



**PERIYAR MANIAMMAI INSTITUTE OF
SCIENCE & TECHNOLOGY**
Periyar Nagar, Vallam, Thanjavur - 613403
Tamil Nadu, India.

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BIOTECHNOLOGY

B.Tech Biotechnology

Curriculum (Semesters I to VIII)

Regulations 2024

PERIYAR MANIAMMAI INSTITUTE OF SCIENCE & TECHNOLOGY
FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BIOTECHNOLOGY

B.Tech. Biotechnology with Specialization in Data Analytics for Biotechnology
CURRICULUM – REGULATIONS 2024

Category of courses and minimum credit requirement for B.Tech. Biotechnology with Specialization in Data Analytics for Biotechnology programme as per Regulations 2024 are outlined below:

| Sl. No. | Category of Courses | Credits |
|----------------|---|----------------|
| 1. | Foundation Courses (Humanities and Social Sciences including Management Courses, Basic Science and Engineering Science Courses) | 61 |
| 2. | Professional Core Courses | 59 |
| 3. | Professional Elective Courses | 18 |
| 4. | Open Elective Courses and Indian Knowledge System | 09 |
| 5. | Online Courses | 06 |
| 6. | Employability Enhancement Courses (Value-added, Community Engagement and Social Responsibility, Skill Development Courses, Soft and Managerial Skills, Internship, Mini-projects, and Capstone project) | 27 |
| 7. | Audit Courses * | --- |
| 8. | Courses Lead to Specialization / Minor / Honours | 20 |
| | Total Credits | 200 |

***Note:** Audit Courses such as Life Science, Environmental Science, Indian History etc., shall be introduced as they mandate the requirement of Outcome Based Education.

SEMESTER I

| Sl.No. | Course Code | Course Name | Credits | | | |
|------------------|-------------|------------------------------------|---------|---|---|----|
| | | | L | T | P | C |
| Theory | | | | | | |
| 1 | U24EN101 | Technical English | 3 | 0 | 0 | 3 |
| 2 | U24MA101 | Matrices and Differential Calculus | 3 | 1 | 0 | 4 |
| 3 | U24CH151 | Engineering Chemistry | 3 | 0 | 0 | 3 |
| 4 | U24GE101 | Principles of Engineering | 3 | 0 | 0 | 3 |
| 5 | U24GE152 | Engineering Graphics | 2 | 1 | 0 | 3 |
| 6 | U24EM101 | Coding Techniques | 3 | 0 | 0 | 3 |
| Practical | | | | | | |
| 7 | U24MA102 | Mathematics Laboratory | 0 | 0 | 2 | 1 |
| 8 | U24CH152 | Engineering Chemistry Laboratory | 0 | 0 | 2 | 1 |
| 9 | U24EM102 | Coding Techniques Laboratory | 0 | 0 | 2 | 1 |
| Total | | | 17 | 2 | 6 | 22 |

SEMESTER II

| Sl.No. | Course Code | Course Name | Credits | | | |
|------------------|-------------|---|---------|---|----|----|
| | | | L | T | P | C |
| Theory | | | | | | |
| 1 | U24EN151 | Technical Communication Skill Development | 2 | 0 | 2 | 3 |
| 2 | U24MA151 | Vector Calculus and Laplace Transforms | 3 | 1 | 0 | 4 |
| 3 | U24PH101 | Engineering Physics | 3 | 0 | 0 | 3 |
| 4 | U24GE151 | Design Thinking | 3 | 0 | 0 | 3 |
| 5 | U24GE102 | Biology for Engineers | 3 | 0 | 0 | 3 |
| 6 | U24EM151 | Programming in Practice | 3 | 0 | 0 | 3 |
| Practical | | | | | | |
| 7 | U24PH102 | Engineering Physics Laboratory | 0 | 0 | 2 | 1 |
| 8 | U24GE153 | Design Thinking Laboratory | 0 | 0 | 4 | 2 |
| 9 | U24GE154 | Engineering Practices | 0 | 0 | 2 | 1 |
| 10 | U24EM152 | Programming in Practice Laboratory | 0 | 0 | 2 | 1 |
| Total | | | 17 | 1 | 12 | 24 |

SEMESTER III

| Sl. No. | Course Code | Course Name | Credits | | | |
|--|-------------|--|---------|----|----|----|
| | | | L | T | P | C |
| Theory | | | | | | |
| 1 | U24MA201 | Multivariate Calculus and Linear Algebra | 3 | 1 | 0 | 4 |
| 2 | U24SH201 | Universal Human Values | 2 | 1 | 0 | 3 |
| 3 | U24GE202 | Biochemistry | 3 | 0 | 0 | 3 |
| 4 | U24GE203 | Genetics | 3 | 0 | 0 | 3 |
| 5 | U24BT201 | Microbiology | 3 | 0 | 0 | 3 |
| 6 | U24BT202 | Basic Transport Processes | 3 | 0 | 0 | 3 |
| Practical | | | | | | |
| 7 | U24GE204 | Biochemistry Laboratory | 0 | 0 | 2 | 1 |
| 8 | U24BT203 | Microbiology Laboratory | 0 | 0 | 2 | 1 |
| 9 | U24BT204 | Basic Transport Processes Laboratory | 0 | 0 | 2 | 1 |
| Audit Course | | | | | | |
| 10 | U24AUXXX | Audit Course – I | -- | -- | -- | -- |
| Courses Lead to +/- Minor / Honours | | | | | | |
| 11 | U24BT601 | R for Biologist | 3 | 0 | 2 | 4 |
| Total | | | 20 | 2 | 8 | 26 |

SEMESTER IV

| Sl.No. | Course Code | Course Name | Credits | | | |
|---|-------------|---|---------|----|----|----|
| | | | L | T | P | C |
| Theory | | | | | | |
| 1 | U24MA253 | Statistics and Numerical Methods | 3 | 1 | 0 | 4 |
| 2 | U24BT251 | Cellular and Molecular Biology | 3 | 0 | 0 | 3 |
| 3 | U24BT252 | Bioenergetics and Metabolism | 3 | 0 | 0 | 3 |
| 4 | U24BT253 | Bioanalytical Techniques | 3 | 0 | 0 | 3 |
| 5 | U24BT254 | Chemical Engineering Thermodynamics | 3 | 1 | 0 | 4 |
| 6 | U24BT751 | Ancient Indian Medicinal System | 3 | 0 | 0 | 3 |
| Practical | | | | | | |
| 7 | U24BT255 | Bioanalytical Techniques Laboratory | 0 | 0 | 2 | 1 |
| 8 | U24BT256 | Cellular and Molecular Biology Laboratory | 0 | 0 | 4 | 2 |
| 9 | U24EM2XX | Internship/ Practical Training/ Value Added Course(s) | 2 | 0 | 2 | 3 |
| Audit Course | | | | | | |
| 10 | U24AUXXX | Audit Course – II | -- | -- | -- | -- |
| Courses Lead to Specialization / Minor / Honours | | | | | | |
| 11 | U24BT651 | Artificial Intelligence - Based Biotechnology | 3 | 0 | 2 | 4 |
| Total | | | 23 | 2 | 10 | 30 |

SEMESTER V

| Sl.No. | Course Code | Course Name | Credits | | | |
|---|-------------|--|---------|----|----|----|
| | | | L | T | P | C |
| Theory | | | | | | |
| 1 | U24BT301 | Immunology | 3 | 0 | 0 | 3 |
| 2 | U24BT302 | Bioreaction Engineering | 3 | 0 | 0 | 3 |
| 3 | U24BT303 | Upstream Processing Techniques | 3 | 0 | 0 | 3 |
| 4 | U24BT7XX | Open Elective – I | 3 | 0 | 0 | 3 |
| 5 | U24BT9XX | Professional Elective - I | 3 | 0 | 0 | 3 |
| 6 | U24BT9XX | Professional Elective - II | 3 | 0 | 0 | 3 |
| 7 | U24EM301 | Community Engagement and Social Responsibility | 1 | 0 | 2 | 2 |
| Practical | | | | | | |
| 8 | U24BT304 | Immunology Laboratory | 0 | 0 | 4 | 2 |
| 9 | U24BT305 | Bioreaction Engineering Laboratory | 0 | 0 | 4 | 2 |
| Audit Course | | | | | | |
| 10 | U24AUXXX | Audit Course – III | -- | -- | -- | -- |
| Courses Lead to Specialization / Minor / Honours | | | | | | |
| 11 | U24BT602 | Neural Networks | 3 | 0 | 2 | 4 |
| Total | | | 22 | 0 | 12 | 28 |

SEMESTER VI

| Sl.No. | Course Code | Course Name | Credits | | | |
|---|-------------|--|---------|----|----|----|
| | | | L | T | P | C |
| Theory | | | | | | |
| 1 | U24GE351 | Microbial Biotechnology | 2 | 0 | 0 | 2 |
| 2 | U24BT351 | Plant Biotechnology and Animal Biotechnology | 4 | 0 | 0 | 4 |
| 3 | U24BT352 | Tissue Engineering | 3 | 0 | 0 | 3 |
| 4 | U24BT7XX | Open Elective – II | 3 | 0 | 0 | 3 |
| 5 | U24BT8XX | Online Course – I | 3 | 0 | 0 | 3 |
| 6 | U24BT9XX | Professional Elective - III | 3 | 0 | 0 | 3 |
| 7 | U24BT9XX | Professional Elective - IV | 3 | 0 | 0 | 3 |
| Practical | | | | | | |
| 8 | U24BT353 | Upstream Processing Techniques Laboratory | 0 | 0 | 4 | 2 |
| 9 | U24EM3XX | Skill Enhancement / Value Added Course(s) | 1 | 0 | 2 | 2 |
| Audit Course | | | | | | |
| 10 | U24AUXXX | Audit Course – IV | -- | -- | -- | -- |
| Courses Lead to Specialization / Minor / Honours | | | | | | |
| 11 | U24BT652 | Applied Predictive Analysis | 3 | 0 | 2 | 4 |
| Total | | | 25 | 0 | 8 | 29 |

SEMESTER VII

| Sl.No. | Course Code | Course Name | Credits | | | |
|---|-------------|--|---------|---|----|----|
| | | | L | T | P | C |
| Theory | | | | | | |
| 1 | U24GE401 | Professional Ethics | 3 | 0 | 0 | 3 |
| 2 | U24BT401 | Downstream Processing Techniques | 3 | 0 | 0 | 3 |
| 3 | U24BT402 | Recombinant DNA Technology | 3 | 0 | 0 | 3 |
| 4 | U24BT403 | Computational Biology | 3 | 0 | 0 | 3 |
| 5 | U24BT9XX | Professional Elective - V | 3 | 0 | 0 | 3 |
| 6 | U24BT9XX | Professional Elective - VI | 3 | 0 | 0 | 3 |
| Practical | | | | | | |
| 7 | U24BT404 | Recombinant DNA Technology Laboratory | 0 | 0 | 4 | 2 |
| 8 | U24BT405 | Downstream Processing Techniques Laboratory | 0 | 0 | 2 | 1 |
| 9 | U24BT406 | Computational Biology Laboratory | 0 | 0 | 2 | 1 |
| 10 | U24EM401 | Project Phase – I | 0 | 0 | 8 | 4 |
| Courses Lead to Specialization / Minor / Honours | | | | | | |
| 11 | U24BT603 | Deep Learning Techniques for Biotechnologist | 3 | 0 | 2 | 4 |
| Total | | | 21 | 0 | 18 | 30 |

SEMESTER VIII

| Sl.No. | Course Code | Course Name | Credits | | | |
|------------------|-------------|--------------------|---------|---|----|----|
| | | | L | T | P | C |
| Theory | | | | | | |
| 1 | U24BT8XX | Online Course – II | 3 | 0 | 0 | 3 |
| Practical | | | | | | |
| 2 | U24EM451 | Project Phase – II | 0 | 0 | 16 | 8 |
| Total | | | 3 | 0 | 16 | 11 |

The number of credits in each semester is summarized as follows:

| Course | I | II | III | IV | V | VI | VII | VIII |
|--|----|----|-----|----|----|----|-----|------|
| B.Tech. Biotechnology with Specialization in Data Analytics for Biotechnology | 22 | 24 | 26 | 30 | 28 | 29 | 30 | 11 |

Semester wise Credit Distribution (in all categories of courses)

| Sl. No. | Category of Courses | Credits | I | II | III | IV | V | VI | VII | VIII |
|----------------|--|----------------|----------|-----------|------------|-----------|----------|-----------|------------|-------------|
| 1. | Foundation Courses | 61 | 18 | 20 | 14 | 4 | - | 2 | 3 | - |
| 2. | Professional Core Courses | 59 | - | - | 8 | 16 | 13 | 9 | 13 | - |
| 3. | Professional Elective Courses | 18 | - | - | - | - | 6 | 6 | 6 | - |
| 4. | Open Elective Courses and Indian Knowledge System | 9 | - | - | - | 3 | 3 | 3 | - | - |
| 5. | Employability Enhancement Courses | 27 | 4 | 4 | - | 3 | 2 | 2 | 4 | 8 |
| 6. | Online Courses | 6 | - | - | - | - | - | 3 | - | 3 |
| 7. | Audit Courses | - | - | - | - | - | - | - | - | - |
| 8. | Courses Lead to Specialization / Minor / Honours | - | - | - | 4 | 4 | 4 | 4 | 4 | - |
| Total | | 200 | 22 | 24 | 26 | 30 | 28 | 29 | 30 | 11 |

Suggested List of Professional Elective Courses

Professional Elective - I

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|--|---------|---|---|---|
| | | | L | T | P | C |
| 1 | U24BT901 | Bioprocess Control and Instrumentation | 3 | 0 | 0 | 3 |
| 2 | U24BT902 | Heat and Mass Transfer Fundamentals | 3 | 0 | 0 | 3 |
| 3 | U24BT903 | Transport Phenomena in Biological System | 3 | 0 | 0 | 3 |
| 4 | U24BT904 | Bioreactor Design and Scale up Process | 3 | 0 | 0 | 3 |
| 5 | U24BT905 | Applied Chemical Reaction Engineering | 3 | 0 | 0 | 3 |

Professional Elective – II

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|---------------------------------|---------|---|---|---|
| | | | L | T | P | C |
| 1 | U24BT906 | Pharmaceutical Biotechnology | 3 | 0 | 0 | 3 |
| 2 | U24BT907 | Protein Engineering | 3 | 0 | 0 | 3 |
| 3 | U24BT908 | Bionanotechnology | 3 | 0 | 0 | 3 |
| 4 | U24BT909 | Biomedical Engineering | 3 | 0 | 0 | 3 |
| 5 | U24BT910 | Biosafety and Hazard Management | 3 | 0 | 0 | 3 |

Professional Elective - III

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|--|---------|---|---|---|
| | | | L | T | P | C |
| 1 | U24BT951 | Therapeutic Application of Phytochemicals | 3 | 0 | 0 | 3 |
| 2 | U24BT952 | Biotechnological Approach in Crop Improvement | 3 | 0 | 0 | 3 |
| 3 | U24BT953 | Plant Tissue Culture and Transformation Techniques | 3 | 0 | 0 | 3 |
| 4 | U24BT954 | Animal Cell Culture Technology | 3 | 0 | 0 | 3 |
| 5 | U24BT955 | Agricultural Biotechnology | 3 | 0 | 0 | 3 |

Professional Elective - IV

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|---|---------|---|---|---|
| | | | L | T | P | C |
| 1 | U24BT956 | Enzyme Technology | 3 | 0 | 0 | 3 |
| 2 | U24BT957 | Bio-fertilizer Production and Mushroom Cultivation | 3 | 0 | 0 | 3 |
| 3 | U24BT958 | Bioenergy and Biofuels | 3 | 0 | 0 | 3 |
| 4 | U24BT959 | Clinical Trials and Health Care Policies in Biotechnology | 3 | 0 | 0 | 3 |
| 5 | U24BT960 | Food Biotechnology | 3 | 0 | 0 | 3 |

Professional Elective – V

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|---|---------|---|---|---|
| | | | L | T | P | C |
| 1 | U24BT911 | Cancer Biology | 3 | 0 | 0 | 3 |
| 2 | U24BT912 | Environmental Biotechnology | 3 | 0 | 0 | 3 |
| 3 | U24BT913 | Biomaterials | 3 | 0 | 0 | 3 |
| 4 | U24BT914 | Stem Cell Technology | 3 | 0 | 0 | 3 |
| 5 | U24BT915 | Bioreactor Consideration for Recombinant Products | 3 | 0 | 0 | 3 |

Professional Elective – VI

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|---|---------|---|---|---|
| | | | L | T | P | C |
| 1 | U24BT916 | Intellectual Property Rights in Biotechnology | 3 | 0 | 0 | 3 |
| 2 | U24BT917 | Molecular Therapeutics and Diagnostics | 3 | 0 | 0 | 3 |
| 3 | U24BT918 | Biophysics | 3 | 0 | 0 | 3 |
| 4 | U24BT919 | Tissue Regeneration | 3 | 0 | 0 | 3 |
| 5 | U24BT920 | Rheology for Complex Fluids | 3 | 0 | 0 | 3 |

List of Courses under each Category

Foundation Courses

| Sl. No. | Course Code | Course Name | Credits | | | |
|--|-------------|---|---------|---|---|---|
| | | | L | T | P | C |
| Humanities & Social Sciences including Management Courses | | | | | | |
| 1 | U24EN101 | Technical English | 3 | 0 | 0 | 3 |
| 2 | U24EN151 | Technical Communication Skill Development | 2 | 0 | 2 | 3 |
| 3 | U24SH201 | Universal Human Values | 2 | 1 | 0 | 3 |
| Basic Science Courses | | | | | | |
| 4 | U24MA101 | Matrices and Differential Calculus | 3 | 1 | 0 | 4 |
| 5 | U24PH101 | Engineering Physics | 3 | 0 | 0 | 3 |
| 6 | U24MA102 | Mathematics Laboratory | 0 | 0 | 2 | 1 |
| 7 | U24PH102 | Engineering Physics Laboratory | 0 | 0 | 2 | 1 |
| 8 | U24MA151 | Vector Calculus and Laplace Transforms | 3 | 1 | 0 | 4 |
| 9 | U24CH151 | Engineering Chemistry | 3 | 0 | 0 | 3 |
| 10 | U24CH152 | Engineering Chemistry Laboratory | 0 | 0 | 2 | 1 |
| 11 | U24MA201 | Multivariate Calculus and Linear Algebra | 3 | 1 | 0 | 4 |
| 12 | U24MA253 | Statistics and Numerical Methods | 3 | 1 | 0 | 4 |
| Engineering Science Courses | | | | | | |
| 13 | U24GE101 | Principles of Engineering | 3 | 0 | 0 | 3 |

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|----------------------------|---------|---|----|----|
| | | | L | T | P | C |
| 14 | U24GE102 | Biology for Engineers | 3 | 0 | 0 | 3 |
| 15 | U24GE151 | Design Thinking | 3 | 0 | 0 | 3 |
| 16 | U24GE152 | Engineering Graphics | 2 | 1 | 0 | 3 |
| 17 | U24GE153 | Design Thinking Laboratory | 0 | 0 | 4 | 2 |
| 18 | U24GE154 | Engineering Practices | 0 | 0 | 2 | 1 |
| 19 | U24GE202 | Biochemistry | 3 | 0 | 0 | 3 |
| 20 | U24GE203 | Genetics | 3 | 0 | 0 | 3 |
| 21 | U24GE204 | Biochemistry Laboratory | 0 | 0 | 2 | 1 |
| 22 | U24GE351 | Microbial Biotechnology | 2 | 0 | 0 | 2 |
| 23 | U24GE401 | Professional Ethics | 3 | 0 | 0 | 3 |
| Total | | | 47 | 6 | 16 | 61 |

Professional Core Courses

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|---------------------------|---------|---|---|---|
| | | | L | T | P | C |
| 1. | U24BT201 | Microbiology | 3 | 0 | 0 | 3 |
| 2. | U24BT202 | Basic Transport Processes | 3 | 0 | 0 | 3 |

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|--|---------|---|---|---|
| | | | L | T | P | C |
| 3. | U24BT203 | Microbiology Laboratory | 0 | 0 | 2 | 1 |
| 4. | U24BT204 | Basic Transport Processes Laboratory | 0 | 0 | 2 | 1 |
| 5. | U24BT251 | Cellular and Molecular Biology | 3 | 0 | 0 | 3 |
| 6. | U24BT252 | Bioenergetics and Metabolism | 3 | 0 | 0 | 3 |
| 7. | U24BT253 | Bioanalytical Techniques | 3 | 0 | 0 | 3 |
| 8. | U24BT254 | Chemical Engineering Thermodynamics | 3 | 1 | 0 | 4 |
| 9. | U24BT255 | Bioanalytical Techniques Laboratory | 0 | 0 | 2 | 1 |
| 10. | U24BT256 | Cellular and Molecular Biology Laboratory | 0 | 0 | 4 | 2 |
| 11. | U24BT301 | Immunology | 3 | 0 | 0 | 3 |
| 12. | U24BT302 | Bioreaction Engineering | 3 | 0 | 0 | 3 |
| 13. | U24BT303 | Upstream Processing Techniques | 3 | 0 | 0 | 3 |
| 14. | U24BT304 | Immunology Laboratory | 0 | 0 | 4 | 2 |
| 15. | U24BT305 | Bioreaction Engineering Laboratory | 0 | 0 | 4 | 2 |
| 16. | U24BT351 | Plant Biotechnology and Animal Biotechnology | 4 | 0 | 0 | 4 |
| 17. | U24BT352 | Tissue Engineering | 3 | 0 | 0 | 3 |
| 18. | U24BT353 | Upstream Processing Techniques Laboratory | 0 | 0 | 4 | 2 |
| 19. | U24BT401 | Downstream Processing Techniques | 3 | 0 | 0 | 3 |

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|---|---------|---|----|----|
| | | | L | T | P | C |
| 20. | U24BT402 | Recombinant DNA Technology | 3 | 0 | 0 | 3 |
| 21. | U24BT403 | Computational Biology | 3 | 0 | 0 | 3 |
| 22. | U24BT404 | Recombinant DNA Technology Laboratory | 0 | 0 | 4 | 2 |
| 23. | U24BT405 | Downstream Processing Techniques Laboratory | 0 | 0 | 2 | 1 |
| 24. | U24BT406 | Computational Biology Laboratory | 0 | 0 | 2 | 1 |
| Total | | | 43 | 1 | 30 | 59 |

Professional Elective Courses

| Sl.No. | Course Code | Course Name | Credits | | | |
|--------|-------------|-----------------------------|---------|---|---|----|
| | | | L | T | P | C |
| 1 | U24BT9XX | Professional Elective - I | 3 | 0 | 0 | 3 |
| 2 | U24BT9XX | Professional Elective - II | 3 | 0 | 0 | 3 |
| 3 | U24BT9XX | Professional Elective - III | 3 | 0 | 0 | 3 |
| 4 | U24BT9XX | Professional Elective - IV | 3 | 0 | 0 | 3 |
| 5 | U24BT9XX | Professional Elective - V | 3 | 0 | 0 | 3 |
| 6 | U24BT9XX | Professional Elective - VI | 3 | 0 | 0 | 3 |
| Total | | | 18 | 0 | 0 | 18 |

Open Elective Courses and IKS

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|--------------------------------------|---------|---|---|---|
| | | | L | T | P | C |
| 1 | U24BT751 | IKS- Ancient Indian Medicinal System | 3 | 0 | 0 | 3 |
| 2 | U24BT7XX | Open Elective - I | 3 | 0 | 0 | 3 |
| 3 | U24BT7XX | Open Elective - II | 3 | 0 | 0 | 3 |
| Total | | | 9 | 0 | 0 | 9 |

List of Open Elective Courses

| Sl.No. | Course Code | Course Name | Credits | | | |
|--------|-------------|---------------------------------------|---------|---|---|---|
| | | | L | T | P | C |
| 1 | U24BT7XX | Intellectual Property Rights | 3 | 0 | 0 | 3 |
| 2 | U24BT7XX | Industrial Safety and Risk Management | 3 | 0 | 0 | 3 |
| 3 | U24BT7XX | Biostatistics | 3 | 0 | 0 | 3 |
| 4 | U24BT7XX | Introduction to Food and Nutrition | 3 | 0 | 0 | 3 |

Employability Enhancement Courses

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|--|---------|---|----|----|
| | | | L | T | P | C |
| 1 | U24EM101 | Coding Techniques | 3 | 0 | 0 | 3 |
| 2 | U24EM102 | Coding Techniques Laboratory | 0 | 0 | 2 | 1 |
| 3 | U24EM151 | Programming in Practice | 3 | 0 | 0 | 3 |
| 4 | U24EM152 | Programming in Practice Laboratory | 0 | 0 | 2 | 1 |
| 5 | U24EM2XX | Internship/ Practical Training/Value Added Course(s) | 2 | 0 | 2 | 3 |
| 6 | U24EM301 | Community Engagement and Social Responsibility | 1 | 0 | 2 | 2 |
| 7 | U24EM3XX | Skill Enhancement/Value Added Course(s) | 1 | 0 | 2 | 2 |
| 8 | U24EM401 | Project Phase - I | 0 | 0 | 8 | 4 |
| 9 | U24EM451 | Project Phase - II | 0 | 0 | 16 | 8 |
| Total | | | 10 | 0 | 34 | 27 |

Online Courses

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|--------------------|---------|---|---|---|
| | | | L | T | P | C |
| 1 | U24BT8XX | Online Course - I | 3 | 0 | 0 | 3 |
| 2 | U24BT8XX | Online Course - II | 3 | 0 | 0 | 3 |
| Total | | | 6 | 0 | 0 | 6 |

Audit Courses

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|--------------------|---------|---|---|---|
| | | | L | T | P | C |
| 1 | U24AUXXX | Audit Course - I | 2 | 0 | 0 | 0 |
| 2 | U24AUXXX | Audit Course - II | 2 | 0 | 0 | 0 |
| 3 | U24AUXXX | Audit Course - III | 2 | 0 | 0 | 0 |
| 4 | U24AUXXX | Audit Course - IV | 2 | 0 | 0 | 0 |
| Total | | | 8 | 0 | 0 | 0 |

Suggested list of Audit Courses

| Sl. No. | Course Code | Course Name | Credits | | | |
|---------|-------------|------------------------------|---------|---|---|---|
| | | | L | T | P | C |
| 1 | U24AU001 | Disaster Management | - | - | - | - |
| 2 | U24AU003 | Cyber Security | - | - | - | - |
| 3 | U24AU007 | Environmental Studies | - | - | - | - |
| 4 | U24AU008 | Entrepreneurship Development | - | - | - | - |
| 5 | U24AU009 | Constitution of India | - | - | - | - |

Courses Lead to Specialization / Minor / Honours

| Sl. No. | Course Code | Course Name | Credits | | | |
|----------------|--------------------|--|----------------|----------|----------|----------|
| | | | L | T | P | C |
| 1 | U24BT601 | R for Biologists | 3 | 0 | 2 | 4 |
| 2 | U24BT651 | Artificial Intelligence - Based Biotechnology | 3 | 0 | 2 | 4 |
| 3 | U24BT602 | Neural Networks | 3 | 0 | 2 | 4 |
| 4 | U24BT652 | Applied Predictive Analysis | 3 | 0 | 2 | 4 |
| 5 | U24BT603 | Deep Learning for Biotechnologist | 3 | 0 | 2 | 4 |
| Total | | | 15 | 0 | 10 | 20 |