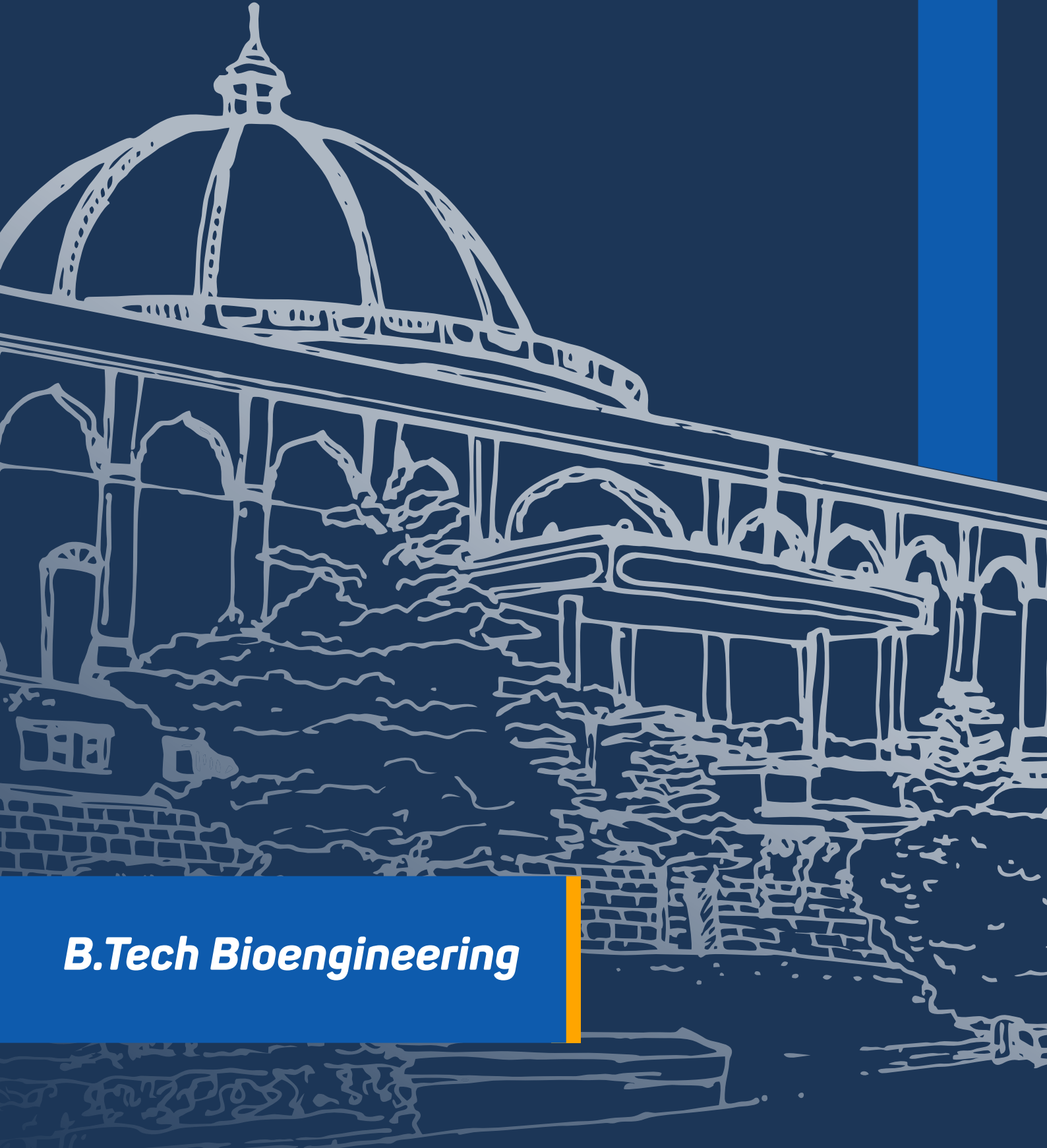




FACULTY OF
ENGINEERING AND
TECHNOLOGY



B.Tech Bioengineering

Division	Faculty of Engineering and Technology
School Name	School of Engineering & Technology
Department Name	Department of Bioengineering
Programme Name	B.Tech Bioengineering

Semester	Odd (I)	Even (II)	Total Credits
First Year	21	22	43
Second Year	21	22	43
Third Year	22	22	44
Fourth Year	16	19	35

+ + + + + + + + + + + + + + + + **COURSE BASKET** + + + + + + + + + + + + + + + +

| Course Type | Description |
|----------------------|--|
| Programme Core | Courses dealing with foundations, depth and breadth of the major in which student is admitted at MIT-WPU |
| Programme Electives | Open electives under the programme allow students to specialise in a particular area connected to their major. |
| University Core | Courses that reflect the core MIT-WPU values and the mission of Life Transformation of students. |
| University Electives | Multidisciplinary courses across the faculties at MIT-WPU and outside the programme core. |

Semester I

| Semester | Course Type | Course Name / Course Title | Total Credits |
|----------|-------------|---|---------------|
| I | UC | Indian Constitution | 1 |
| I | UC | Environment and Sustainability | 1 |
| I | UC | Yoga - I | 1 |
| I | UC | Social Leadership Development Program | 1 |
| I | UC | Financial Literacy | 1 |
| I | PF | Engineering Physics | 3 |
| I | PF | Engineering Chemistry | 3 |
| I | PF | Engineering Graphics | 3 |
| I | PF | Programming and Problem Solving | 3 |
| I | PF | Ideas and Innovations in Manufacturing | 1 |
| I | PF | Introductory Mathematics for Bioengineers | 0 |
| I | PF | Engineering Mechanics | 3 |
| | | Total Credits: | 21 |

Semester II

| Semester | Course Type | Course Name / Course Title | Total Credits |
|----------|-------------|--|---------------|
| II | UC | Yoga - II | 1 |
| II | UC | Co-creation | 1 |
| II | UC | AI for everyone | 2 |
| II | UC | Foundation of Peace | 2 |
| II | UC | Indian Knowledge System (General) | 2 |
| II | UC | Sports | 1 |
| II | PF | Basics of Electrical and Electronics Engineering | 3 |
| II | PF | Cell and Molecular Biology | 4 |
| II | PF | Mathematics for Bioengineers-I | 3 |
| II | PF | Human Anatomy and Physiology | 3 |
| | | Total Credits: | 22 |

Semester - III

| Semester | Course Type | Course Name / Course Title | Total Credits |
|----------|----------------------|--|---------------|
| III | UC | Spiritual and Cultural heritage: Indian Experience | 2 |
| III | UC | Research Innovation Design Entrepreneurship (RIDE) | 1 |
| III | University Electives | University Electives - I | 3 |
| III | PF | Mathematics for Bioengineers-II | 3 |
| III | PF | Physiology for Engineers | 2 |
| III | PF | Bioengineering Laboratory | 1 |
| III | PM | Data Science for Bioengineers | 3 |
| III | PM | Biochemical Process Calculations | 3 |
| III | PM | Microbiology and Microbial Techniques | 3 |
| | | Total Credits: | 21 |

SEMESTER - IV

| Semester | Course Type | Course Name / Course Title | Total Credits |
|----------|----------------------|---|---------------|
| IV | University Core | Rural Immersion | 1 |
| IV | University Core | Life Transformation Skills | 1 |
| IV | University Electives | University Electives - II | 3 |
| IV | Program Major | Biochemistry | 4 |
| IV | Program Major | Heat and Fluid Flow | 4 |
| IV | Program Major | Strength of Materials | 2 |
| IV | Program Foundation | Probability and Statistics for Bioengineers | 3 |
| IV | Program Major | Introduction to Immunoengineering | 2 |
| IV | Program Major | Indian Knowledge System (Sci. & Tech.) | 2 |
| | | Total Credits: | 22 |

Semester - V

| Semester | Course Type | Course Name / Course Title | Total Credits |
|----------|-------------|--|---------------|
| V | UC | Managing Conflicts Peacefully: Tools and Techniques | 2 |
| V | UE | University Electives - III | 3 |
| V | PE | Program Elective - I | 4 |
| V | PM | Numerical Methods and advanced statistics for Bioengineers | 3 |
| V | PM | Genetics | 3 |
| V | PM | Fundamentals of Proteomics | 3 |
| V | PM | Biothermodynamics | 3 |
| V | PF | Unit Operations for Bioengineers | 1 |
| | | Total Credits: | 22 |

Semester - VI

| Semester | Course Type | Course Name / Course Title | Total Credits |
|----------|--|--|---------------|
| VI | UC | National Academic Immersion Program | 2 |
| VI | PE | Program Elective - II | 4 |
| VI | PF | Bioanalytical Techniques Laboratory | 1 |
| VI | PM | Biomaterials | 3 |
| VI | PM | Industrial Biotechnology | 3 |
| VI | PM | Biological transport Phenomena | 3 |
| VI | PM | Bioreaction Engineering Principles | 3 |
| VI | PM | Modeling and Simulation for Bioengineers | 1 |
| VI | PM | Bioprocess Laboratory | 1 |
| VI | Program Capstone Project/Seminar and Internships | Seminar | 1 |
| | | Total Credits: | 22 |

Semester - VII

| Semester | Course Type | Course Name / Course Title | Total Credits |
|----------|--|----------------------------|---------------|
| VII | PE | Program Elective - III | 4 |
| VII | Program Capstone Project/Seminar and Internships | Internship | 12 |
| | | Total Credits: | 16 |

Semester - VIII

| Semester | Course Type | Course Name / Course Title | Total Credits |
|----------|--|---|---------------|
| VIII | Program Electives | Program Elective - IV | 4 |
| VIII | Program Major | Project Management and Economics | 3 |
| VIII | Program Major | Bioethics, Biosafety and Regulatory Affairs | 2 |
| VIII | Program Capstone Project/Seminar and Internships | Capstone project | 8 |
| VIII | Program Major | Impact of AI in Bioengineering | 2 |
| | | Total Credits: | 19 |

Program Electives

| Semester | Course Type | Course Name / Course Title | Total Credits |
|----------|-------------|--|---------------|
| V | PE - I | Introduction to Biomechanics | 4 |
| V | PE - I | Electronic Devices and Integrated Circuits | 4 |
| V | PE - I | Metabolic Engineering | 4 |
| V | PE - I | Introduction to Computational Biology | 4 |
| V | PE - I | Gene Manipulation and Genomics | 4 |
| VI | PE - II | Advanced Biomechanics | 4 |
| VI | PE - II | Biomedical Signals and Processing | 4 |
| VI | PE - II | Bio-catalysis | 4 |
| VI | PE - II | Python for Bioinformatics | 4 |
| VI | PE - II | Synthetic Biology | 4 |
| VII | PE - III | Medical Devices | 4 |
| VII | PE - III | Biomedical Devices | 4 |
| VII | PE - III | Bioprocess Design | 4 |
| VII | PE - III | Advanced Algorithm for Bioinformatics | 4 |
| VII | PE - III | Gene Therapy | 4 |
| VIII | PE - IV | Implant Design and Manufacturing | 4 |
| VIII | PE - IV | Biomedical Image Processing | 4 |
| VIII | PE - IV | Process Intensification in Bioprocesses | 4 |
| VIII | PE - IV | Bioinformatic Systems and Networks | 4 |
| VIII | PE - IV | Regulatory Aspects in Genetic Engineering | 4 |

*Modifications to the programmes and courses are contingent upon adherence to university guidelines and procedures. Any proposed changes must undergo a thorough review process, including consultation with relevant academic departments, approval from the appropriate administrative bodies, and compliance with accreditation standards.

Additionally, consideration will be given to feedback from students, faculty, and other stakeholders to ensure that modifications align with the overall educational objectives and mission of the university. The implementation of any approved changes will be communicated transparently to the university community, and appropriate measures will be taken to facilitate a smooth transition for all affected parties.