

DEPARTMENT OF BOTANY				CLASS: I M.Sc. Botany				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours/week	CIA	Ext	Total
I	Major Practical 1	21P1BMP1	Practical-I**	2	4	40	60	100

Nature of Course			
Knowledge and skill	✓		Employability oriented
Skill oriented	✓		Entrepreneurship oriented

Course Objectives:

1. To observe morphological, anatomical and reproductive features of Algae, Fungi, Lichens & Bryophytes.
2. To train the students to prepare micro slides for observation under microscope.
3. To train the students thru practices on organic farming and equip them become entrepreneur

Plant Diversity-I Practical

1. Study of the morphology of Algae (*Oscillatoria*, *Volvox*, *Caulerpa*, *Padina*, *Gelidium* & *Diatoms*)
2. Study of the morphology of Fungi (*Phytophthora*, *Rhizopus*, *Polyporus* and *Fusarium*) & Lichens (*Parmelia* and *Usnea*).
3. Study of the morphology of Bryophytes (*Riccia*, *Anthoceros* and *Polytrichum*)
4. Make micro- slide preparations of aerial and reproductive parts.
5. Demonstration of mass cultivation of freshwater and marine algae; and fungi
6. Field visit to study fresh water/ marine water algal forms and their mass cultivation sites
7. Field visit to study different forms of bryophytes for a minimum of two days.

Plant diversity II Practical

1. Study of the vegetative and reproductive morphology of Pteridophytes (*Angiopteris*, *Equisetum*, *Ophioglossum*, *Polypodium* and *Marselia*)
2. Observation of fossil pteridophytes
3. Study of the vegetative and reproductive morphology of Gymnosperms (*Cycas*, *Ginkgo*, *Taxus*, *Ephedra* and *Gnetum*).
4. Study of the 3D internal structure of pteridophytes and gymnosperms taking appropriate sections and micro-slide preparations.
5. Group discussion on the comparative morphology and geological time period of pteridophytes and gymnosperms at the class and order levels respectively.
6. Field visit to study local pteridophytes and gymnosperms.
7. Field visit to study different vegetations to observe pteridophytes and gymnosperms for a minimum of two days.
8. Collection and enumeration of economically important pteridophytes and gymnosperms

Rationale for Nature of the Course:

Prospecting the economically important pteridophytes and gymnosperms

Activities having direct bearing on Skill development / Employability / Entrepreneurship

Observation of internal morphology of different habits of angiosperms adopting hand and microtome sectioning of different dimensions (T.S, RLS and TLS), differential staining, tissue maceration and permanent slide preparations.

Analyzing the fibre and timber quality of the plants of interests

Understanding and applications of conventional crop improvement techniques

Pedagogy:

Chalk and Talk, PPT, Group Discussion, Seminar, Interaction, Problem Solving, Quiz, Virtual Labs & Learning Management System (CANVAS).

Course Learning Outcomes:

CLOs	CLO Statement	Knowledge Level
Students will be able to know, understand, apply, and analyse		
CLO -1	the external and internal morphology of Algae, Fungi, Lichens. Bryophytes, Pteridophytes and Gymnosperms	Up to K4
CLO -2	the phylogenetic relationships of within and between the members of Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms	Up to K4
CLO -3	the knowledge on economic importance in Algae, Fungi, Lichens. Bryophytes, Pteridophytes and Gymnosperms	Up to K4
CLO -4	the fossil forms of these plant divisions	Up to K4
CLO -5	the demonstration of mass culturing of some economically important algal and fungal members	Up to K4

Mapping Programme Specific Outcomes with Course Outcome:

	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5
CO-1	2	1	2	2	3
CO-2	3	2	2	2	2
CO-3	1	3	3	2	3
CO-4	3	2	2	3	3
CO-5	2	2	2	3	2

3-Advance application, 2- Intermediate level, 1- Basic level

Lesson Plan

Sl. No	Description	Hrs	Mode
I	a) Study of the morphology using micro-slide preparation of <i>Oscillatoria</i> , <i>Volvox</i> , <i>Caulerpa</i> , <i>Padina</i> , <i>Diatoms</i> , <i>Gelidium</i>	6	Experiments, demonstration videos and field trips
	b) Mass culturing some algal and fungal members	6	
	c) Micro-examination of the fungi <i>Phytophthora</i> , <i>Rhizopus</i> , <i>Polyporus</i> , <i>Fusarium</i>	6	
	d) Study the morphology and anatomy of Lichens <i>Parmelia</i> , <i>Usnea</i>	6	
	e) Study of the morphology and anatomy of <i>Riccia</i> , <i>Anthoceros</i> , <i>Reboulia</i> , <i>Polytrichum</i>	6	
I	a) Microslide preparations and observations of <i>Angiopteris</i>	3	Experiments, demonstration and videos
	b) Microslide preparations and observations of <i>Equisetum</i>	3	
	c) Microslide preparations and observations of <i>Ophioglossum</i>	3	
	d) Microslide preparations and observations of <i>Polypodium</i>	3	
	e) Microslide preparations and observations of <i>Marselia</i>	3	
	f) Microslide preparations and observations of <i>Cycas</i>	3	
	g) Microslide preparations and observations of <i>Ginkgo</i>	3	
	h) Microslide preparations and observations of <i>Taxus</i>	3	
	i) Microslide preparations and observations of <i>Ephedra</i>	3	
	j) Microslide preparations and observations of <i>Gnetum</i>	3	

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