PROGRAMME STRUCTURE

B.TECH BIOINFORMATICS

(SPECIALIZATION IN ARTIFICIAL INTELLIGENCE)

Category	**Credits**
Major (Core)	**80**
Minor Stream	**32**
Multidisciplinary	**9**
Ability Enhancement Courses (AEC)	**8**
Skill Enhancement Courses (SEC)	**9**
Value Added Courses common for all UG	**8**
Internship / Field Work	**2**
Research Project / Dissertation	**12**
Total	**160**

Sem-1	**Type**	**L**	**T**	**P**	**C**
Biology for Engineers	Theory	**3**	**0**	**0**	**3**
Engineering Design and Prototyping	Comprehensive	**1**	**0**	**2**	**4**
Mathematics for Bioengineering-I	Theory	**3**	**0**	**0**	**3**
Principles of Bioelectronics	Integrated	**3**	**0**	**1**	**4**
Engineering Chemistry/Applied Physics	Integrated	**3**	**0**	**1**	**4**
YOGA	Theory	**1**	**0**	**0**	**1**
Aptitude Skills	Theory	**1**	**0**	**0**	**1**
					20
Sem-2	Type	**L**	**T**	**P**	**C**
Engineering Chemistry/Applied Physics	Integrated	**3**	**0**	**1**	**4**

Mathematics for Bioengineering-II	Theory	**3**	**0**	**0**	**3**
Basics of Bioinformatics	Theory	**2**	**0**	**0**	**2**
Python for Biological Data Analysis	Integrated	**3**	**0**	**1**	**4**
Structural Bioinformatics	Integrated	**3**	**0**	**1**	**4**
Science and Engineering for Sustainable World	Theory	**2**	**0**	**0**	**2**
Engineering Communication Skills	Theory	**1**	**0**	**0**	**1**
					20
Sem-3	Type	**L**	**T**	**P**	**C**
Structural Biology	Integrated	**2**	**0**	**0**	**2**
Principles of Biochemistry	Integrated	**3**	**0**	**1**	**4**
CELL AND MOLECULAR BIOLOGY	Theory	**3**	**0**	**0**	**3**
Database Management Systems	Integrated	**2**	**0**	**1**	**3**
AI and Cognitive Systems	Theory	**2**	**0**	**0**	**2**
Professional Elective -1					
AI in Biosciences & Technology	Integrated	**2**	**0**	**1**	**3**
Fundamentals of Cancer Biology	Theory	**3**	**0**	**0**	**3**
Genetic Engineering	Theory	**3**	**0**	**0**	**3**
Open Elective -1					
OOPS Using Python	Integrated	**2**	**0**	**1**	**3**
Pharmaceutical Biotechnology	Theory	**3**	**0**	**0**	**3**
Introduction to Healthcare Systems	Theory	**3**	**0**	**0**	**3**
					20
Sem-4	Type	**L**	**T**	**P**	**C**
System Biology	Integrated	**2**	**0**	**1**	**3**
Genetics and Evolutionary Biology	Theory	**2**	**0**	**0**	**2**
Statistical Applications in Bioinformatics	Integrated	**2**	**0**	**1**	**3**

Fundamentals of Data Structures	Integrated	**2**	**0**	**1**	**3**
Prompting and AI Tools	Theory	**2**	**0**	**0**	**2**
Innovation and Entrepreneurship	Theory	**1**	**0**	**0**	**1**
Professional Elective -2					
Immunoinformatics	Theory	**3**	**0**	**0**	**3**
Bioprocess Engineering	Theory	**3**	**0**	**0**	**3**
Epidemiology and Global Health	Theory	**3**	**0**	**0**	**3**
BioPearl	Integrated	**2**	**0**	**1**	**3**
Open Elective -2					
Data structure & Algorithms using Python	Integrated	**2**	**0**	**1**	**3**
Agriculture and Environmental Biotechnology	Theory	**3**	**0**	**0**	**3**
Machine Learning for BioPharma	Integrated	**2**	**0**	**1**	**3**
					20
Sem-5	Type	**L**	**T**	**P**	**C**
Machine Learning–I	Integrated	**2**	**0**	**1**	**3**
Structural Bioinformatics	Integrated	**2**	**0**	**1**	**3**
Pharmacogenomics & Informatics	Integrated	**2**	**0**	**1**	**3**
Algorithm in Bioinformatics	Theory	**2**	**0**	**0**	**2**
Summer Training & Minor Project-1	Project	**0**	**0**	**1**	**1**
AI-Driven Data Visualization and Storytelling	Theory	**2**	**0**	**0**	**2**
Professional Elective -3					
Molecular Diagnostics and Therapeutics	Theory	**3**	**0**	**0**	**3**
Medical Imaging and Diagnostic Techniques	Theory	**3**	**0**	**0**	**3**
Cheminformatics	Theory	**3**	**0**	**0**	**3**
Open Elective -3					
Operating Systems	Integrated	**2**	**0**	**1**	**3**

Microbial Technology	Theory	**3**	**0**	**0**	**3**
AI in Drug Safety	Integrated	**2**	**0**	**1**	**3**
					20
Sem-6	Type	**L**	**T**	**P**	**C**
Machine Learning–II	Integrated	**2**	**0**	**1**	**3**
Omics Technology	Theory	**2**	**0**	**0**	**2**
Computational Drug Discovery	Integrated	**2**	**0**	**1**	**3**
Next Generation Sequencing (NGS)	Integrated	**2**	**0**	**1**	**3**
Statistical Analysis using R	Integrated	**2**	**0**	**1**	**3**
Professional Elective -4					
Health Informatics	Theory	**3**	**0**	**0**	**3**
Animal Biotechnology	Theory	**3**	**0**	**0**	**3**
Translational Bioinformatics	Integrated	**2**	**0**	**1**	**3**
Open Elective -4					
Mobile App Development (React Native)	Integrated	**2**	**0**	**1**	**3**
Advanced Genomics	Theory	**3**	**0**	**0**	**3**
Cloud Computing for Bioinformatics	Integrated	**2**	**0**	**1**	**3**
					20
Sem-7	Type	**L**	**T**	**P**	**C**
Network Biology & Pathway Analysis	Integrated	**3**	**0**	**1**	**4**
Deep Learning	Integrated	**3**	**0**	**1**	**4**
Research Methodology and Prototype Development	Lab	**0**	**0**	**1**	**1**
Intellectual Property Rights and Regulatory Affairs	Theory	**2**	**0**	**0**	**2**
Universal Human Values	Theory	**1**	**0**	**0**	**1**
Indian Knowledge System	Theory	**1**	**0**	**0**	**1**

Summer Training & Minor Project-2	Project	**0**	**0**	**1**	**1**
Professional Elective -5					
Protein Engineering	Theory	**3**	**0**	**0**	**3**
GenAI for Biology	Integrated	**2**	**0**	**1**	**3**
MLOps for Bioinformatics	Integrated	**2**	**0**	**1**	**3**
Open Elective -5					
Natural Language Processing	Integrated	**2**	**0**	**1**	**3**
Computer Vision	Integrated	**2**	**0**	**1**	**3**
Advanced Structural Bioinformatics	Integrated	**2**	**0**	**1**	**3**
					20
Sem-8	Type	**L**	**T**	**P**	**C**
Project & Dissertation	Project	**0**	**0**	**14**	**14**
Internship & Scientific Communication	Internship	**0**	**0**	**2**	**2**
MOOCS Course -1	Theory	**0**	**0**	**0**	**2**
MOOCS Course -2	Theory	**0**	**0**	**0**	**2**
					20
	Total Credits				**160**