



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

Course Code				23BOMAP233							
Title of the Course				PLANT BREEDING							
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 PLANT DISEASES AT +2 LEVEL							

Course Description:

An overview of the course content and objectives.

This course is an introduction to the science of plant breeding. This course introduces the fundamental concepts of plant breeding and plant adaptation that are applicable to agricultural and natural systems. Extensive industry engagement is also undertaken as part of the course curriculum where students connect with industry leaders in the plant breeding discipline, whether in broad-acre cropping (e.g. wheat, barley, canola, faba bean breeding) or horticulture (e.g. almond breeding). The topics covered include: genetic diversity in relation to adaptation, productivity, pest and disease resistance and end-use quality; strategies for setting breeding objectives and maximizing selection and improvement of key traits; breeding methodologies for self or cross pollinated plants.

Course Aims and Objectives:

S.NO	COURSE OBJECTIVES
1	understand the cross-pollination mechanism.
2	understand the self-pollination mechanism.
3	gain knowledge in modern breeding methods
4	understand the hybridization techniques.
5	identify the plant variants based on pollination.

Course Outcomes

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

CO NO	COURSE OUTCOME	BTL	PO	PSO
CO1	Distinguish self and cross-pollinated plant species based on floral biology.	K2	2	1
CO2	Perform skills related to self and cross pollination in plants.	K6	2	1
CO3	Experiment hybridization to produce new varieties.	K3	2	1
CO4	Apply the principles of inheritance to plant breeding	K3	2	1
CO5	Identify mutation breeding.	K1	2	1

CO-PO MATRIX									
CO NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1		2						2	
CO2		3						3	
CO3		3						3	
CO4		3						3	
CO5		1						1	

Course Structure

This lab list covers the key areas of plant breeding course, providing hands-on practice with applying the concepts in plant breeding and pollination methods.

Unit 1: [Basic concepts of plant breeding] (6Hrs)

Lab 1:

Floral biology in a self and a cross pollinated plant species.

- **Dataset (web link) / Experiment:**
<https://www.youtube.com/shorts/K7wyQZereZg?feature=share>
- **Tasks:** Identification of floral organs.

Unit 2: [Contrivances for cross pollination] (6Hrs)

Lab 1:

(1) Identification and classification of plants based on pollination mechanism.

(2) Pollen viability test.

(3) Observation on pollen germination.

- **Dataset (web link) / Experiment:**
<https://www.youtube.com/watch?v=GtYHU1Mx4SE&pp=ygUVcG9sbGVuIHZpYWJpbGl0eSB0ZXN0>
- **Tasks:** Identifying the pollen germination of different plant species.

Unit 3: [Breeding methods in plants] (6Hrs)

Lab 1: Practicing selfing technique.

- **Dataset (web link) / Experiment:**
https://www.youtube.com/shorts/atLQPBZ_pcs?feature=share
- **Tasks:** Differentiating self-pollinating plants.

Unit 4: [Breeding methods in cross-pollinated plants] (6Hrs)

Lab 1:

- (1) Practicing emasculation technique.
- (2) Practicing crossing technique.
- (3) Estimation of heterosis and inbreeding depression.

- **Dataset (web link) / Experiment:**
<https://www.youtube.com/shorts/H6rLkcyVXgo?feature=share>
- **Tasks:** Differentiating cross-pollinating plants.

Unit 5: [Modern methods in plant breeding] (6Hrs)

Lab 1:

- (1) Assessment of genetic variability.
- (2) Studying mutant and polyploids in crop plants.

- **Dataset (web link) / Experiment:**
https://www.youtube.com/shorts/l_tHc8VuZ2M?feature=share
- **Tasks:** Identification of mutants.

Question Paper Pattern for Practical Course

(A) Semester End Lab Examination

23BOMAP233: PLANT BREEDING

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. Perform the given experiment 'A' to calculate the percentage of pollen germination. 8M

Q2. Perform the given experiment 'B' and identify the seed viability using tetrazolium. 8M

Q3. Perform the given experiment 'C'. 8M

Q4. Identify and write a note on 'D'. 3M

Q5. Identify and write a note on 'E'. 3M

II Viva

3 Marks

III Record

2 Marks

(B) CONTINUOUS ASSESSMENT(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
