VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
M.Sc. – SYLLABUS
(Effective from July 2010 - 2011)

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SEMESTER I

BOTANY PAPER -401
(BACTERIA, PHYCOLOGY, MYCOLOGY, PLANT PATHOLOGY)

UNIT I: BACTERIA

1. General characteristics of Bacteria
2. Classification of Bacteria
3. Structure of Bacterial cell
4. Nutrition in Bacteria
5. Reproduction of Bacteria
6. Economic importance of Bacteria

UNIT II: PHYCOLOGY ((Only Cyanophyceae and Chlorophyceae)

1. General Characters of Cyanophyceae and Chlorophyceae.
2. Classification of Cyanophyceae and Chlorophyceae.
3. Thallus & Cell Structure of Cyanophyceae and Chlorophyceae.
4. Phylogeny & Affinities of Cyanophyceae.
5. Nitrogen Fixation by Blue green Algae.
6. Reproduction & Economic importance of Cyanophyceae and Chlorophyceae.

UNIT III : MYCOLOGY (Only Phycomycetes)

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

5. Classification of Phycomycetes
6. Economic importance of Phycomycetes

UNIT IV : PLANT PATHOLOGY

1. Introduction, General symptoms & Classification of Plant diseases.
2. Bacterial diseases of plants – Symptoms and types of bacterial diseases.
3. Symptoms, Casual organism and Control of following bacterial diseases.
   (i) Citrus canker
   (ii) Bacterial blight of Cotton
   (iii) Bacterial blight of Paddy
   (iv) Bacterial leaf streak diseases of Rice
   (v) Bacterial brown rot of Potatoes
   (vi) Leaf spot of Mango
   (vii) Black rot of Crucifer
   (viii) Stalk rot of Maize

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SEMESTER I

BOTANY PAPER - 402
(Bryophyta, Pteridophyta, Including Fossils)

UNIT I: BRYOPHYTA

1. General Characters, Occurance & Classification of Bryophyta
2. Reproduction (Vegetative, Asexual & Sexual) of Bryophyta.
3. Alternation of generation of Bryophyta
4. Origin of Bryophytes
5. General characters of Hipaticopsida
6. Study of the thallus structure and reproductive bodies of the following (Classification with reasons)

Hipeticopsida: ***Targionia, Cyathodium, Plagiochasma, Lunularia, Fossombryonia*.**

UNIT II: PTERIDOPHYTA

1. Habitate, general characters & affinities of Pteridophyta.
2. External morphology & Anatomy of Pteridophyta.
3. Spore producing organ of Pteridophyta.
4. Sporangium, spore, prothallus, sex organs of Pteridophyta.
5. Classification of pteridophyta.
6. Study of the thallus structure and reproductive bodies of the following (Classification with reasons)

   Botrychium, Actinopteris, Lygodium, Asplenium, Salvinia

UNIT III: FOSSIL PTERIDOPHYTA

1. Nomenclature of fossils
2. Geological time table
3. Fossilization
4. Detailed study of the following fossils

   (A) Psilophytopsida – (i) *Asteroxylon* (ii) *Horneophyton*

   (B) Lycopsida – (i) *Protolepidodendrron* (ii) *Miadesmia*

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SEMESTER I

BOTANY PAPER - 403
(TAXONOMY AND DIVERSITY OF SEED PLANTS INCLUDING FOSSILS)

UNIT I : GYMNOSPERMS

1. Introduction, salient characters, distribution of Gymnosperms
2. External morphology & anatomy of Gymnosperms
3. Reproduction, cones, sporophyll & sporangia of Gymnosperms
4. Gametophytes, pollination & fertilization of Gymnosperms
5. Classification of Gymnosperms.

6. Occurance, classification, external & internal structure and reproduction of the following.

(a) Pteridospermateles–(i) *Medullosa (ii) Pachytesta*

(b) Cycadeoidales – General account

(c) Pentoxylales - General account.

(d) Coniferales –(i) ***Thuja*** **(ii)** ***Juniperous***.

UNIT II : ANGIOSPERMS

1. Aims and objective of plant taxonomy.
2. Taxonomic hierarchy, species, genus, family and other categories.
3. History and system of classification.
   (i) Bentham & Hooker
   (ii) Engler - Prantl
   (iii) Bessey.
4. Phylogeny & floral variations in Parietales and Tubiflorae.
5. Taxonomical studies of the following families with references to their eographical distribution, systematic position, floral variations and economic importance.

DICOT :

Polypetalae : (i) Dilleniaceae (ii) Violaceae (iii) Ternostromiaceae
(iv) Geraniaceae (v) Balsaminaceae (vi) Meliaceae
(vii) Celasteraceae (viii) Turneraceae (ix) Begoniaceae
(x) Molluginaceae (xi) Cactaceae

Gamopetalae : (xii) Oliaceae
(xiii) Salvadoraceae,

Apetalae: (xiv) Chenopodiaceae

MONOCOT :

(xv) Orchidaceae (xvi) Commelinaceae (xvii) Lamneceae.

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SEMESTER I
BOTANY PAPER -404

(PLANT DEVELOPMENT AND REPRODUCTION --
ANATOMY & EMBRYOLOGY)

UNIT I : ANATOMY

1. **Cellwall** : Structure, chemistry, wall layer, plasmodesmata, theckening and function of the cell wall.
2. **Shoot apex** : Introduction, Apical cell concept, Histogen concept, Tunica-Corpus concept, Hostogenic layer concept, Layer-Core concept, Meristeme D'attente concept, Newman's concept.
3. **Sclereids** : Orign, development,structure and classification.
4. **Leaf anatomy** : Primary structure of dicot & monocot leaf, leaf fall and anatomy of phyllodes.

UNIT II : EMBRYOLOGY

1. History of embryology & Important embryologists.
2. Male gametophyte -- Microgametogenesis, palynology, dispersal of pollen grain, abnormalities.
3. Embryo -- Embryogeny in dicot ------ Ludwigia palustris, Lactuca sativa, Sagina procumbans.
   Embryogeny in monocot ----- Sagittaria.
4. Experimental embryology
   (i) Anther & Pollen culture
   (ii) Nucellus culture
   (iii) Parthenocarpy and Parthenogenesis.

UNIT III : PLANT DEVELOPMENT

1. Effect of Plant growth regulators on the growth of young seedlings.
2. Study of seed dormancy and methods to break dormancy.