

M.Sc. Industrial Microbiology 2 Year 4 semester Course

1st Semester

1. PMG101	Microbial Physiology, metabolism and Genetics	3+0
2. BDT101	Clinical Biochemistry and Diagnostic Techniques	2+0
3. FMB101	Fermentation Microbiology and Biotechnology	3+0
4. GAB101	Genomics and Bioinformatics	2+0
5. MDE101	Molecular Microbial Diversity and Environmental Microbiology	2+0
6. MDT101	Microbiology, diagnostics and Fermentation Technology	0+4
7. DGE101	Diversity and genomics exploration	0+3
8. SEE101	Self-Earn Elective Course	0+2
9. OEC101	Open Elective Course	0+2
Total Credits		12+11=23

Non-Credit Course

1. BFM101	Biostatistics for Microbiology	2+2
2. RMS101	Research methodology and scientific communication	0+3
3. HMB101	History of Microbiology	2+0
Total Credit		2+5=07

Self-Earn Elective Courses

1. ICM101	Infection, Control and Molecular Virology	2+0
2. PMQ101	Pharmaceutical Microbiological Quality Assurance and Control: Practical Guide for Non-Sterile Manufacturing	2+0
3. FMF101	Food Microbiology Frontiers	2+0
4. PMF101	Principles of Microbiological Troubleshooting in the Industrial Food Processing Environment	2+0
5. IEM101	Industrial and Environmental Microbiology	2+0
6. HMB101	History of Microbiology	2+0
7. COB101	Chemistry of Beer: The Science in the Suds	2+0

Open Elective Course

1. MDT101 Microbiology with Diseases by Taxonomy 2+0
2. MDB101 Microbiology with Diseases by Body System 2+0
3. MMI101 Medical Microbiology and Immunology 2+0
4. DIM101 Diagnostic Microbiology 2+0
5. MHS101 Microbiology for the Health Sciences 2+0
6. BIE101 Bioprocess Engineering: Kinetics, Sustainability, and Reactor Design 2+0
7. MTE101 Metabolic Engineering: Principles and Methodologies 2+0
8. MBT101 Microalgae Biotechnology 2+0
9. MBB101 New and Future Developments in Microbial Biotechnology and
Bioengineering: Microbial Cellulase System
Properties and Applications 2+0

Sr. No	Course Name	Course Code	Total Credits	Theory (T)		Total Marks	Practical (P)		Total Marks (P)	Total Marks (T+P)
				External Marks	Internal Marks		External Marks	Internal Marks		
1	Microbial Physiology, metabolism and Genetics	PMG101	3+0	90	60	150	00	00	00	150
2	Clinical Biochemistry and Diagnostic Techniques	BDT101	2+0	60	40	100	00	00	00	100
3	Fermentation Microbiology and Biotechnology	FMB101	3+0	90	60	150	00	00	00	150
4	Genomics and Bioinformatics	GAB101	2+0	60	40	100	00	00	00	100
5	Molecular Microbial Diversity and Environmental Microbiology	MDE101	2+0	60	40	100	00	00	00	100
6	Microbiology, diagnostics and Fermentation Technology	MDT101	0+4	00	00	00	120	80	200	200
7	Diversity and genomics exploration	DGE101	0+3	00	00	00	90	60	150	150
8	Self-Earn Elective Course	SEE101	0+2	00	00	00	60	40	100	100
9	Open Elective Course	OEC101	0+2	00	00	00	60	40	100	100
	Non-Credits Course									
1	Biostatistics for Microbiology	FM101	2+2	60	40	100	60	40	100	200

2	Research methodology and scientific communication	BFM101	0+3	00	00	00	90	60	150	150
3	History of Microbiology	HMB101	2+0	60	40	100	00	00	00	100
	Self-Earn Elective Courses									
1	Infection, Control and Molecular Virology	ICM101	2+0	60	40	100	00	00	00	100
2	Pharmaceutical Microbiological Quality Assurance and Control: Practical Guide for Non-Sterile Manufacturing	PMQ101	2+0	60	40	100	00	00	00	100
3	Food Microbiology Frontiers	FMF101	2+0	60	40	100	00	00	00	100
4	Principles of Microbiological Troubleshooting in the Industrial Food Processing Environment	PMF101	2+0	60	40	100	00	00	00	100
5	Industrial and Environmental Microbiology	IEM101	2+0	60	40	100	00	00	00	100
6	History of Microbiology	HMB101	2+0	60	40	100	00	00	00	100
7	Chemistry of Beer: The Science in the Suds	COB101	2+0	60	40	100	00	00	00	100
	Open Elective Course									
1	Microbiology with Diseases by Taxonomy	MDT101	2+0	60	40	100	00	00	00	100
2	Microbiology with Diseases by Body System	MDB101	2+0	60	40	100	00	00	00	100
3	Medical Microbiology and Immunology	MMI101	2+0	60	40	100	00	00	00	100
4	Diagnostic Microbiology	DIM101	2+0	60	40	100	00	00	00	100
5	Microbiology for the Health Sciences	MHS101	2+0	60	40	100	00	00	00	100
6	Bioprocess Engineering: Kinetics, Sustainability, and Reactor Design	BIE101	2+0	60	40	100	00	00	00	100
7	Metabolic Engineering: Principles and Methodologies	MTE101	2+0	60	40	100	00	00	00	100
8	Microalgae Biotechnology	MBT101	2+0	60	40	100	00	00	00	100
9	New and Future Developments in Microbial Biotechnology and Bioengineering: Microbial Cellulase System Properties and Applications	MBB101	2+0	60	40	100	00	00	00	100

2nd Semester 1st Year

1. MIM201	Modern Industrial Microbiology and Biotechnology	3+0
2. FFM201	Functional Metagenomics: Tools and Applications	2+0
3. MWM201	Molecular Wine Microbiology: Science and Technology	3+0
4. MBS201	Mastering Brewing Science: Quality and Production	2+0
5. GTM201	Gene technologies for Microbial Biomolecule Production	3+0
6. IML201	Industrial Microbiology Laboratory	0+3
7. RDT201	Recombinant DNA Technology for Microbial Industry	0+3
8. SEE201	Self Earn Elective Course	0+2
9. OEC201	Open Elective Course	0+2
	Total Credits	13+10=23

Non-Credit Course

1. SCW201	Scientific communication and Writing	0+3
2. CIP201	Critical thinking, Idea, Innovation and Project Writing	0+3
3. MHM201	Modern Historical Microbiology	0+2
	Total Credits	0+8=8

Self-Earn Elective Course

1. BME201	Biotechnology of Microbial Enzymes: Production, Biocatalysis and Industrial Applications	2+0
2. AEF201	Applied Microbiology (Agriculture, Environmental, Food And Industrial Microbiology)	2+0
3. RMI201	Recombinant Microbes for Industrial and Agricultural Applications (Biotechnology and Bioprocessing)	2+0
4. FFM201	Food, Fermentation, and Micro-organisms	2+0
5. MFM201	Modern Food Microbiology	2+0
6. MSM201	Modern Soil Microbiology	2+0
7. MHM201	Modern History of Microbiology	2+0
8. MFM201	Modern Methods in Food Mycology	2+0
9. MFB201	Malt: A Practical Guide from Field to Brewhouse	2+0
10. MPA201	Microbial Production of L-Amino Acids	2+0

Open Elective Courses

1. SME201 Soil Microbiology, Ecology and Biochemistry 2+0
2. CAS201 Case Studies in Microbiology: A Personal Approach 2+0
3. MDM201 Medical Microbiology 2+0
4. FDB201 Fundamental Bioengineering 2+0
5. UDI201 Upstream and Downstream Industrial Biotechnology 2+0
6. MTF201 Microbiology and Technology of Fermented Foods 2+0
7. ENM201 Environmental Microbiology: From Genomes to Biogeochemistry 2+0
8. MET201 Microbial Electrochemical Technologies 2+0

Sr. No	Course Name	Course Code	Total Credits	Theory (T)		Total Marks	Practical (P)		Total Marks (P)	Total Marks (T+P)
				External Marks	Internal Marks		External Marks	Internal Marks		
1	Modern Industrial Microbiology and Biotechnology	MIM201	3+0	90	60	150	00	00	00	150
2	Functional Metagenomics: Tools and Applications	FFM201	2+0	60	40	100	00	00	00	100
3	Molecular Wine Microbiology: Science and Technology	MWM201	3+0	90	60	150	00	00	00	150
4	Mastering Brewing Science: Quality and Production	MBS201	2+0	60	40	100	00	00	00	100
5	Gene technologies for Microbial Biomolecule Production	GTM201	3+0	90	60	150	00	00	00	150
6	Industrial Microbiology Laboratory	IML201	0+3	00	00	00	90	60	150	150
7	Recombinant DNA Technology for Microbial Industry	RDT201	0+3	00	00	00	90	60	150	150
8	Self-Earn Elective Course	SEE201	0+2	00	00	00	60	40	100	100
9	Open Elective Course	OEC201	0+2	00	00	00	60	40	100	100
Non-Credit Course										
1	Scientific communication and Writing	SCW201	0+3	00	00	00	90	60	150	150

