

## Master of Science (Microbial Technology)

(AY 2026-27 onwards)

### Curriculum Version 1.00

Credit distribution among baskets (Minimum Credits to be earned = 80)		
Sl. No.	Baskets	Credit Contribution
1	School Core	16
2	Program Core	31
3	Discipline Elective	27
	Common Electives Basket	15
	Specialized Elective Baskets*	12
4	Open Elective	6
<b>TOTAL CREDITS</b>		<b>80</b>

Specialized Elective Baskets*		
Sl.No.	Name of the Basket	Minimum Credit Requirement
1	Microbial Proteins : Engineering and Applications	3
2	Industrial Biotechnology	3
3	Biopharmaceutics	3
4	Biological Data Analysis	3
Total*		12

*\* Remaining Credits, if any, to satisfy Specialized Elective Baskets credit requirement can be taken from any Specialized Elective Basket*

Sl. No.	Course Code	Course Name	T	P	Credits
<b>A. School Core - Minimum Credits to be earned from this basket (A+B+C) =</b>					<b>16</b>
1	ENG5001	English Language and Communication Skills	0	2	1
2	BIT5040	Research Paper	-	-	2
3	BIT6003	M.Sc. Microbial Technology Capstone Project	-	-	6
4	BIT6004	M.Sc. Microbial Technology Internship	-	-	4
<b>B. Foreign Languages Basket - Min. credits to be earned from this basket =</b>					<b>1</b>
1	FRE1002	Communicative French	0	2	1
2	GER1002	Communicative German	0	2	1
<b>C. Soft Skills Basket (All Courses in this basket are mandatory) - Minimum Credits =</b>					<b>2</b>
1	PSY5124	Self-development and Interpersonal Skills	0	2	1
2	SSK2002	Being Corporate Ready	0	2	1
<b>D. Program Core - Minimum Credits to be earned from this basket =</b>					<b>31</b>
1	BIT5041	Microbial Gene Technology	3	2	4
2	BIT5002	Advanced Cell and Molecular Biology	2	2	3
3	BIT5042	Microbial Biochemistry	3	2	4
4	BIT5043	Infection Biology and Immune Defence	2	0	2
5	BIT5044	Molecular Epidemiology	2	0	2
6	BIT5045	Industrial Microbiology and Bioprocess Technology	3	2	4
7	BIT5046	Applied Molecular Virology	2	0	2
8	BIT5009	Advanced Bioinformatics	3	2	4
9	BIT5047	Microbial Genomics and Proteomics	2	2	3
10	BIT5018	Nanobiotechnology	3	0	3
<b>E. Discipline Electives - Minimum Credits to be earned from <u>both</u> Common and Specialized elective baskets (F+G) =</b>					<b>27</b>
<b>F. Common Electives Basket - Minimum Credits to be earned from this basket =</b>					<b>15</b>
1	MAT5010	Advanced Biostatistics	2	2	3
2	BIT5048	Food and Dairy Microbial Technology	3	2	4
3	BIT5012	Research Methodology for Biosciences	2	0	2
4	BIT5013	Bioentrepreneurship	2	0	2
5	PHS2002	Drug Formulation and Dosage Calculation	2	0	2
6	CSE1021	Python Programming	0	4	2
7	BIT5015	Pharmaceutical Biotechnology	2	0	2
8	BIT5049	Water and Wastewater Microbiology	2	2	3
9	BIT5050	Antimicrobial Resistance and Stewardship	3	0	3
10	BIT5051	Advances in Tissue Engineering	3	0	3
11	BIT5052	Microbes in Sustainable Agriculture and Energy	3	0	3
12	BIT5053	Next Generation Sequencing Technologies	3	0	3
13	BIT5021	Molecular Diagnostics Techniques	3	0	3
14	BIT5059	Computational Biology	3	0	3

**G. Specialized Electives Baskets - Minimum Credits to be earned from these baskets (H+I+J) =** **12**

**H. Microbial Proteins: Engineering and Applications Basket - Minimum Credits to be earned from this basket =** **3**

1	BIT5022	Upstream and Downstream Process	2	2	<b>3</b>
2	BIT5054	Infection Biology and Vaccinology	3	0	<b>3</b>
3	BIT5055	Metabolomics in Microbial Systems	3	0	<b>3</b>
4	BIT5025	Protein Characterization Techniques	2	2	<b>3</b>

**I. Industrial Biotechnology Basket - Minimum Credits to be earned from this basket =** **3**

1	BIT5026	Food and Beverage Biotechnology	3	0	<b>3</b>
2	BIT5056	Engineering Biosimilars and Bioactive Metabolites	3	0	<b>3</b>
3	BIT5028	Quality Control and Quality Assurance	2	0	<b>2</b>
4	BIT5057	Fundamentals of Bioassays	3	0	<b>3</b>

**J. Biopharmaceutics Basket - Minimum Credits to be earned from this basket =** **3**

1	PHS2001	Drug Discovery and Drug Development	2	2	<b>3</b>
2	BIT5032	Regulatory Affairs, IPR, Biosafety and Bioethics	3	0	<b>3</b>
3	BIT5060	Biotherapeutics: Proteins and Peptides	3	0	<b>3</b>
4	BIT5035	Clinical Data Management and Medical Writing	3	0	<b>3</b>

**K. Biological Data Analysis Basket - Minimum Credits to be earned from this basket =** **3**

1	BIT5036	Biological Image Processing	2	2	<b>3</b>
2	BIT5037	R Programming and Data Visualization	2	2	<b>3</b>
3	BIT5058	Quality Analytics and Process Optimization	2	2	<b>3</b>
4	BIT5039	AI in Biology	2	2	<b>3</b>

**Open Elective basket - Minimum Credits to be earned from this basket =** **6**

- Any course from **another** 'eligible' curriculum
- Any **unused** Discipline Elective from his/ her 'own' curriculum
- Any **stand-alone** course declared as "Open Elective" by School for a specific 'eligible' degree
- School approved NPTEL/ Swayam courses for a maximum of 3-credits