

# M.Sc. Microbiology 2 Years 4 Semesters

## Course Structure

### Semester 1

| S.No                 | Code      | Course                                 | Credits   |
|----------------------|-----------|----------------------------------------|-----------|
| 1                    | BTMSc 501 | Biochemistry                           | 3         |
| 2                    | BTMSc 503 | Cell and Molecular Biology             | 3         |
| 3                    | BTMSc 507 | Microbiology                           | 2         |
| 4                    | BTMSc 531 | Bioinformatics                         | 3         |
| 5                    | BTMSc 533 | Nanobiotechnology                      | 3         |
| 6                    | BTMSc 535 | Microbial Genetics                     | 2         |
| 7                    | BTMA445   | Basic of Mathematics and Biostatistics | 3         |
| Laboratory           |           |                                        |           |
| 1                    | BTMSc 513 | Biochemistry and Analytical Techniques | 3         |
| 2                    | BTMSc 515 | Microbiology lab                       | 3         |
| 3                    | BTMSc 537 | Bioinformatics                         | 2         |
| <b>Total Credits</b> |           |                                        | <b>27</b> |

### Semester 2

| S.No                 | Code      | Course                                                                                                      | Credits   |
|----------------------|-----------|-------------------------------------------------------------------------------------------------------------|-----------|
| 1                    | BTMSc 502 | Genetic Engineering                                                                                         | 3         |
| 2                    | BTMSc 504 | Immunology                                                                                                  | 3         |
| 3                    | BTMSc 552 | Bioprocess Engineering and Technology                                                                       | 3         |
| 4                    | BTMSc 554 | Downstream Processing in Biotechnology                                                                      | 3         |
| 5                    | BTMSc 556 | Virology                                                                                                    | 3         |
| 6                    | BTMSc 542 | Microbial Diversity and Metagenomics                                                                        | 2         |
| 7                    | DSE1      | 1. BTMSc 526 Protein Engineering<br>2. BTMSc 516 Computational Biology<br>3. BTMSc 558 Microbial Physiology | 2         |
| Laboratory           |           |                                                                                                             |           |
| 1                    | BTMSc 562 | Immunology and Genetic Engineering Lab                                                                      | 3         |
| 2                    | BTMSc 560 | Bioprocess lab                                                                                              | 3         |
| <b>Total credits</b> |           |                                                                                                             | <b>25</b> |

### Semester 3

| S.No                 | Code      | Course                                                                                                                                                                       | Credits   |
|----------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 1                    | BTMSc 607 | Bioentrepreneurship                                                                                                                                                          | 3         |
| 2                    | BTMSc 609 | Intellectual Property Rights, Biosafety and Bioethics                                                                                                                        | 2         |
| 3                    | BTMSc 643 | Microbial Pathogenesis and Diagnosis                                                                                                                                         | 3         |
| 4                    | BTMSc 645 | Vaccine Research and Development                                                                                                                                             | 3         |
| 5                    | BTMSc 647 | Research Methodology                                                                                                                                                         | 2         |
| 6                    | BTMSc 613 | Seminar                                                                                                                                                                      | 1         |
| 7                    | DSE 2     | 1. BTMSc 649 System and Synthetics Biology<br>2. BTMSc 653 Microbiology Quality Control in Pharma and Food Industry<br>3. BTMSc 657 Fundamentals of Antimicrobial Resistance | 2         |
| Laboratory           |           |                                                                                                                                                                              |           |
| 1                    | BTMSc 655 | Advanced Microbial Techniques                                                                                                                                                | 3         |
| 2                    | BTMSc 619 | Dissertation I                                                                                                                                                               | 4         |
| <b>Total Credits</b> |           |                                                                                                                                                                              | <b>23</b> |

### Semester 4

| S.No | Code      | Course          | Credits   |
|------|-----------|-----------------|-----------|
| 1    | BTMSc 602 | Dissertation II | <b>22</b> |

**Total Credits : 27+25+23+22=97**