NORTH MAHARASHTRA UNIVERSITY, JALGAON.

F.Y.B.Sc. Botany Syallabus.

(to be implemented with effect from June, 1992)

COURSES:-

Paper I: BO.1.1. Lower Cryptogams and Higher Cryptogams
Lower Cryptogams (First Term)
Higher Cryptogams (Second Term)

Paper II: BO.1.2.- Morphology of Angiosperms (External and Internal), Gymnosperms and Taxonomy of Angiosperms.

- Morphology of Angiosperms (External and Internal) (First Term)
- Gymnosperms and Taxonomy of Angiosperms (Second Term)

Paper III:BO.1.3.- Practicals based on Theory Paper-I & Paper-II i.e. BO.1.1 * BO.1.2.

[N.B.: i) Local excursions should be arranged.

ii) Properly prepared minimum five herbarium Sheets from the area visited should be submitted along with excursion report]

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Paper-II.BO. 1.2. Morphology of Angiosperms

(External and Internal) ;

Gymnosperms and Taxonomy of Angiosperms

First Term :- Morphology of Angiosperms (External and Internal)
(Total periods= 36)

A. Morphology (External)-

A.1) Introduction, distinguishing features of the (2)
group, Alternation of generations.

A.2) Root system-Definition, Types of root-Primary,
Secondary & Tertiary;

-Adventitions roots- fibrous, foliar.
-Modifications - a) Modified tap roots-fusiform,
napiform, conical & tuberous.

b) Modified branch root- pneumatophore

c) Modified adventitious roots - tuberous, fasciculated,
nodulose, moniliform, annulated, prop or stilt roots,
climbing, sucking or haustoria, respiratory,
epiphytic, assimilatory roots. (3)

A.3) Stem:- Definition,

a) Forms of stem-i) Erect or strong ii) weak stems -
prostrate, dicumbent, diffuse, creeping, twining, climbing

- Modifications-

a) Underground modification-rhizome, tuber, bulb, corm.
b) Sub-aerial modification- runner, stolon,
offset, sucker.
c) Aerial modification-Stem tendeil, (3)
thorn, phylloclade, cladode, bulbils.

A.4) Leaf -

a) Definition & parts of leaf, stipules and kinds
of stipules, apex, margin, surface, shape &
venation of leaf, simple and compound leaves.
b) Modification of leaves- leaf tendril, leaf spines,
scale leaves, phyllode, pitcher and bladder.
c) Phyllotaxy- alternate, opposite & whorled. (3)

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A.5) Inflorescence- Definition, types including special types (2)

A.6) Flower - Definition, parts, flower as a modified shoot, Calyx and aestivation; Corolla types and aestivation; Androecium, cohesion and adhesion; Gynoecium - position of ovary, placentations (6)

A.7) Fruit - Definition, classification and dispersal of seeds and fruits. (3)

B. Morphology (Internal) -

B.1. Tissue - Definition, classification of meristematic tissue on the basis of position and origin. (3)

B.2. Primary permanent tissues -

a) Simple Tissues - Parenchyma, Collenchyma, Sclerenchyma.
b) Complex tissues - Xylem and Phloem
c) Types of vascular bundles. (5)

B.3) Primary Structure of Dicotyledonous -

a) Stem
b) Root
c) Leaf (3)

B.4) Primary Structure of Monocotyledonous (3)

a) Stem
b) Root
c) Leaf

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Second Term: Gymnosperms and Taxonomy of Angiosperms.
(Total periods = 36)

A- Gymnosperms:

A-1 Introduction -

i) Distinguishing features of the group
ii) Alternation of generation.
iii) Out line classification-according to Chamberlain's classification upto classes with reasons giving at least two examples in each class. (5)

A-2 Study of Life Cycle of Cycas with reference to :
i) Classification with reasons
ii) Habit and habitat
iii) External morphology-root, stem and leaf.
iv) Anatomy of -
a) Normal root & corallcid root
b) rachis
c) leaflet
v) Vegetative reproduction
vi) Morphology of male cone & male gametophyte
vii) Morphology of female reproductive body (megasporophyll) and female gametophyte.
viii) Ovule and embryo
ix) Pollination and fertilization. (Development not expected) (10)
x) Seed structure and germination. (Development not expected)

B- Angiosperms:

B-1.

a) Definition and scope of Taxanomy.
b) Binomial nomenclature.
c) Outline classification of Bentham and Hocker upto series (5)

B-2. Study of families with reference to :
i) Classification with reasons
ii) General morphological characters
iii) Distinguishing characters
iv) Floral formula
v) Floral diagram
vi) Economic importance

1:	Anonaceae	2:	Papilionaceae (Fabaceae)	
3:	Rubiacea	4:	Convolvulaceae	
5:	Acanthaceae	6:	Nyctaginaceae	
7:	Euphorbiaceae	8:	Amaryllidaceae	(14)

B-3. Herbariumit's techniques and scope. (2)

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Paper III. Bo.1.3.- Practical Course [Based on Theory Paper-I (Bo.1.1.) and Paper-II (Bo.1.2.)]

(Total Practicals-24)

FIRST TERM

[Lower Cryptogams, Morphology of Angiosperms (External and Internal)]

P.S.= Permanent Slide.

1. a) Viruses: Observation of following any two virus-affected plants (Demonstration)
   i) Yellow vein disease of Lady's Finger/Papaya
   ii) Little leaf of Brinjal.
   iii) Witches broom

   b) Bacteria: Gram staining of bacteria.

2. Algae:

   Study of Nostoc.

3. Study of Sargassum

   i) T.S.of axis

   P.S.- { i) T.S.of secondary lateral (leaf)
   { ii) T.S.-male conceptacle.
   { iii) T.S.-female conceptacle.

4. Fungi:

   Study of Rhizopus

   i) Observation of Mycelium, Stolon & Sporangiophore.

   P.S. i) Sexual stages- (zygospore).

5. Study of Agaricus

   i) Morphology of Sporocarp
   ii) T.S.of gills.

   P.S. i) L.S.of Sporocarp.
   ii) T.S. of gills.

6. Lichens: [Demonstration]

   i) Forms of lichens - a) Crustose.
   b) Foliose
   c) Fruticose

   P.S. i) T.S.of thallus
   ii) V.S.of apothecium

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Demonstration Practicals (Practical Numbers 7-11)

7. Morphology of root and it's modifications (as per syllabus)

8. Morphology of stem and it's modifications (as per syllabus)

9. Morphology of leaf and it's modifications (as per syllabus)

10. Study of Inflorescence and its types including special types.

11. Morphology of Flower with reference to

i) Calyx
ii) Corolla
iii) Androecium
iv) Gynoecium

P.S. i) Placentation.
ii) Aestivation.

12. Study of tissues (Demonstration)
P.S. i) Meristem (L.S.)
ii) Xylem and phloem (T.S.& L.S.)
iii) Types of vascular bundles.

13. Anatomy: Primary structure of ....
a) Stem - Sunflower & Maize
b) Root - Sunflower & Maize
P.S. i) Leaf- Sunflower & Maize (T.S.)

Second Term

[Higher Cryptogams Gymnosperms and Taxonomy of Angiosperms]

Bryophytes:

14. Study of Riccia

i) Mounting of rhizoids and scales.
ii) T.S. of thallus
P.S.{i) T.S. of thallus showing antheridia and archegonia
{ii) T.S.of thallus showing sporophyte.

15 Study of Funaria

i) Mounting of rhizoids
ii) T.S.of stem
P.S. { i) V.S.of antheridial head.
{ ii) V.S.of archegonial head
{ iii) V.S.of capsule.

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16 Pteridophytes:

Study of Selaginella

i) T.S. of stem (ii) Mounting of Spores
P.S. i) T.S.of root (ii) T.S. of rhizophore
iii) V.S. of strobilus.

17. Study of Equisetum

i) T.S.of stem passing through the internode.
ii) Mounting of Sporangiophore and Spores.
P.S. { i) T.S.of root.
{ ii) T.S.of rhizome
{ iii) V.S. of Strobilus.

18,19. Gymnosperms:

Study of Cycas

i) T.S. of rachis
ii) T.S. of pinna
iii) Structure of male cone, microsporophyll, microsporanium and mounting of pollen grains.
iv) Observation of megasporophyll.
P.S. { i) T.S. of coralloid root
{ ii) V.S. of ovule.

20,21,22 & 23. Taxonomy of Angiosperms:

Study of families (as per syllabus)

24. Herbarium techniques.

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