B. Tech
Curriculum (2024) – Honours-Semester IV to VIII
BIOTECHOLOGY

Branch Code: BT

(SHR/AC/Auto/Acad. Council/B.Tech/2/Curri. /Honours/BT)

Recommended by BoS on 10/06/2025
Approved by Academic Council on 05/07/2025

Preface

The Bachelor of Technology (Honours) program offers B.Tech students an opportunity to achieve academic excellence and deepen their expertise in their chosen major discipline. It is designed to foster advanced technical knowledge, research aptitude, and innovation skills, preparing students for higher studies and competitive professional challenges.

Eligible students may register for the Honours program during the 4th semester, with the requirement to maintain a minimum CGPA of 8.0 by the end of the eighth semester to qualify for the award. The program mandates the successful completion of an additional 15 credits through a combination of theory courses, MOOCs, higher credit electives, and a Mini Project, enabling flexible and interdisciplinary learning paths.

Strict academic standards apply throughout the program. Any failure in Honours or major courses disqualifies continuation in the Honours program, and no supplementary examinations are provided. Credits earned before any such failure will appear on the grade card but will not contribute to the CGPA.

The curriculum encourages practical application of knowledge via project work under faculty guidance, while assessments align with established academic regulations. Successful completion of all requirements within the normal four-year duration, without any failing grades, is essential for the conferment of the B.Tech (Honours) degree.

This program aims to nurture a culture of rigor and distinction, empowering students to excel and expand their academic and professional horizons.

Basket 1									
Slot: R/M/H							**Course Type: VAC**		
Semester	**Course Code**	**Course Title (Course Name)**	**Credit Structure**				**Total Marks**		**Credits**	**Hrs./ Week**
			L	**T**	**P**	**R**	**CIA**	**ESE**		
4	24BTH411	Computational approaches in Biology	3	1	0	0	40	60	4	4
5	24BTH512	Foundations of Biological Data Science	4	0	0	0	40	60	4	4
6	24BTH613	Machine learning and AI in Biology	3	0	0	0	40	60	3	3
7	24BTH704	Mini Project	0	0	0	4	50	50	4	4
Total									**15**	

Basket 2									
Slot: R/M/H							**Course Type: VAC**		
Semester	**Course Code**	**Course Title (Course Name)**	**Credit Structure**				**Total Marks**		**Credits**	**Hrs./ Week**
			L	**T**	**P**	**R**	**CIA**	**ESE**		
4	24BTH421	Therapeutic Proteins and Biologics	3	1	0	0	40	60	4	4
5	24BTH522	Biopharmaceutical Production and Bioprocessing	3	1	0	0	40	60	4	4
6	24BTH623	Emerging Technologies in Biopharmaceutical Innovation	3	0	0	0	40	60	3	3
7	24BTH704	Mini Project	0	0	0	4	50	50	4	4
Total									**15**	

Basket 3									
Slot: R/M/H							**Course Type: VAC**		
Semester	**Course Code**	**Course Title (Course Name)**	**Credit Structure**				**Total Marks**		**Credits**	**Hrs./ Week**
			L	**T**	**P**	**R**	**CIA**	**ESE**		
4	24BTH431	Organic Chemical technology	4	0	0	0	40	60	4	4

5	24BTH532	Chemical process Intensification	3	0	0	0	40	60	3	3
6	24BTH633	Process Plant Operations and safety	4	0	0	0	40	60	4	4
7	24BTH704	Mini Project	0	0	4	0	50	50	4	4
Total									**15**	

Basket 1 List of MOOC Courses						
Sl. No	**Course Code**	**Course Title (Course Name)**	**Duration**	**Offering Platform**	**Offering Institute**	**Credits**
1	24BTH101	Data Analysis for Biologists	8 weeks	NPTEL	IIT Guwahati	3
2	24BTH102	Computational System Biology	12 weeks	NPTEL	IIT Madras	4
3	24BTH103	Computational Genomics	12 weeks	NPTEL	IISER Bhopal	4
4	24BTH104	Algorithms in Computational Biology and Sequence Analysis	12 weeks	NPTEL	IISc Bangalore	4
5	24BTH105	Bioinformatics: Algorithms and Applications	12 weeks	NPTEL	IIT Madras	4

Basket 2: List of MOOC Courses						
Sl. No	**Course Code**	**Course Title (Course Name)**	**Duration**	**Offering Platform**	**Offering Institute**	**Credits**
1	24BTH106	Drug Delivery: Principles and Engineering	12 weeks	NPTEL	IISc Bangalore	4
2	24BTH107	Organic Chemistry in Biology and Drug Development	12 weeks	NPTEL	IIT Kharagpur	4
3	24BTH108	Medicinal Chemistry	12 weeks	NPTEL	IISER Pune	4
4	24BTH109	Spectroscopic Techniques for Pharmaceutical and Biopharmaceutical Industries	12 weeks	NPTEL	IIT Delhi	4

| 5 | 24BTH110 | Biomedical Nanotechnology | 4 weeks | NPTEL | IIT Roorkee | 2 |
| 6 | 24BTH111 | Computer Aided Drug Design | 8 weeks | NPTEL | IIT Madras | 3 |

Basket 3 List of MOOC Courses						
Sl. No	Course Code	Course Title (Course Name)	Duration	Offering Platform	Offering Institute	Credits
1	24BTH112	Chemical Process Intensification	12 weeks	NPTEL	IIT Guwahati	4
2	24BTH113	Chemical Process Safety	12 weeks	NPTEL	IIT Roorkee	4
3	24BTH114	Chemical Process Instrumentation	12 weeks	NPTEL	IIT Kharagpur	4
4	24BTH115	Chemical Process Technology	12 weeks	NPTEL	IIT Guwahati	4
5	24BTH116	Chemical Process Utilities	12 weeks	NPTEL	IIT Roorkee	4