MSc BIOTECHNOLOGY

CHOICE BASED CREDIT SYSTEM (CBCS)

DEPARTMENT OF GENETICS & BIOTECHNOLOGY, OSMANIA UNIVERSITY

Schedule for Instruction and Examination

(Proposed Scheme for Academic year 2022 onwards)

SEMESTER – I			
S No	**Syllabus Ref No**	**Subject**	**Credits**
		THEORY	
1.	BT 101 T	Cell Biology and Genetics	3
2.	BT 102 T	Biological chemistry	3
3.	BT 103 T	Microbiology	3
4.	BT 104 T	Statistics, laboratory management & safety, entrepreneurship	3
		PRACTICALS	
1.	BT 151 P	Cell Biology, Genetics	2
2.	BT 152 P	Biological chemistry	2
3.	BT 153 P	Microbiology	2
	BT 154 P	Biostatistics	2
		Total	**20**

SEMESTER – II			
S No	**Syllabus Ref No**	**Subject**	**Credits**
		THEORY	
1.	BT 201 T	Molecular Biology- The Genome	3
2.	BT 202 T	Molecular Biology- Genes to Proteins	3
3.	BT 203 T	Immunology	3
4.	BT 204 T	Microbial technology	3
		PRACTICALS	
1.	BT 251 P	Molecular Biology- The Genome	2
2.	BT 252 P	Molecular Biology- Genes to Proteins	2
3.	BT 253 P	Immunology	2
4.	BT 254 P	Microbial technology	2
		Total	**20**

SEMESTER – III			
S.No	Syllabus Ref No	Subject	Credits
		THEORY	
1.	BT 301 T	Recombinant DNA Technology	3
2.	BT 302 T	Bioinformatics and its Applications	3
3.	BT 303 T	**Elective:** A. Advance in Plant Biotechnology (or) B. Food Biotechnology	3
4.	BT 304 T	**Elective:** A. Animal Biotechnology (or) B. Protein Engineering	3
		PRACTICALS	
5.	BT 351 P	Recombinant DNA Technology	2
6.	BT 352 P	Bioinformatics and its Applications	2
7.	BT 353 P	A. Advance in Plant Biotechnology (or) B. Food Biotechnology	1
8.	BT 353 P	A. Animal Biotechnology (or) B. Protein Engineering	1
		SEMINAR	2
		Total	20

SEMESTER – IV			
S No	Syllabus Ref No	Subject	Credits
		THEORY	
1.	BT 401 T	Bioprocess Engineering	3
2.	BT 402 T	Medical Biotechnology	3
3.	BT 403 T	**Elective:** A. Environmental Biotechnology (or) B. Bio-pharmacology	3
4.	BT 404 T	Project Work	4
		PRACTICALS	
1.	BT 451 P	Bioprocess Engineering	2
2.	BT 452 P	Medical Biotechnology	2
3.	BT 453 P	A. Environmental Biotechnology (or) B. Bio-pharmacology	1
4.	BT 454 P	Project Thesis Presentation	2
		TOTAL	20
		GRAND TOTAL	80

T-theory, P-practical

M. Sc (BIOTECHNOLOGY)
SEMESTER-I
THEORY PAPER-I
BT 101 T- CELL BIOLOGY AND GENETICS

UNIT I - CELL STRUCTURE AND FUNCTION

1.1 Membrane System and Transport

A. Membrane Structure and Transport

B. Endomembrane System and Transport- Golgi complex, Endoplasmic Reticulum and Lysosomes

C. Nuclear Envelop and Transport Between Nucleus and Cytoplasm

1.2 Organization, Genetic Systems and Function of Organelles involved in Cell Energetics and Metabolism

A. Mitochondria -

B. Chloroplast

C. Peroxisome

1.3 Structure and Organization of Cytoskeleton and Cell Movements

A. Actin Filaments -

B. Intermediate Filaments

C. Microtubules

1.4 Internal Organization in Nucleus

A. Chromosomes and Higher Order Chromatin Structure-

B. Nucleolus

C. Functional Domains within the Nucleus

1.5 Cell cycle and cell processes

A. Eukaryotic cell cycle

B. Mitosis and meiosis

C. Cell Signalling and Cell Communication

UNIT II MENDELIAN AND NON-MENDELIAN INHERITANCE

2.1Mendelian Inheritance

A. Mendel's Laws

B. Chromosome Theory of inheritance

C. Mendelian Genetics in Humans -

2.2 Extensions to Mendelian Inheritance

A. Allelic Interactions

B. Non allelic Interactions-

C. Complex Loci

2.3 Sex-linked inheritance and sex determination

A. Sex-Linked Inheritance in Drosophila

B. Sex-linked Inheritance in Man

C. Sex Determination

2.4, Genes and Environment

A. Penetrance and Expressivity, Phenocopy.

B. Polygenic Inheritance

C. Norm of Reaction

2.5 Extranuclear Inheritance

A. Maternal Inheritance-

B. Cytoplasmic Inheritance

C. Uniparental Inheritance