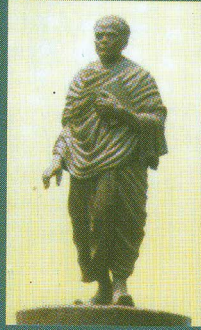


DIRECTORATE OF DISTANCE EDUCATION



SYLLABUS
M.Sc. Course
in
Botany



VIDYASAGAR UNIVERSITY
MIDNAPORE - 721102

VIDYASAGAR UNIVERSITY

DIRECTORARE OF DISTANCE EDUCATION

MIDNAPORE

BOTANY

MARKS DISTRIBUTION

Total Marks	Theoretical	Practical	Course
100	70	30	30
100	70	30	10



PART - I

Theoretical Course

Two papers of 100 marks each and each paper having two halves)

SYLLABUS

M. Sc. Course

in

BOTANY

Syllabus
M. Sc. Course
in
BOTANY

MARKS DISTRIBUTION.

	Total Marks	Theoretical Course	Practical Course
Part-I	500	300	200
Part-II	500	300	200
Total	1000	600	400

PART - I

Theoretical Course

(Three Papers of 100 marks each and each paper having two halves)

Full Marks

Paper-I : 1st Half	Microbiology	50
Paper-II: 2nd Half	Phycology, Mycology, Bryology, Pteridology, Gymnosperms and Palaeobotany	50
	Phycology	10
	Mycology	10
	Bryology	10
	Pteridology	10
	Gymnosperms and	

Directorate of Distance Education

	Palaeobotany	10
Paper-I : 1st Half	Taxonomy of Angiosperms	50
Paper-II : 2nd Half	Bioinformatics and Computer Application	50
Paper-III : 1st Half	Silviculture, Silviculture System and Nonwood Forest Produce (NWFP)	50
	Silviculture	20
	Silviculture System	20
	NWFP	10
Paper-III : 2nd Half	Forest Surveying, Forest Mensuration and Forest Management	50

Practical Course

(Three papers, of which papers IV and V

Carry 80 marks each,

and

Paper VI carries 40 marks; each paper contains two halves)

Full Marks

Paper-IV : 1st Half	Microbiology (20), Phycology (10) and Mycology (10)	40
Paper-IV : 2nd Half	Bryology (10), Pteridology (10) and Gymnosperms & Palaeobotany (20)	40
Paper-V : 1st Half	Taxonomy of Angiosperms	40
Paper-V : 2nd Half	Forestry	40
Paper-VI : 1st Half	Computer Applications	25
Paper-VI : 2nd Half	Seminar Talk	15

Directorate of Distance Education

PART -II

Theoretical Course

(Four papers of which papers VII & VIII carry 60 marks each, paper IX carries 80 marks having 1st half for 50 marks and 2nd half for 30 marks: paper X carries 100 marks for Special paper)

Full Marks

Paper-VII	Plant Physiology and Biochemistry	60
Paper-VIII	Cytogenetics, Molecular Biology and Biotechnology	60
Paper-IX : 1st Half	Plant Ecology and Ecological Anatomy	50
Paper - IX : 2nd Half	Forest Pathology and Mycorrhizae	30
Paper-X: Special Paper		100

Practical Course

(Three general papers and one special paper)

Full Marks

Paper-XI :	Plant Physiology & Biochemistry	40
Paper - XII :	Cytogenetics and Molecular Biology	35
Paper - XIII :	Plant Ecology and Ecological Anatomy	25
Paper-XIV :	Special Paper	100

Directorate of Distance Education

PART-1 Courses

THEORETICAL

PAPER-1 (First Half)

MICROBIOLOGY

Full Marks - 50

1. History; discoveries and contributions; differences between prokaryotes and eukaryotes; five kingdom concept; classification of microbes; scopes and areas of microbiology (3)
2. Nutrition of Microbes; principles behind formulation of media; enrichment culture technique; anaerobic culture principles(3).
3. Principle characteristics used in the classification and identification of microbes; Bergey's manual of determinative bacteriology. (5)
4. Methods of sterilization; dry and moist heat; UV and X-ray; Food sterilization; (3)
5. Growth curve; mathematical nature and expression of growth; exponential and arithmetic growth; generation time; growth curve parameters-yield; exponential growth rate and duration of log phase; effect of nutritional concentration on growth; synchronous & continuous growth. (4)
6. Bacteria Morphology; fine structure & chemical nature of capsule; cell wall, flagella, pili, genome, cytoplasmic membrane (PLP and fluid mosaic model) and cytoskeletal elements of bacterial cell; idea of the principle of gram staining, reserve substances; endospore.(6)
7. Microbial metabolism; respiration and fermentation, fermentation pathway (ED pathway etc.); Nitrification; sulfur oxidation; nitrogen fixation.(4)

Directorate of Distance Education

8. Organization and replication of genetic material in bacteria, plasmids; genetic recombination-conjugation transformation, and transduction & gene-mapping. (5) .
9. Chemical basis of mutation; induced mutation; types of mutation and isolation of mutants; spontaneous nature of mutation. (3)
10. Genetic Engineering, vectors, restriction endonucleases, host restriction modification, gene cloning, applications of Genetic Engineering in agriculture, health, industry and environmental stability; transposons. (6)
11. Viruses; structural organization and chemistry of viruses; viral replication (TMV) and bacteriophage; assay of viruses; classification; cultivation; viruses as disease producing agents; oncogenesis; antiviral drugs; lytic and lysogenic cycle. HIV and its importance. (5)
12. Applied microbiology; production of alcohol, wine, beer, Penicillin, SUFU. (4)
13. Chemotherapy; fundamentals, chemistry, mechanism of action and therapeutic uses of penicillin, tetracycline, griseofulvin, sulfonamides, non-medical use of antibiotics, bioassay of antibiotics. (3)
14. Microscopy; gel-electrophoresis; spectrophotometry; Isolation of nucleic acids, radioactive labelling. (4)
15. Immunology; general idea of immunity; types of immunity; properties of antigen and antibodies; nature of immunological reaction; diagnostic application; monoclonal antibody, ELISA; Vaccines and their production. (7)
16. Chemistry of Protein, carbohydrate and fat; Enzyme properties; endotoxin and exotoxin. (6)

Directorate of Distance Education

PAPER-I (Second half)

PHYCOLOGY

Marks - 10

1. Classification of algae : a survey of classifications by different authors; criteria of classification; modern trends in classification; molecular biology as an aid to classification.
2. Salient features of different classes of algae and their phylogeny.
3. Economic importance of algae: industrial use; phycocolloids; soil reclamation; single cell protein, use in space research and in fisheries.
4. Life cycle pattern in different classes of algae. Evolutionary trends in Chlorophyceae.

MYCOLOGY

Marks - 10

1. Recent classification of fungi.
2. Sexuality in fungi - homothallism, heterothallism, parasexuality, heterokaryosis.
3. Physiology of fungi with reference to biotrophs, hemibiotrophs, symionts and neotrophs.
4. General characters of the subdivisions Myxomycotina, Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina, Deuteromycotina.
5. General accounts of role of fungi in industries.

BRYOLOGY

Marks - 10

1. Outline classification of Bryophytes based on different criteria and with reference to representative members of major taxa.

Directorate of Distance Education

2. Origin and evolution of Bryophytes; primitive and advanced features of Bryophytes; differences and similarities with other divisions of plant kingdom; fossil Bryophytes.
3. General characters of phylogenetic considerations, Sphaerocarpales, Calobryales, Takakiales, Sphagnales and Bryales.
4. Experimental studies in Bryophytes : spore germination, bud formation, parthenogenesis, apospory and apogamy.
5. Distribution and economic importance of Bryophytes.
6. Bryophyte ecology, monitoring of environmental pollution by Bryophytes, xerophilous Bryophytes.

GYMNOSPERMS

Marks - 10

1. Recent trends in the classification of Gymnosperms.
2. Relationship of Gymnosperms with Pteridophytes, prgymnosperms and angiosperms.
3. Characteristic features and phylogenetic considerations of Cyeadofilicales, Cycadales, Ginkgoales, Coniferales, Taxales and Gnetales.
4. Economic importance of Gymnosperms with special reference to medicinal values.

PALAEOBOTANY

1. Principles of stratigraphy and correlation, dating of sedimentary rocks.
2. Origin and early evolution of life; a general account of plant life through Indian Gondwana
3. Preservation of plants; plants as fossil and their methods of study.

4. Outline idea of continental drift.

5. Palaeoecology.

PTERIDOLOGY

Marks - 10

1. Importance of Pteridophytes as first land plants.
2. Classification of Pteridophytes by different authors including latest concept.
3. Salient features of different classes and orders of Pteridophytes and their phylogenetic significance.
4. Apogamy and apospory in ferns.
5. Telome theory and its significance; stelar, soral and prothallial evolution in Pteridophytes.
6. Evolutionary trends in ferns.

PAPER-II (First Half)

TAXONOMY OF ANGIOSPERMIS

Full Marks - 50

1. **Introduction** : Definition of terms : systematics, taxonomy, classification, nomenclature, identification; history of development of taxonomy; phases of taxonomic studies; aims of taxonomy; procedures of taxonomy.
2. **Data sources** : Seedling morphology and leaf architecture; Anatomy, Embryology Phytochemistry, Cytology.
3. **Data analysis** : Numerical taxonomy, basis of kinds of similarities and relationships - phenetic, phyletic and cladistic.
4. **Biosystematics** : Definition, variation - phenotypic plasticity. principles, procedures, categories, relation with taxonomy.

5. **Classification** : History and current systems of classification: Takhtajan, Cronquist, Dahlgren & Thorne.
6. **Taxonomic structure** : Hierarchy, minor and major categories.
7. **ICBN** : History, principles, general rules and recommendations.
8. **Origin of Angiosperm** : Theoreis and evidences.
9. **Botanic gardens and Herbaria** : Importance in taxonomic studies; examples from India and abroad.
10. **Systematics studies** : General survey of angiosperms *sensu* Cronquist (1981) with reference to their characters, interrelationships and evolutionary trends : Magnoliales. Caryophyllales, Rosales, Asterales. Alismatales, Liliales and Cyperales.

PAPER-II (Second half)

BIO-INFORMATICS AND COMPUTER APPLICATIONS

Information Technology : Data, information, information processing cycle. Files, databases. Usage of IT in modern society.

Computer system : Block diagram and definition of CPU, memory, input, output devices and their functionality. Primary and secondary storage, ROM, CDROM. soft wares-system software and applications software. Operating system: Definition, Classification, Windows 98-desktop, taskbar, my computer recycle bin, clipboard, accessories, windoes explorer, files, folder, drives.

Programming in C : Constant, variables, data types, operators and expressions, decision making and branching, arrays, characters, function, structures and unions, pointers and files in C.

Word Processing : MS word-Page set-up, fonts; paragraphs, columns,

