

**MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL**  
**(Formerly West Bengal University of Technology)**  
**Syllabus of B. Sc in Biotechnology**  
**(Effective from 2023-24 Academic Sessions)**

### **Graduate Attributes**

- **Disciplinary knowledge and skills**
- **Skilled communication**
- **Critical thinking and problem solving capacity**
  - **Logical thinking and reasoning**
- **Team Spirit & Leadership Quality**
- **Digital efficiency**
- **Ethical awareness / reasoning**
- **Both National and international perspective**
- **Lifelong learning**

#### **By the end of the program the students will be able to:**

- Understand concepts in Biotechnology and demonstrate interdisciplinary skills acquired in cell biology, genetics, biochemistry, bioprocessing, microbiology and molecular biology.
- Demonstrate the laboratory skills in cell biology, genetics, biofermentation, instrumentation, basic and applied microbiology with an emphasis on technological aspects.
- Competent to apply the knowledge and skills gained in the fields of Plant biotechnology, animal biotechnology and microbial technology in pharma, food, agriculture, beverages, herbal and nutraceutical industries.
- Critically analyze the environmental issues and apply the knowledge gained in biotechnology for conserving the environment and resolving the problems.
- The person with a graduate degree in Biotechnology will be knowledgeable, skilled and analytical in different domains like disease, mutation, genetical problems, environmental problems, microbiological problems remedies and managements.
- The course will lead to a basic degree in Biotechnology, which is considered as the minimum essential for a professional with an eligibility to go for a higher degree.
- Public education on basic ethics and biosafety related programs.
- Offer a helping hand and or efficiently manage and successfully run any biotechnology labs, department in institutions, and offer expertise..
- Engage oneself in self-assessment and structure their continuing professional education to refine existing skills and acquire new skills for professional advancement.
- Practice professional and ethical responsibilities with high degree of credibility, integrity and social concern.

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**Curriculum Structure**

**SEM-1**

Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	DSC	BMBT 1101	Biochemistry	3	0	2	5
		BMBT 1191					
2.		BMBT 1102	Cell Biology	3	0	2	5
		BMBT1192					
3.	DSE	MIC101	Computer Fundamental	3	0	0	3
4.	GE		Any one from GE Basket A or D	3	0	0	3
5.	AECC	AECC101	English & Professional Communication	2	0	0	2
6.	SEC	SEC181	Life Skills & Personality Development	2	0	0	2
7.	VAC	VAC181A/ VAC181B/ VAC181C	Yoga/ Health & Wellness/ Sports	2	0	0	2
<b>Total Credit</b>							22
<b>SEM-2</b>							
Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	DSC	BMBT2101	Basic microbiology	3	0	2	5
		BMBT2191					
2.		BMBT2102	Plant and mammalian physiology	3	0	2	5
		BMBT2192					
3.	DSE	MIC201	Management Information System	3	0	0	3
4.	GE		Any one from GE Basket B or E	3	0	0	3
5.	AECC	AECC 201	Modern Indian Languages and Literature	2	0	0	2
6.	SEC	SEC201	IT Skills	2	0	0	2
7.	VAC	VAC281A VAC281B VAC281C VAC281D	Critical Thinking NSS Mental Health Environmental Studies	2	0	0	2
<b>Total Credit</b>							22

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**SEM-3**

Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	DSC	BMBT3201 BMBT3291	Molecular Biology	3	0	2	5
2.		BMBT3202 BMBT3292	Enzymology and Enzyme Technology	3	0	2	5
3.	DSE	MIC301	Word and PowerPoint & Spreadsheet Application with Excel	4	0	0	4
4.	GE		Any one from GE Basket C or F	3	0	0	3
5.	AECC	AECC 301B	The Constitution and Human Rights	2	0	0	2
6.	SEC	SEC301	Understanding basics of Cyber Security	2	0	0	2
<b>Total Credit</b>							21

**SEM-4**

Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	DSC	BMBT 4201	Bioanalytical Tools	4	0	0	4
2.		BMBT 4202	Plant and animal tissue culture techniques	4		0	4
3.		BMBT4203 BMBT4293	Genetics and Karyotyping	3		2	5
4.	DSE	MIC401A/B	Basics of Operating System/ Database Management with SQL	3	1	0	4
5.		MIC402A/B	Graphic Design with Photoshop and Illustrator/ Unix And Shell Programming	3	1	0	4
6.	AECC	AECC401	Universal Human Values (UHV)	2	0	0	2
<b>Total Credit</b>							23

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**SEM-5**

Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	DSC	BMBT5301	Recombinant DNA Technology	3	0	2	5
2.		BMBT5302-	Immunology	3	0	2	5
3.	DSE	MIC501A/ B/C	Cloud Computing /Introduction to Computer Network	3	1	0	4
4.		MIC502	E-commerce and Application	3	1	0	4
5.	SEC	SEC 581	Internship to be started after exam of 4 <sup>th</sup> sem (sem break) and completed within 5 <sup>th</sup> sem (weekends)	0	0	4	4
<b>Total Credit</b>							22

**SEM-6**

Sl	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	DSC	BMBT 6301	Plant and Animal Biotechnology	4	0		4
2.		BMBT 6302	Developmental Biology	4	1	0	5
3.		BMBT-6303 BMBT-6393	Agricultural and Environmental Biotechnology	3	0	2	5
4.	DSE	MIC601	Web Development with HTML and CSS	3	1	0	4
5.		MIC602 A/B	Internet and Networking /ERP	3	1	0	4
<b>Total Credit</b>							22

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**SEM-7**

Sl .	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	DSC	BMBT 7401 BMBT 7491	<b>Genomics Proteomics and Bioinformatics</b>	3	0	2	5
2.		BMBT 7402 BMBT 7492	<b>Bioprocess, pharmaceutical and Industrial Biotechnology</b>	3	0	2	5
3.		BMBT 7403	<b>Research methodology</b>	3	1	0	4
4.	DSE	MIC701 A/B/C	<b>Cloud Computing / Software Project Management /Introduction To Cyber Security and Cyber Laws</b>	3	1	0	4
5.		MIC702 A/B/C	<b>Branding in Healthcare &amp; Digital Marketing / Digital Marketing/ Data Analysis and Interpretation</b>	3	1	0	4
<b>Total Credit</b>							22

**SEM-8**

Sl.	Subject Type	Code	Subject Name	Credits			Total Credits
				L	T	P	
1.	DSC	BMBT 8401	<b>IPR and Biosafety</b>	4	1	0	5
2.		BMBT 8402 BMBT 8492	<b>Medical and Nano-biotechnology</b>	3	0	2	5
4.	SEC	BT 881	Research Project/ Dissertation/ <b>Basic Forensic Science+ Molecular Diagnostics + Pharmaceutical Biotechnology /Ecology and Evolution</b>	0	0	12	12
<b>Total Credit</b>							22