

**VEER NARMAD SOUTH GUJARAT UNIVERSITY,
SURAT.**

**M.Sc. – SYLLABUS
(Effective from July 2010)**

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SEMESTER II

**BOTANY PAPER - 501
(VIRUSES, PHYCOLOGY, MYCOLOGY & PLANT PATHOLOGY)**

UNIT I: VIRUSES

1. General Characters & Classification of Viruses
2. Nomenclature & Symptoms of Viruses
3. Study of Tobacco Mosaic Virus
4. Study of Tobacco Bacteriophage
5. Study of viroides

UNIT II: PHYCOLOGY ((Only Pheophyceae & Rhodophyceae)

1. General Characters of Pheophyceae & Rhodophyceae.
2. Classification of Pheophyceae & Rhodophyceae.
3. Thallus & Cell Structure of Pheophyceae & Rhodophyceae.
4. Reproduction of Pheophyceae & Rhodophyceae.
5. Economic importance of Pheophyceae & Rhodophyceae.

UNIT III: MYCOLOGY (Only Ascomycetes & Basidiomycetes)

1. General account of Ascomycetes & Basidiomycetes
2. Structure & nutrition of Ascomycetes & Basidiomycetes
3. Reproduction (Asexual & Sexual) in Ascomycetes & Basidiomycetes
4. Evolution & Origin of Ascomycetes & Basidiomycetes

5. Classification of Ascomycetes & Basidiomycetes
6. Economic importance of Ascomycetes & Basidiomycetes

UNIT IV : PLANT PATHOLOGY

1. Control of Plant Diseases
 2. Effective of environment and nutrition on diseases development.
 3. Virus diseases of Plants – Symptoms & Control of viral diseases
 4. Symptoms, Casual organism and Control of following viral diseases.
 - (i) Leaf roll disease of Potato
 - (ii) Leaf curl of Papaya
 - (iii) Yellow vein mosaic of Bhindi
 - (iv) Potato mosaic
 - (v) Leaf curl of Tomato
 - (vi) Bunchy top of Banana
 - (vii) Yellow mosaic of Legumes
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SEMESTER II

BOTANY PAPER - 502

(BRYOPHYTA, PTERIDOPHYTA, INCLUDING FOSSILS)

UNIT I: BRYOPHYTA

1. Affinities & evolution of Sporophyte
2. Sterilization of the sporogenous tissue in Bryophytes.
3. Economic importance of Bryophyta.
4. General characters of Anthocerotopsida and Bryopsida.
5. Study of the thallus structure, reproductive bodies & classification with reasons of

the following types.

(A) Anthocerotopsida – (i) *Notothylas*

(B) Bryopsida – (i) *Andrea* (ii) *Polytrichum* (iii) *Pogonatum*

UNIT II: PTERIDOPHYTA

1. Heterospory and seed habit.
2. Apogomy, Apospory, & Parthenogenesis
3. Telome theory
4. Steler system and steler evolution
5. Economic importance of Pteridophytes
6. Study of the thallus structure, reproductive bodies & classification with reasons of the following types.

Glechenia, Pteris, Adiantum, Polypodium, Alsophila

UNIT III: FOSSIL PTERIDOPHYTA

1. Types of Fossil
2. Useful techniques for fossil
3. Detailed study of the following fossils
 - (A) Sphenopsida – (i) *Hynea* (ii) *Calamophyton*
 - (B) Filicopsida – (i) *Zygopteris* (ii) *Botryopteris* (iii) *Cladoxylon*

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SEMESTER II

BOTANY PAPER - 503
(TAXONOMY AND DIVERSITY OF SEED PLANTS
INCLUDING FOSSILS)

UNIT I : GYMNOSPERMS

1. Comparison of angiosperms and Gymnosperms.
2. Comparison of Ferns and Gymnosperms.
3. Evolution of Gymnosperms.
4. Economic importance of Gymnosperms.
5. Occurance, classification, external & internal structure and reproduction of the following.
 - (A) Cycadales – (i) *Zamia* (ii) *Nilssonia*.
 - (B) Ginkgoales –(iii) *Ginkgo* (iv) *Ginkgoites*
 - (C) Coniferales (v) *Cupressus* (vi) *Podocarpus* (vii) *Cryptomaria*.
 - (C) Welwistschiales – (viii) *Welwetschia*.
 - (D) Cordaitales -- General account.

UNIT II : ANGIOSPERMS

1. Botanical nomenclature -- Need for scientific names, history of botanical nomenclature, principle of ICBN, name of taxa.
2. History and significance of systematic botany.
3. History and system of classification.
 - (1) Hutchinson
 - (2) Takhtajan
 - (3) Cronquist
- (4) Phylogeny & floral variations in Geraniales and Scitaminales.
- (5) Taxonomical studies of the following families with references to their geographical distribution, systematic position, floral variations and economic importance.

DICOT :

Polypetalae : (i) Berberidaceae (ii) Guttiferae (iii) Linaceae

(iv) Malpighiaceae (v) Oxalidaceae (vi) Balanitaceae

(vii) Rhizophoraceae (viii) Ficoideae.

Gamopetalae : (ix) Plumbaginace (x) Gentianaceae,

Apetalae : (xi) Santalaceae.

MONOCOT :

(xii) Dioscoriaceae (xiii) Pandanaceae (xiv) Typhaceae

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SEMESTER II

BOTANY PAPER - 504

(PLANT DEVELOPMENT AND REPRODUCTION --
ANATOMY, EMBRYOLOGY & BIOCHEMISTRY)

UNIT I : ANATOMY

1. Root apex -- Introduction, Apical cell concept, Histogen concept, Korper-kappe concept, Quiescent centre concept.
2. Xylem -- Introduction, Components, structure & their function.
3. Phloem -- Introduction, Components, structure & their function.
4. Nodal anatomy -- Definition, Types and structure.

UNIT II EMBRYOLOGY

1. Female gametophyte -- Types, development, organization of embryo sac and morphological nature.
2. Endosperms -- Types of endosperms, endosperms haustoria, Ruminant endosperms, Mosaic endosperms, morphological nature and function.
3. Polyembryony.
4. Experimental embryology
 - (1) Embryo culture

(2) Seed culture

(3) Production of Adventive embryos.

UNIT II BIOCHEMISTRY

1. Carbohydrates:

(1) Occurrence (2) Classification (3) Structure and function of monosaccharides, disaccharides and polysaccharides including starch, cellulose and protein.

2. Proteins:

1) Occurrence (2) Classification (3) Structure and importance acyl lipids and phosphates (4) Biosynthesis of fatty acids (5) β oxidation (6) Role of poly saturated fatty acids.