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DETAILED SYLLABUS

FOR

DISTANCE EDUCATION

B.Sc. (Botany)

(SEMESTER SYSTEM)

B.Sc. Botany

COURSE TITLE: B.Sc. (BOTANY)
DURATION : 6 SEMESTERS
MODE : SEMESTERS

FIRST SEMESTER

COURSE TITLE	Paper Code	MARKS				
		THEORY		PRACTICAL		TOTAL
		INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	
Diversity of Microbes	BSCB/S/110	40	60			100
Cell Biology	BSCB/S/120	40	60			100

SECOND SEMESTER

COURSE TITLE	Paper Code	MARKS				
		THEORY		PRACTICAL		TOTAL
		INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	
Diversity of Archegoniates	BSCB/S/210	40	60			100
Genetics	BSCB/S/220	40	60			100
Practicals(Annually)Semester-I&II	BSCB/S/230	40	60			100

THIRD SEMESTER

COURSE TITLE	Paper Code	MARKS				
		THEORY		PRACTICAL		TOTAL
		INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	
Biology and Diversity of Seed Plants-I	BSCB/S/310	40	60			100
Plant Anatomy	BSCB/S/320	40	60			100

FOURTH SEMESTER

COURSE TITLE	Paper Code	MARKS		
		THEORY	PRACTICAL	TOTAL

		INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	
Biology and Diversity of Seed Plants-II	**BSCB/S/410**	**40**	**60**			**100**
Plant Embryology	**BSCB/S/420**	**40**	**60**			**100**
Practicals (Annually) Semester-III & IV	**BSCB/S/430**	**40**	**60**			**100**

FIFTH SEMESTER

COURSE TITLE	Paper Code	MARKS				
		THEORY		PRACTICAL		TOTAL
		INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	
Plant Physiology	**BSCB/S/510**	**40**	**60**			**100**
Ecology	**BSCB/S/520**	**40**	**60**			**100**

SIXTH SEMESTER

COURSE TITLE	Paper Code	MARKS				
		THEORY		PRACTICAL		TOTAL
		INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	
Biochemistry & Plant Biotechnology	**BSCB/S/610**	**40**	**60**			**100**
Economic Botany	**BSCB/S/620**	**40**	**60**			**100**
Practicals (Annually) Semester-V & VI	**BSCB/S/630**	**40**	**60**			**100**

SEMESTER-I

Max. Marks – 100
Time- 3 Hrs.

BSCB/S/110 DIVERSITY OF MICROBES

Note: Attempt five questions in all, selecting two questions from each unit.
Question No. 1 is compulsory (short answer type).
Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Bacteria : Structure, nutrition, reproduction and economic importance; general account of cyanobacteria (with reference to *Nostoc*).

Algae: General characters, classification (upto classes) and economic importance; important features and life-history (excluding development) of *Volvox*, *Oedogonium* (Chlorophyceae), *Vaucheria* (Xanthophyceae), *Ectocrpus* (Phaeophyceae) and *Polysiphonia* (Rhodophyceae).

UNIT-II

Viruses: General account of Viruses including structure of TMV and Bacteriophages.

Fungi: General characters, classification (upto classes) and economic importance; important features and life-history of *Phytophthora* (Mastigomycotina), *Mucor* (Zygomycotina), *Penicillium* (Ascomycotina), *Puccinia*, *Agaricus* (Basidiomycotina), *Colletotrichum* (Deuteromycotina); General account of Lichens.

BSCB/S/120 CELL BIOLOGY

Max. Marks – 100
Time- 3 Hrs.

Note: Attempt five questions in all, selecting two questions from each unit.
Question No. 1 is compulsory (short answer type).
Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

The Cell Envelopes: Structure and functions of Cell Wall and Plasma Membrane.

Ultrastructure and function of nucleus, Golgi Apparatus, Endoplasmic Reticulum, Chloroplast, Mitochondria, Lysosomes, Peroxisomes and Vacuoles.

UNIT-II

Cell Division: Mitosis and Meiosis.

Chromosome: Morphology, organization, ultrastructure of Centromere and Telomere; Chromosomal alterations- deletions, duplications, translocations, inversions; Variations in chromosome number- aneuploidy, polyploidy; sex chromosomes and sex determination.

SEMESTER-II

Max. Marks – 100
Time- 3 Hrs.

BSCB/S/210 DIVERSITY OF ARCHEGONIATES

Note: Attempt five questions in all, selecting two questions from each unit.
Question No. 1 is compulsory (short answer type).
Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Bryophyta- General characters, classification (upto classes), alternation of generations, structure and reproduction (excluding development) of *Marchantia* (Hepaticopsida), *Anthoceros* (Anthocerotopsida), *Funaria* (Bryopsida).

UNIT-II

Pteridophyta- General characters, classification (upto classes), alternation of generations, structure and reproduction (excluding development) of *Rhynia* (Psilopsida), *Selaginella* (Lycopsida), *Equisetum* (Sphenopsida) and *Pteris* (Pteropsida).

BSCB/S/220 GENETICS

UNIT-I

Genetic Material: DNA the genetic material, DNA structure and replication, DNA-Protein interaction, the Nucleosome Model, Genetic Code, Satellite and Repetitive DNA.

Genetic Inheritance: Mendelism: Laws of segregation and Independent Assortment; Linkage Analysis; Allelic and non-allelic interactions.

UNIT-II

Genetic Variations: Mutations- spontaneous and induced; transposable genetic elements; DNA damage and repair.

Gene Expression: Modern concept of gene; RNA; Ribosomes; transfer of genetic information- transcription and translation (Protein Synthesis); regulation of gene expression in prokaryotes and eukaryotes; 1-D, 2-D and 3-D structure of Proteins.

Extra Nuclear Inheritance: Presence and function of Mitochondrial and Plastid DNA; Plasmids.

BSCB/S/230 PRACTICALS

Max. Marks – 100
Time- 6 Hrs. (2 Sessions)

1.	Identify, classify and write short morphological notes giving well labelled relevant diagrams on the given specimens **A, B, C** and **D** (one each from Algae, Fungi, Bryophytes and Pteridophytes).	26
2.	Prepare the root smear and find out two different stages of Mitosis. Identify and show it to the examiners. Also give characters of identification.	10
3.	Numerical regarding Genetics (Mendelian Inheritance or Gene Interaction) as per syllabus.	10
4.	Identify giving two important characters of identification on spots **1, 2, 3** and **4** (one slide	
5.	or material each from Algae, Fungi, Bryophytes and Pteridophytes).	20
6.	Note-book, collection and collection report.	12
7.	Viva-voce.	12

LIST OF PRACTICALS (Semester I & II)

1. Stages of Mitosis from Material (Onion-root tips).
2. Experiments on Monohybrid and Dihybrid ratios.
3. Gene Interactions and modified Dihybrid ratios.
4. Chi-square analysis.
5. Type study- Specimens from Algae, Fungi, Bryophytes and Pteridophytes as per theory syllabus.
6. Field tour of an area rich in diversity of Archegoniates for collection of plants, plant diseases and preparation of Herbarium.
7. Preparation of Survey/Collection Report.