



Maulana Azad
NATIONAL INSTITUTE OF TECHNOLOGY, Bhopal-462003
DEPARTMENT OF BIO SCIENCES & ENGINEERING
M. Tech. in *Biotechnology*
SCHEME OF STUDY (Revised April 2020)

First Semester

| Course No. | Subject | Scheme of Studies Periods Per week | | | Total Credits |
|--------------------------------------|-------------------------------------------|------------------------------------|---|---|---------------|
| | | L | T | P | |
| BIO- 101 | Biostatistics & Bioinformatics | 3 | 1 | - | 4 |
| BIO- 102 | Instrumentation in Biotechnology | 3 | 1 | - | 4 |
| BIO-103 | Genetic Engineering & Population Genetics | 3 | 1 | - | 4 |
| BIO- 104 | Cell & Tissue Culture Engineering | 3 | 1 | - | 4 |
| | Elective-1(A) | 3 | 1 | - | 4 |
| | Elective-2(B) | 3 | 1 | - | 4 |
| BIO-105 | Lab-1 | - | - | 2 | 1 |
| BIO-106 | Seminar-1 | - | - | 2 | 1 |
| BIO-107 | Communication skills / NPTEL/MOOC | 2 | - | - | 2 |
| Total Hours 30 | | Total Credits | | | 28 |
| Total Credits (Cumulative) 28 | | | | | |

Second Semester

| Course No. | Subject | Scheme of Studies Periods Per week | | | Total Credits |
|--------------------------------------|----------------------------------------------------------|------------------------------------|---|---|---------------|
| | | L | T | P | |
| BIO-201 | Cheminformatics & Drug Designing | 3 | 1 | - | 4 |
| BIO-202 | Molecular Biotyping | 3 | 1 | - | 4 |
| BIO-203 | Bionanotechnology | 3 | 1 | - | 4 |
| | Elective 3(A) | 3 | 1 | - | 4 |
| | Elective 4(A) | 3 | 1 | - | 4 |
| | Elective 5(C) | 3 | 1 | - | 4 |
| 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 30 | | Total Credits | | | 28 |
| Total Credits (Cumulative) 56 | | | | | |

Third Semester

| Course No. | Subject | Scheme of Studies Periods Per week | | | Total Credits |
|---------------------------------------------------------------|----------------------|---------------------------------------|---|----|------------------|
| | | L | T | P | |
| BIO-301 | Dissertation Phase-I | - | - | 24 | 12 |
| Total Hours 24 Total Credits (Cumulative) 68 | | Total Credits | | | 12 |

Fourth Semester

| Course No. | Subject | Scheme of Studies Periods Per week | | | Total Credits |
|--------------------------------------------------------------|----------------------|---------------------------------------|---|----|------------------|
| | | L | T | P | |
| BIO-401 | DissertationPhase-II | - | - | 24 | 12 |
| Total Hours24 Total Credits (Cumulative) 80 | | Total Credits | | | 12 |

List of Electives

Group A Program Electives

| | |
|----------|-----------------------------------------|
| BIO-501 | Bio safety and Bio security Regulations |
| BIO-502 | Protein Engineering & Enzyme Technology |
| BIO-503 | Genomics & Transcriptomics |
| BIO-504 | Computational Biology |
| BIO-505 | Computational Phylogenetics |
| BIO-506 | System Biology |
| BIO- 507 | Molecular & Cellular Diagnosis |
| BIO- 508 | Environmental Biotechnology |
| BIO-509 | Molecular Biology |
| BIO- 510 | Cell Biology |

Group B Department Electives (for other programs of same department only)

| | |
|-----------|---------------------------------------------|
| BIO- 601 | Microbiology & Immunology |
| BIO- 602 | Bioenergy Engineering |
| BIO- 603 | Computational Advancements in Biotechnology |
| BIO- 604 | Biodiversity and Bioprospecting |
| BIO - 605 | Biochemistry & Physiology |

Group C Institute Electives (for other departments only)

| | |
|----------|-----------------------------------------------|
| BIO- 701 | Quality Management & process Design Marketing |
| BIO- 702 | Bioprocess Engineering |
| BIO- 703 | Data Mining & Data warehousing |
| BIO- 704 | Language Learning For Bioinformatics |
| BIO- 705 | Biophysics Tools and Techniques |