

## **M.Sc. Biotechnology 2 Year 4 Semester Course**

### **1<sup>st</sup> Semester**

MCB101	Molecular Cell Biology	3+0
PEI101	Protein engineering for Industrial Biotechnology	2+0
GTS101	Gene Technology and Synthetic Biology	3+0
MAI101	Microbiology and Immunotechnologies	3+0
MSL101	Advanced Biotechnology: expression systems for biopharmaceutical & industrial proteins	0+4
DUP101	Downstream and Upstream processing (Mini Project base)	0+4
SEE101	Self Earn Elective Course	0+2
OPE101	Open Elective Course	0+2

### **Non-Credit Course**

BIS101	Biostatistics	0+3
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### **Self-Earn Elective Course 1**

PFT101	Principles of Fermentation Technology	2+0
BEB101	Biochemical Engineering and Biotechnology	2+0
MIM101	Modern Industrial Microbiology and Biotechnology	2+0
DMP101	Development and Manufacturing of Protein Pharmaceuticals	2+0
IBV101	Industrial Biotechnology of Vitamins, Bio pigments and Antioxidants	2+0
HMB101	History of Modern Biotechnology 1	2+0

### **Open Elective Course**

IDM101	Industrial Microbiology	2+0
BTP101	Bioprocessing Technology for production of Biopharmaceuticals Bioproducts	2+0
BME101	Biotechnology of Microbial enzymes	2+0
IEM101	Industrial and Environmental Microbiology	2+0
OMT101	Omics Technologies	2+0
BAB101	Bioprocessing and Bioengineering	2+0
TRW101	The RNA World	2+0

## 2<sup>nd</sup> Semester

BPP201	Biopharmaceutical Processing: Development, Design, and Implementation of Manufacturing Processes	3+0
BCB201	Bioinformatics and computational Biology	3+0
IBE201	Industrial Biotechnology: Enzymes, Biochemicals and Biomaterials	3+0
CCE201	Cell Culture Engineering: Recombinant Protein Production	2+0
BFL201	Bio factory Laboratory	0+3
RPP201	Recombinant Protein Production Laboratory (Mini Project base)	0+3
SEE101	Self Earn Elective Course	0+2
OPE201	Open Elective Course	0+2

### Non-Credit Course

RMS201	Research Methods and Scientific writing and communication	2+1
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### Self-Earn Elective Course 1

CEF201	Cell Factories	2+0
PCS201	Plant Cell Signalling	2+0
PBT201	Plant Biotechnology	2+0
SFB201	Sex, Flowers and Biotechnology	2+0
PBI201	Plant Biotechnology Industry	2+0
GIC201	Genetic Improvement of crop Plants	2+0
ABB201	Antibody Biotechnology	2+0
HMB201	History Modern Biotechnology-II	2+0
MIB201	Microbial Biotechnology	2+0
RSM201	Research Skills in Microbial Biotechnology	2+0
MEE201	Microbiology of Extreme Environment	2+0

### Open Elective Course

ANB201	Animal Biotechnology	2+0
ABI201	Animal Biotechnology Industry	2+0
MON201	Molecular Nutrition	2+0
PGF201	Pharma farming	2+0
BIM201	Biomanufacturing	2+0

ABE201      Advanced Biochemical Engineering      2+0

ABD201      Advanced Bioprocesses Design Projects      2+0

### **3<sup>rd</sup> Semester**

RPD301      Research Project and dissertation      0+10

### **4th Semester**

IOF401      Internship on field/ in Industry      0+10