PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE
Autonomous
Siddhartha Nagar, Vijayawada–520010
Re-accredited at 'A+' by the NAAC

Course Code				**23BOMAP231**			
Title of the Course				**VASCULAR PLANTS (Pteridophytes, Gymnosperms and Taxonomy of Angiosperms)**			
Offered to: (Programme/s)				**B.Sc. Hons Botany**			
L	**0**	**T**	**0**	**P**	**2**	**C**	**1**
Year of Introduction:	**2024-25**			**Semester:**			**3**
Course Category:	**Major**			**Course Relates to:**	**Global**		
Year of Revision:	**NA**			**Percentage:**	**NA**		
Type of the Course:				**Skill development**			
Crosscutting Issues of the Course :				**NA**			
Pre-requisites, if any				**KNOWLEDGE OF VASCULAR PLANTS AT +2 LEVEL**			

Course Description:

An overview of the course content and objectives.

A comparative study of pteridophytes, gymnosperms and angiosperms, integrating form, function and ecology. This course is designed to introduce students to the major lineages of vascular plants, including the ferns, gymnosperms and flowering plants. Students will be introduced to basic plant structure (anatomy and morphology) and diversity, as well as topics in plant evolution. An understanding of vascular plants is essential for global citizens with interests in biodiversity, ecology, agriculture, forestry, medicine and biochemistry.

Course Aims and Objectives:

S.NO	COURSE OBJECTIVES
1	Compare and contrast the general structure and function of roots, stems, and leaves as well as identify modifications of these organs for specialized functions.
2	Explain photosynthesis as a process and how it has been modified in plants adapted for different environments.
3	Discuss the potential impacts of global climate change and predict how plants will respond.
4	Identify the main innovations that occurred in vascular plant evolution and indicate them on a phylogenetic tree.
5	Name the main groups of extant (living today) vascular plants and distinguish them based on their structure and reproduction.

Course Outcomes

At the end of the course, the student will be able to…

CO NO	COURSE OUTCOME	BTL	PO	PSO
CO1	Distinguish the Pteridophytes and Gymnosperms based on their morphological characters.	K2	2	1
CO2	Distinguish the Pteridophytes and Gymnosperms based on their anatomical characters.	K2	2	1
CO3	Distinguish the Pteridophytes and Gymnosperms based on their reproductive structures.	K2	2	1
CO4	Make systematic classification of plant species using vegetative and floral characters.	K2	2	1
CO5	Identify angiosperm plant species and make herbarium specimens.	K2	2	1

CO-PO MATRIX									
CO NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1		2						2	
CO2		2						2	
CO3		2						2	
CO4		2						2	
CO5		2						2	

Course Structure

This lab list covers the key areas of a Vascular Plants course, providing hands-on practice with microscopic observations.

Unit 1: [**Pteridophytes]** (6Hrs)

Lab 1: Study/microscopic observation of vegetative, sectional/anatomical and reproductive structures of the following using temporary or permanent slides/specimens/mounts:

1. Pteridophyta: *Lycopodium* and *Marselia*

- **Dataset** (web link) / **Experiment**: https://youtu.be/VR5soZ1Qg-E
- **Tasks:** Individual preparation and mounting of temporary slide.

Unit 2: [**Gymnosperms]** (6Hrs)

Lab 1: Study/microscopic observation of vegetative, sectional/anatomical and reproductive structures of the following using temporary or permanent slides/specimens/mounts:

1. Gymnosperms: *Cycas and Gnetum*

- **Dataset** (web link) / **Experiment**: https://youtu.be/mGiqGFfy7eA
- **Tasks:** Individual preparation and mounting of temporary slide.

Unit 3: [Principles of Plant Taxonomy] (6Hrs)

Lab 1: Demonstartion of herbarium techniques

- **Dataset** (web link) / **Experiment**: https://youtu.be/HaaX5WzlAiI
- **Tasks:** Prepartion of herbarium sheets.

Unit 4: [Descriptive Plant Taxonomy] (6Hrs)

Lab 1: Technical description of locally available plant species from the following angiosperm families:

1. Annonaceae
2. Cucurbitaceae
3. Asteraceae
4. Asclepiadaceae
5. Amaranthaceae
6. Euphorbiaceae
7. Arecaceae
8. Poaceae

- **Dataset** (web link) / **Experiment**:

  https://youtu.be/JG5M5qocNN8

  https://youtu.be/nSwMbO-yIsU

  https://youtu.be/MbzekBV5tgg

  https://youtu.be/zVkXQr7aU6A
- **Tasks:** Identification of angiosperm plant families

Unit 5: [Evidences for Plant Systematics] (6Hrs)

Lab 1: Field trip to a local floristic area/forest (submission of 30 number of herbarium sheets of wild plants with the standard system are mandatory).

- **Dataset** (web link) / **Experiment**: https://youtu.be/ADoiU_YTprk
- **Tasks:** Identification of different types of herbs.

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Question Paper Pattern for Practical Course

(A) Semester End Lab Examination

23BOMAP231: VASCULAR PLANTS (Pteridophytes, Gymnosperms and Taxonomy of Angiosperms) **Offered to: B.Sc Hons Botany**

Semester: III **Max.Marks: 50 (CIA+SEE)**

Max. Time: 3 Hrs

I. Answer the following. **Max. Marks: 30 Marks**

Q1. Take T.S. of the material '**A**' (Pteridophyta), make a temporary slide and justify the identification with apt points. 8M

Q2. Take T.S. of the material '**B**' (Gymnosperms), make a temporary slide and justify the identification with apt points. 8M

Q3. Describe the vegetative and floral characters of material '**C**' (Taxonomy of Angiosperms) and derive its systematic position. 8M

Q4. Identify the botanical name and family of collected herbarium '**D**' & '**E**'. 3M

Q5. Identify and write a comment on '**F**' (Pteridophyte) & '**G**' (Gymnosperm). 3M

II Viva **3 Marks**

III Record **2 Marks**

(B) CONTINUOUS ASSESMENT(Internal) **15 MARKS**

15 marks for the continuous assessment (Day to day work in the laboratory shall be evaluated for 15 marks by the concerned laboratory teacher based on the regularity/ record/viva). Laboratory teachers are mandated to ensure that every student completes 80%-90% of the lab assessments.

TOTAL: (A)+(B) = **50 MARKS**

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