

The Kelkar Education Trust's
V. G. Vaze College of Arts, Science and Commerce
(Autonomous) - Affiliated to University of Mumbai
(Re Accredited By NAAC with Grade A)

Revised Syllabus for FYBSc
Based on NEP-2020 Guidelines

Program: B.Sc.
Course : BOTANY
Semester I

To Be Implemented From
Academic Year 2023-24
F.Y.B.Sc (Botany)
Semester: I

Major Course-I
Course Title: PLANT DIVERSITY I

Course code: VGVUSMBO101

Credits: 02

Teaching Scheme (Hrs/Week)				Continuous Internal Assessment (CIA) 40 marks					End Semester Examination	Total
L	T	P	C	CIA-1	CIA-2	CIA-3	CIA-4	Lab	Written	
3	-	1	2	20	15	05		-	60	100
Max. Time, End Semester Exam (Theory) -2Hrs.										

Course Learning Objectives:

- To understand the classification, general characters of the classes of Algae, Fungi and Bryophytes.
- To differentiate between the morphology, structure, life cycle and importance of the organisms of respective groups of plants
- To recognize the difference between various groups of Algae, Fungi and Bryophyte.

Course Learning Objectives:

After the successful completion of the course, Learners will able to:

CO1- Develop critical understanding of the salient features, their life cycle pattern. be able to identify them.

CO2- know economic importance of various species of Algae, Fungi and Bryophytes and their applications for human kind

CO3 -know more about the fascinating world of plants which will enhance their interest for the subject.

CO4-Interpret affinities between of Algae,Fungi and Bryophytes.

PLANT DIVERSITY I

ALGAE		Lectures
Unit I	General Characters and Economic importance of Chlorophyta life cycle of <i>Spirogyra</i>	
	General Characters and Economic importance of Cyanophyta life cycle of <i>Nostoc</i>	
FUNGI		
Unit II	Classification of Fungi upto Class proposed by G. M. Smith	
	Characters and Economic importance of Phycomycetes Life cycle of <i>Rhizopus</i> Mode of nutrition in Fungi : Saprophytism and Parasitism	
BRYOPHYTE		
Unit III	Classification of bryophyte upto class as per G.M.Smith General Characters of Hepaticae Life Cycle of <i>Riccia</i> Range of sporophyte in Hepaticae	

References:

1. Sharma, O.P. (1986) Textbook of Algae.
2. Pandey, B. P. (1994) Textbook of Botany – Algae.
3. Vashista, B. R. (1995) Botany for degree students-Algae.
4. Sharma, O.P. (1989) : Textbook of Fungi.
5. Vashista, B. R. (1995) Botany for degree students-Fungi.
6. Smith, G. M. (1955) :Cryptogamic Botany Vol. II .
7. Vashista, B.R. (1996) : Botany for degree students -Bryophytes.
8. Chopra, R. N. and P. K. Kumar (1988) : Biology of Bryophytes.

PRACTICALS BASED ON PLANT DIVERSITY I

Course code:

Credits:02

Learning Objectives:

The Practical intends to:

- Understand the, general and reproductive characters of *Spirogyra*, *Nostoc*, *Rhizopus* and *Riccia*
- Understand and observe species for Economic importance of Chlorophyta, Cyanophyta, Phycomycetes : *Anabaena* (Nitrogen fixation), *Spirulina* (Neutraceutical), *Ulva* (Biofuel), *Chlorella* (Protein).
- Differentiate between the morphology and anatomical structure of sporophyte of Hepaticae.

Learning outcome:

After successful completion of practicals ,the learner will be able to identify *Spirogyra*, *Nostoc*, *Rhizopus* and *Riccia* with morphology and anatomical structure .

Sr. No.	Description
1.	Study of stages in the life cycle of <i>Nostoc</i> from fresh/ preserved material and permanent slides
2.	Study of stages in the life cycle of <i>Spirogyra</i> from fresh/ preserved material and permanent slides.
3.	Economic importance of algae: <i>Anabaena</i> (Nitrogen fixation), <i>Spirulina</i> (Neutraceutical), <i>Ulva</i> (Biofuel), <i>Chlorella</i> (Protein).
4.	Study of stages in the life cycle of <i>Rhizopus</i> from fresh/ preserved material and permanent slides.
5.	Economic importance of Phycomycetes Fungi: Fumaric acid, Oxalic acid, Citric acid production (Negative importance) : Neurites
6.	Study of stages in the life cycle of <i>Riccia</i> from fresh/ preserved material with the help of permanent slides.
7.	Study of sporophyte in Hepaticae with the help of permanent slides or photomicrographs.

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Revised Syllabus for FYBSc
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Program: B.Sc.
Course : BOTANY
Semester II

To Be Implemented From
Academic Year 2023-24
F.Y.B.Sc (Botany)
Semester: II
Major Course-II
Course Title: PLANT DIVERSITY II

Course Code: VGVUSMBO201

Credits:

Teaching Scheme (Hrs/Week)				Continuous Internal Assessment (CIA) 40 marks					End Semester Examination	Total
L	T	P	C	CIA-1	CIA-2	CIA-3	CIA-4	Lab	Written	
3	-	1	2	20	15	05		-	60	100
Max. Time, End Semester Exam (Theory) -2Hrs.										

Course learning Objectives		
1	To understand the classification, general characters of the classes of Pteridophyta.	
2	To understand morphology ,anatomy, structure and life cycle of respective groups of plants.	
3	To understand morphology of Flower, Inflorescence and variation.	
4	To learn families on the basis of vegetative and floral characters and understand variation in these families.	

Course learning Outcomes: After the successful completion of the course, Learners will be able to		
CO 1	To develop critical understanding on the salient features, life cycle pattern and identify plant systems.	
CO 2	To know economic importance of various species of respective group of Plants	
CO 3	To know more about the fascinating world of plants which will enhance their interest for the subject.	
CO 4	To develop critical understanding on families identification according to Bentham and Hookers system of classification and economic importance of plants	

PLANT DIVERSITY II

Unit I	PTERIDOPHYTES	Lectures
1.1	Classification of Pteridophyta Upto Classes as per G.M. Smith System of Classification.	
1.2	Life Cycle of <i>Nephrolepis</i>	
1.3	Economic importance of Pteridophyta	
1.4	Types of Stele in Pteridophyta	
Unit II	GYMNOSPERMS	
2.1	Classification of Gymnosperms upto classes (Chamberlain's system of classification)	
2.2	Life cycle of cycas	
2.3	Distribution of Cycadophyta in India	
2.4	Economic importance of Cycadophyta	
Unit III	ANGIOSPERMS	
3.1	Morphology of flower – All Parts of Flower	
3.2	Types of Inflorescence-Racemose, Cymose & their types	
3.3	Study of following families according to Bentham and Hookers System of Classification: 1 Malvaceae 2. Caesalpinoideae 3 Apocynaceae 4 Amaryllidaceae	

Reference

1. Rashid, A. (1978) - An introduction to pteridophytes
2. Vashishta, B.R. (1996) - Botany for degree students – Pteridophytes
3. Chamberlein, C.J. (1966) - Gymnosperms, Structure and Evolution
4. Ramanujan, C.G.K. (1979) - Indian Gymnosperms in Time and Space
5. Vashishta, P.C. (1976) - The Gymnosperms
6. A Textbook of Botany: Angiosperms - Taxonomy, Anatomy, Embryology and Economic Botany -Publisher: S Chand & Co Ltd
7. Sharma, O. P. 1993. Plant Taxonomy. Tata McGraw Hill Publishing Co. Ltd.; NewDelhi
8. Sambamurty, A. V. S. S. 2005. Taxonomy of Angiosperms. I. K. International Pvt.Ltd., New Delhi.

Semester II Practical

Course code:

(CREDITS-02)

Learning Objectives –The Practical intends to

1. To understand the, general and reproductive characters of *Nephrolepis, and Cycas*
2. Understand and observe Morphology of Flowers and Inflorescence using Plant Specimen
3. To learn the difference between families of Angiosperms on the basis of morphological characters.

Learning outcomes: After successful completion of practicals ,the learner will be able to

CO1: Identification of *Nephrolepis* ,*Cycas* on the basis of morphological and anatomical structure .

CO2: Will be able to understand morphology of Flower and inflorescence to classify the families.

CO3: Will be able to learn classification of families according to Bentham and Hooker's system of classification.

Practicals based on Plant Diversity I

1. Study of stages in the life cycle of *Nephrolepis* from fresh/ preserved material and permanent slides.
2. Economic importance of Pteridophytes: Food (*Marsilea*), biofertilizers (*Azolla*), bioremediation (*Pteris*), Ornamentals (*Ferns*)
3. Study of stages in the life cycle of *Cycas* from fresh/ preserved material and permanent slides
4. *Economic importance of Cycadophyta-*
 - *Food (Sago Palms)*
 - **Medicinal Plants** (*Cycas*)
 - Source of Fiber(*Cycas*),
 - Ornamental (*Zamia*)
5. Study of Morphology of Flowers using fresh/ preserved material
6. Study of Inflorescence from fresh/ preserved material
7. Study of Angiosperm families:
 - *Malvaceae*

- Caesalpinaceae
- Apocynaceae
- Amaryllidaceae xcz