



# **P.B. SIDDHARTHA COLLEGE OF ARTS & SCIENCE**

Siddhartha Nagar, Vijayawada – 520 010

*Autonomous -ISO 9001 – 2015 Certified*

## **Title of the Paper**

**(Anatomy and Embryology of Angiosperms, Plant Ecology and Biodiversity)**

**Offered to:** BSc. BZC with Programme code **US03**

**Course Type:** Core (P)

**Year of Introduction:** 2021-2022

**Year of Revision:**

**Percentage of Revision:**

**Semester:** III

**Credits:** 02

**Hours Taught:** 30 hrs. per Semester

**Max. Time:** 3 Hours

**Course Prerequisites:** Knowledge of Anatomy and Embryology of angiosperms, Plant Ecology and Biodiversity at +2 level.

**Course Description:** This course will provide one with a basic and comprehensive understanding and skill of identifying anatomical structure and functions. Enable the student with depth of topics and helps them to gain an appreciation in the embryology of Angiosperms. On the other hand, importance of understanding plant ecology and biodiversity provides an extensive knowledge to the student.

## Course Objectives:

On successful completion of this course, the students will be able to:

1. To understand the Anatomy of Angiosperms.
2. To understand the Embryology of Angiosperms.
3. To understand the Basics of Ecology.
4. To understand the Population Community and Production Ecology.
5. To understand the Basics of Biodiversity.

## Course Outcomes:

On successful completion of this practical course students shall be able to:

1. Get familiarized with techniques of section making, staining and microscopic study of vegetative, anatomical and reproductive structure of plants.
2. Observe externally and under microscope, identify and draw exact diagrams of the material in the lab.
3. Demonstrate application of methods in plant ecology and conservation of biodiversity and qualitative and quantitative aspects related to populations and communities of plants.

## Syllabus

### Course Details

Unit	Learning Units	Lecture Hours
I	1. Tissue organization in root and shoot apices using permanent slides.  2. Anomalous secondary growth in stems of <i>Boerhavia</i> and <i>Dracaena</i> .	4
II	1. Study of anther and ovules using permanent slides/photographs.  2. Study of pollen germination and pollen viability.  3. Dissection and observation of Embryo sac in <i>Austrobaileya</i>	12

	<p>in <i>Santalum</i> or <i>Argemone</i>.</p> <p>4. Structure of endosperm (nuclear and cellular) using permanent slides / Photographs.</p> <p>5. Dissection and observation of Endosperm haustoria in <i>Crotalaria</i> or <i>Coccinia</i>.</p> <p>6. Developmental stages of dicot and monocot embryos using permanent slides / photographs.</p>	
III	<p>1. Study of instruments used to measure microclimatic variables; soil thermometer, maximum and minimum thermometer, anemometer, rain gauge, and luxmeter. (Visit to the nearest/local meteorology station where the data is being collected regularly and record the field visit summary for the submission in the practical).</p> <p>2. Study of morphological and anatomical adaptations of hydrophytes and xerophytes (02 each).</p>	6
IV	<p>1. Quantitative analysis of herbaceous vegetation in the college campus for frequency, density and abundance.</p> <p>2. Identification of vegetation/various plants in college campus and comparison with Raunkiaer's frequency distribution law.</p>	6
V	<p>1. Find out the alpha-diversity of plants in the area</p>	2

**Recommended Reference book:**

1. Practical Botany volume II- Bendra and Kumar.
2. Practical Botany volume II-O.P.Sharma.
3. Practical Botany volume III-H.N.Srivastava.

4. Khasim SM., Botanical Microtechnique- Principles & Practice, Capital Publishing Company.

**Course Delivery method:** Face-to-face / Blended.

**Course has focus on:** Skill Development.

**Websites of Interest:**

<https://youtu.be/iA5EqQm3hqw>

<https://youtu.be/3K2qLwzU>

<https://youtu.be/ZIF4NTDL14U>

<https://youtu.be/qPUPw7iS86Q>

[https://youtu.be/qGLo\\_cUMIHU](https://youtu.be/qGLo_cUMIHU)

<https://youtu.be/Spl9GWgXJPO>

<https://youtu.be/ifAdxMspJGY>

<https://youtu.be/K86XXQdwlB4>

<https://youtu.be/c83EtBUrWsk>

<https://youtu.be/enD2OwXBhCM>

<https://youtu.be/M-TczeGvCCg>

<https://youtu.be/dDrrTbi88zE>

<https://youtu.be/aX58F5jWxU8>

<https://youtu.be/rSsFn1GEuyw>

**Co-curricular Activities:**

Question and answer session at the end of class.

Observing animations.

Written assignments.

Preparation of temporary slides.

Group Discussion (GD)/ Quiz.

Power Point Presentations.

## Model Question Paper Structure for SEE

**Max.: 35 Marks  
Marks**

**Min. Pass: 16**

### Section-A

1. Take T.S of the given material 'A' (Anatomy), prepare a temporary slide and justify the identification with specific reasons. **8M**
2. Write the procedure for the experiment 'B' (Embryology) and demonstrate the same **6M**
3. Take T.S of the material 'C'. Prepare a temporary slide and justify the identification with specific reasons. **6M**
4. Identify the following with specific reasons. **4x2=8M**
  - D. Anatomy/Embryology
  - E. Ecology instrument
  - F. Mapping of Biodiversity hot spot.
  - G. Endemic/endangered plant/animal
5. Record +Viva-voce **5+2=7M**