

B.tech. (Biotechnology)

SEMESTER WISE COURSE LAYOUT

*12 Credit hours of Agriculture courses exchangeable with **12 Credit hours of Animal Science courses.

Students having PCMB group have to select either Bot. 101 + Zoo.101 or Math.101 + Math. 102 courses to fulfill the Compulsory Credit Hours of Credit Courses i.e 178.

SEMESTERWISE COURSE LAYOUT FOR B.Tech. (BIOTECHNOLOGY)		
Semester I		
Course No.	Course Title	Credit
BOT-111/ MATH-111	Basic Botany/ Basic Mathematics – I	2+1/3+0
AGRO-111	Crop Production Technology	2+1
BT-111	Cell Biology	2+0
BT-112	Basic Genetics	2+1
BT-113	Introduction to Biotechnology	2+1
CSPD-111	Communication Skills and Personality development	1+1
ENV-111	Environmental Studies and Disaster Management	2+1
FT-111	Food Science and Processing	1+1
HD-111	Human Ethics	1+0
NCC-111/ NSS-111	NCC/NSS	0+1 NC
	Total	15+7 (22) +1 NC=23

Semester II		
Course No.	Course Title	Credit
ZOO-121/ MATH-122	Basic Zoology/ Basic Mathematics-II	2+1/3+0
BT-124	Plant Tissue Culture	2+1
BT-125	Molecular Biology	2+1
BOT-ZOO-121	Biodiversity and its Conservation	2+0
*HORT-121/ **AS-121	Production technologies for Horticultural Crops/ Anatomy and Physiology of Livestock	2+1/ 3+0
MICRO-121	Microbiology	2+1
*PB -121/**AS-122	Principles of Plant Breeding/ Introduction to Animal Breeding	2+1/ 2+1
STAT-121	Basic Statistics	1+1
NCC-122/ NSS-122	NCC/NSS	0+1 NC
	Total	15+7(22)+1 NC=23

Semester III		
Course No.	Course Title	Credit
AS -233	Livestock Production and Management	2+1
BT-236	Recombinant DNA Technology	2+1
BOT-232	Plant Physiology	2+1
ICT-231	Information and Communication Technology	1+1
ECON-231	Economics and Marketing	2+1
*ENT.PL.PATH-231/**AS-234	Fundamentals of Crop Protection/ Livestock Product Technology	2+1/ 2+1
MATH-233	Biomathematics	2+1
*PB-232/ **AS 235	Breeding of Field Crops/ Animal Health Care	2+1
ET-231	Educational Tour	0+1
NCC-233/NSS-233	NCC/NSS	0+1 NC
Total		15+9(24)+1 NC=25

Semester IV		
Course No.	Course Title	Credit
EDBM -241	Entrepreneurship Development and Business Management	1+1
BIOCHEM- 241	General Biochemistry	3+1
BT-247	Introductory Bioinformatics	2+1
BT-248	Plant Genetic Transformation	2+1
BT/ECE-241	Electronics and Instrumentation in Biotechnology	1+1
BT-249	Classical and Molecular Cytogenetics	2+1
MICRO-242	Microbial Genetics	2+1
PHY-241	Biophysics	2+1
NCC-244/NSS-244	NCC/NSS	0+1 NC
Total		15+8 (23) +1 NC=24

Semester V		
Course No.	Course Title	Credit
BIOCHEM-352	Enzymology and Enzyme Technologies	2+1
BT-3510	Immunology	2+1
BT-3511	Molecular Genetics	2+0
BT-3512	Nanobiotechnology	2+0
BT-3513	Animal Biotechnology	3+1
BT-3514	Molecular Marker Technology	2+0
BT-3515	Genomics and Proteomics	3+0
BT-3516	IPR, Biosafety and Bioethics	2+0
ICT-352	Agricultural Informatics	2+1
ET-352	Educational Tour	0+1
Total		20+5=25

Semester VI		
Course No.	Course Title	Credit
BT-3617	Computational Biology	2+1
STAT-362	Biostatistics	2+1
Optional/ Elective Courses (6)	Electives (4): Only one to be chosen (each with six courses)	18
PBTEL-461 to 466 ABTEL-461 to 466 MEBTEL-461 to 466 BIFEL-461 to 466	1. Plant Biotechnology	12+6
	2. Animal Biotechnology	13+5
	3. Microbial and Environmental Biotechnology	14+4
	4. Bioinformatics	11+7
Total		24

Elective Courses in Biotechnology (one to choose), Each Elective: Total Credit Hours=18

Elective I. Plant Biotechnology		
Course No.	Course Title	Credit
PBTEL-461	Plant Tissue Culture and its Applications	2+1
PBTEL-462	Principles and Applications of Plant Genetic Transformation	2+1
PBTEL-463	Applications of Genomics and Proteomics	2+1
PBTEL-464	Molecular Breeding in Field Crops	2+1
PBTEL-465	Molecular Breeding of Horticultural Crops and Forest Trees	2+1
PBTEL-466	Epigenetics and Gene Regulation	2+1
Elective II. Animal Biotechnology		
ABTEL-461	Principles and Procedures of Animal Cell Culture	2+1
ABTEL-462	Animal Genomics	2+1
ABTEL-463	Embryo Transfer Technologies	2+1
ABTEL-464	Transgenic Animal Production	3+0
ABTEL-465	Molecular Diagnostics	2+1
ABTEL-466	Molecular Virology Production	2+1
Elective III. Microbial and Environmental Biotechnology		
MEBTEL-461	Microbial Biotechnology	2+1
MEBTEL-462	Bio-prospecting of Molecules and Genes	3+0
MEBTEL-463	Molecular Ecology and Evolution	3+0

MEBTEL-464	Fundamentals of Molecular Pharming and Biopharmaceuticals	2+1
MEBTEL-465	Food Biotechnology	2+1
MEBTEL-466	Green Biotechnology	2+1
Elective IV. Bioinformatics		
BIFEL-461	Programming for Bioinformatics	2+2
BIFEL-462	Bioinformatics Tools and Biological Databases	2+1
BIFEL-463	Structural Bioinformatics	2+1
BIFEL-464	Pharmacogenomics	2+1
BIFEL-465	Metabolomics and System Biology	2+1
BIFEL-466	Computational Methods for Data Analysis	1+1

Semester VII		
Course No.	Course Title	Credit
Plant Biotechnology		
READY-PB-471	Micro-propagation of field, horticultural and Medicinal plants	0+20
READY-PB-472	DNA Fingerprinting and hybridity testing	0+20
Animal Biotechnology		
READY-AB-471	Dissemination of <i>Elite</i> germplasm of any species by frozenSemen technology	0+20
READY-AB-472	Molecular diagnostics for diseased/disordered animals	0+20
Microbial and Environmental Biotechnology		
READY-MEB-471	Production of Probiotics/ Fermented Milk Products	0+20
READY-MEB-472	Mushroom Production and Processing Technology	0+20
READY-MEB-473	Liquid Biofertilizer Production Technology	0+20
Bioinformatics		
READY-BIF-471	Biological database creation and its management	0+20
READY-BIF-472	Bioinformatics: Gene to genome	0+20
READY-BIF-473	Drug designing and pharmacogenomics	0+20
READY-BIF-474	AgriSciences utility tool designing	0+20
Total		0+20=20

*To opt only one module as per the chosen elective

Semester VIII		
Course No.	Course Title	Credit
READY-482	Student READY- Project Formulation, Execution and Presentation	0+10
READY-483	Student READY- Entrepreneurial Development in Biotechnology (- On-campus/Off Campus)	0+10
Total		0+20 =20

Deficiency/Remedial Courses:

Students joining degree programme with +2 in medical streams will take Math. 101 and Math. 102 as remedial courses, while the students joining B.Tech. Biotechnology with +2 in Non-Medical stream will take Bot. 101 and Zoo. 101 as remedial courses. These courses will cover syllabus for +1 & +2 classes. There will be a total of six credit hours in each of the deficiency/remedial courses package.