

Maulana Azad National Institute of Technology, Bhopal – 462003
Department of Bio Science and Engineering

M Tech in Bio Technology

SCHEME OF STUDY (January 2021)

First Semester:

| Course No. | Subject | Scheme of studies periods per week | | | Total Credits |
|--------------------------------------|---|------------------------------------|---|---|---------------|
| | | L | T | P | |
| BIO 101 | Biostatistics & Bioinformatics | 3 | - | - | 3 |
| BIO 102 | Instrumentation in Biotechnology | 3 | - | - | 3 |
| BIO103 | Genetic Engineering & Population Genetics | 3 | - | - | 3 |
| BIO 104 | Cell & Tissue Culture Engineering | 3 | - | - | 3 |
| | Elective-1 (A) | 3 | - | - | 3 |
| | Elective-2 (A) | 3 | - | - | 3 |
| BIO 105 | Lab-1 | - | - | 2 | 1 |
| BIO 106 | Seminar-1 | - | - | 2 | 1 |
| BIO 107 | Communication skills / NPTEL/ MOOC | 2 | - | - | 2 |
| Total Hours: 24 Total Credits: 22 | | Total Semester Credits | | | 22 |

Second Semester:

| Course No. | Subject | Scheme of studies periods per week | | | Total Credits |
|--------------------------------------|--|------------------------------------|---|---|---------------|
| | | L | T | P | |
| BIO 201 | Cheminformatics & Drug Designing | 3 | | - | 3 |
| BIO 202 | Molecular Biotyping | 3 | | - | 3 |
| BIO 203 | Bionanotechnology | 3 | | - | 3 |
| | Elective-3 (A) | 3 | | - | 3 |
| | Elective-4 (A) | 3 | | - | 3 |
| | Elective-5 (C) | 3 | | - | 3 |
| BIO 204 | Lab-2 | - | - | 2 | 1 |
| BIO 205 | Research Methodology, Technical Report and paper writing | - | 2 | - | 2 |
| BIO 206 | Seminar-2 | - | - | 2 | 1 |
| Total Hours: 24 Total Credits: 44 | | Total Semester Credits | | | 22 |

Third Semester:

| Course No. | Subject | Scheme of studies periods per week | | | Total Credits |
|--------------------------------------|----------------------|------------------------------------|---|----|---------------|
| | | L | T | P | |
| BIO 301 | Dissertation Phase-I | - | - | 32 | 16 |
| Total Hours: 32 Total Credits: 60 | | Total Semester Credits | | | 16 |

Fourth Semester:

| Course No. | Subject | Scheme of studies periods per week | | | Total Credits |
|--------------------------------------|-----------------------|------------------------------------|---|----|---------------|
| | | L | T | P | |
| BIO 401 | Dissertation Phase-II | - | - | 40 | 20 |
| Total Hours: 40 Total Credits: 80 | | Total Semester Credits | | | 20 |

| List of Electives A | | List of Electives C | |
|----------------------------|---|----------------------------|--|
| BIO501 | Bio safety and Bio security Regulations | EN202 | Solid Waste Management |
| BIO502 | Protein Engineering & Enzyme Technology | GE203 | Reinforced Soil Structures |
| BIO503 | Genomics & Transcriptomics | GI201 | Basic Concepts of GIS |
| BIO504 | Computational Biology | HY201 | Characteristics of Hydraulic Machines |
| BIO505 | Computational Phylogenetics | ST203 | Theory of Plates & Shells |
| BIO506 | System Biology | TR201 | Highway Construction & Maintenance |
| BIO507 | Molecular & Cellular Diagnosis | WR203 | Ground Water Engineering |
| BIO508 | Environmental Biotechnology | ID203 | Advanced Product Design |
| BIO509 | Molecular Biology | IT202 | Failure Analysis & Prevention |
| BIO510 | Cell Biology | AM202 | Advanced Composite Materials |
| BIO511 | Microbiology & Immunology | SV203 | Theory of Vibration II |
| BIO512 | Bioenergy Engineering | TH202 | Thermal Environmental Engineering |
| BIO513 | Computational Advancements in Biotechnology | PS201 | Modern Control Systems |
| BIO514 | Biodiversity and Bioprospecting | ED202 | Advanced Control Systems |
| BIO515 | Biochemistry & Physiology | VE202 | VLSI Technology |
| | | DC203 | Digital Image Processing |
| | | AC203 | Optimization Techniques |
| | | AI202 | Deep Learning |
| | | CN203 | Graph Theory & Network Algorithm |
| | | IS201 | Applied Cryptography |
| | | MS202 | Deformation Behavior of Materials |
| | | CH203 | Industrial Safety & Hazard Management |
| | | HS1204 | Housing Finance |
| | | UP1203 | Infrastructure Planning |
| | | NT201 | Nano Structures Characterization Techniques |
| | | BI203 | Optimization Techniques & Graph |
| | | CSB201 | Mathematical Modeling & Simulation of Biological Systems |
| | | RE202 | Solar Energy Systems |
| | | ES202 | Energy Management in Buildings |

Group A: Program Electives.

Group B: Departmental Electives.

Group C: Open Electives.

{It may also be opted as NPTEL Course after approval from Chairman Senate}