathematics | Value Added Course-3 | 2 | 0 | 0 | 2 |
| | | | TOTAL | | | | 22 |

SEMESTER IV

| S. No. | Course Code | Course Name | Category of Course | L | T | P | Credits |
|--------|-------------|--|-----------------------------|---|---|---|---------|
| 1. | | Concept of Immunology | Discipline Core Course 10 | 3 | 0 | 1 | 4 |
| 2. | | Gene Technology and Human Welfare | Discipline Core Course 11 | 3 | 0 | 1 | 4 |
| 3. | | Bioinstrumentation & Biotechniques | Multi Disciplinary Course 1 | 3 | 0 | 0 | 3 |
| 4. | | Generic Elective (Forensic Science/Maths/Chemistry /Physics/Economics/ Computer Science) | Generic Electives - 4 | 4 | 0 | 0 | 4 |
| 5. | | Disaster Management | Ability | 2 | 0 | 0 | 2 |

| | | | | | | | |
|----|--|--|-----------------------------|---|---|---|-----------|
| | | | Enhancement Course-4 | | | | |
| 6. | | Cyber Sphere & Security Global Concern | Skill Enhancement Course- 4 | 2 | 0 | 0 | 2 |
| 7. | | Nanobiotechnology | Multi Disciplinary Course 2 | 3 | 0 | 0 | 3 |
| | | | TOTAL | | | | 22 |

SEMESTER V

| S. No. | Course Code | Course Name | Category of Course | L | T | P | Credits |
|--------|-------------|--|--------------------------------|---|---|---|-----------|
| 1. | | Soil & Agricultural Microbiology | Discipline Core Course 12 | 3 | 0 | 1 | 4 |
| 2. | | Inheritance Biology | Discipline Core Course 13 | 3 | 0 | 1 | 4 |
| 3. | | Research Methodology and Ethics | Multi Disciplinary Course 3 | 4 | 0 | 0 | 4 |
| 4. | | DSE from Gp. 1 | DSE-1 | | | | 4 |
| 5. | | Generic Elective (Forensic Science/Maths/Chemistry /Physics/Economics/ Computer Science) | Generic Elective - 5 | | | | 4 |
| 6. | | Internship | Industrial/Academic Internship | 0 | 0 | 2 | 2 |
| | | | TOTAL | | | | 22 |

SEMESTER VI

| S. No. | Course Code | Course Name | Category of Course | L | T | P | Credits |
|--------|-------------|--|-----------------------------|---|---|---|-----------|
| 1. | | Medical Microbiology | Discipline Core 14 | 4 | 0 | 0 | 4 |
| 2. | | Food and Dairy Microbiology | Discipline Core 15 | 3 | 0 | 1 | 4 |
| 3. | | DSE from Gp. 1 | DSE-2 | | | | 4 |
| 4. | | DSE from Gp. 1 | DSE-3 | | | | 4 |
| 5. | | Generic Elective (Forensic Science/Maths/Chemistry /Physics/Economics/ Computer Science) | Generic Electives - 6 | | | | 4 |
| 6. | | One from the List of choices | Skill Enhancement Course- 5 | 2 | 0 | 0 | 2 |
| | | | TOTAL | | | | 22 |

After 3 years, Students will get the degree of B.Sc. (Hons.) Microbiology with Total Credits = 132

Choices for Skill Enhancement Course- 4/5

| Subject | L | T | P | Credits |
|--|---|---|---|---------|
| Testing of cosmetics and hygienic products | 1 | 0 | 1 | 2 |
| Innovation and Entrepreneurship | 2 | 0 | 0 | 2 |
| Statistics with R | 1 | 0 | 1 | 2 |
| Electronic Product Testing | 1 | 0 | 1 | 2 |
| Fundamentals of Clinical Research | 2 | 0 | 0 | 2 |
| Social Media Crimes and Awareness | 2 | 0 | 0 | 2 |
| Graphical Tools | 1 | 0 | 1 | 2 |
| Latex writing | 1 | 0 | 1 | 2 |

List of Discipline Specific Electives (DSE)

Infectious Microbiology Specialization

| Category of Course | Subject | L | T | P | Credits |
|--------------------|-------------------------------|---|---|---|---------|
| Elective-1 | Parasitology | 4 | 0 | 0 | 4 |
| | Virology | 4 | 0 | 0 | 4 |
| Elective-2 | Toxicology and Vector Biology | 3 | 0 | 1 | 4 |
| | Bacteriology | 3 | 0 | 1 | 4 |
| Elective-3 | Pharmaceutical Microbiology | 4 | 0 | 0 | 4 |
| Elective-4 | Genomics | 4 | 0 | 0 | 4 |
| | Phycology and Mycology | 3 | 0 | 1 | 4 |
| Elective-5 | Metagenomics | 3 | 0 | 1 | 4 |
| | Food and Dairy Microbiology | 3 | 0 | 1 | 4 |
| Elective-6 | Medical Microbiology | 3 | 0 | 1 | 4 |

Parasitology Specialization

| Category of Course | Subject | L | T | P | Credits |
|--------------------|-----------------------------------|---|---|---|---------|
| Elective-1 | Parasitology | 4 | 0 | 0 | 4 |
| | Virology | 4 | 0 | 0 | 4 |
| Elective-2 | Toxicology and Vector Biology | 3 | 0 | 1 | 4 |
| | Bacteriology | 3 | 0 | 1 | 4 |
| Elective-3 | Genetic disorders | 4 | 0 | 0 | 4 |
| | Plant Pathology | 3 | 0 | 1 | 4 |
| Elective-4 | Genomics | 4 | 0 | 0 | 4 |
| | Phycology and Mycology | 3 | 0 | 1 | 4 |
| Elective-5 | Metagenomics | 3 | 0 | 1 | 4 |
| Elective-6 | Epigenetics and Chromatin Biology | 4 | 0 | 0 | 4 |

Medical Biochemistry Specialization

| Category of Course | Subject | L | T | P | Credits |
|--------------------|-------------------------------------|---|---|---|---------|
| Elective-1 | Clinical correlations of disease | 4 | 0 | 0 | 4 |
| Elective-2 | Toxicology and Vector Biology | 3 | 0 | 1 | 4 |
| | Medical Biochemistry | 3 | 0 | 1 | 4 |
| Elective-3 | Genetic disorders | 4 | 0 | 0 | 4 |
| Elective-4 | Genomics | 4 | 0 | 0 | 4 |
| | Biochemistry of Metabolism | 4 | 0 | 0 | 4 |
| Elective-5 | Metagenomics | 3 | 0 | 1 | 4 |
| | Bioorganic and Medicinal Chemistry | 3 | 0 | 1 | 4 |
| Elective-6 | Epigenetics and Chromatin Biology | 4 | 0 | 0 | 4 |
| | Hormones: Biochemistry and Function | 4 | 0 | 0 | 4 |

List of Generic Electives (GE) offered from Division of Life Sciences

| S.No. | Sem | Code | Course name | L | T | P | C | Discipline |
|-------|------|------|-------------------------------------|---|---|---|---|---------------|
| 1. | I | | Fundamentals of Cell Biology | 3 | 0 | 1 | 4 | Life Sciences |
| 2. | II | | Biochemistry & Physiology | 4 | 0 | 0 | 4 | Life Sciences |
| 3. | III | | Introduction to Microbial World | 3 | 0 | 1 | 4 | Life Sciences |
| 4. | IV | | Fundamentals of Molecular Biology | 3 | 0 | 1 | 4 | Life Sciences |
| 5. | V | | Concept of Immunology | 3 | 0 | 1 | 4 | Life Sciences |
| 6. | VI | | Gene Technology and Human Welfare | 3 | 0 | 1 | 4 | Life Sciences |
| 7. | VII | | Microbial Physiology and Metabolism | 4 | 0 | 0 | 4 | Microbiology |
| 8. | VIII | | Microbial Genetics and | 3 | 0 | 1 | 4 | Microbiology |

| | | | | | | | | |
|-----|------|--|---|---|---|---|---|--------------------|
| | | | Genomics | | | | | |
| 9. | VII | | Human Physiology- I | 3 | 0 | 1 | 4 | Biomedical Science |
| 10. | VIII | | Human Physiology -II | 4 | 0 | 0 | 4 | Biomedical Science |
| 11. | VII | | Biochemistry of Metabolism | 4 | 0 | 0 | 4 | Biochemistry |
| 12. | VIII | | Bioorganic and Medicinal Chemistry | 3 | 0 | 1 | 4 | Biochemistry |
| 13. | VII | | Diversity of Non-Chordates, Parasitology and Economic Zoology | 3 | 0 | 1 | 4 | Zoology |
| 14. | VIII | | Diversity of Chordates and Comparative Anatomy | 3 | 0 | 1 | 4 | Zoology |