ODD SEMESTER PRACITCAL PLAN

Name of the college: Government College of Arts, Science and Commerce, Sanquelim Goa

Name of Faculty: Dr. Nisha Kevat | **Subject: Plant Physiology (PRACTICAL)**

Paper code: BOT 202 | **Program/Course: S.Y B.Sc.** | **Division: - --**

Academic year: 2024 - 2025 | **Semester: III** | **Total Lectures: 30 HOURS (Practicals)**

Course Objectives:

1. Develop an understanding of the physiological processes occurring in plants and their responses.
2. Enable the analysis of plant responses to various factors and understand their effects on physiological processes.
3. Impart practical skills essential for planning and executing research in plant physiology and allied fields

Course Learning Outcome:

1. Enlist the role of mineral nutrients, plant pigments and phytohormones in plant growth.
2. Understand and describe various physiological processes such as absorption, transpiration, photosynthesis, photorespiration, translocation and nitrogen metabolism involved in plant growth.
3. Apply the knowledge of mineral nutrients and phytohormones in regulating plant growth.
4. Analyze plant responses to various growth and environmental factors and plan the experimental layout for research work.

Month	Lectures From:	To:	No. of lectures allotted	Topic, Subtopic to be covered	Assignment/Exercise	ICT Tools	Reference books
July 2024	01/07/	06/07	02	**Practical 1:** Determination of osmotic potential of plant cell sap by plasmolytic method.	Compare the osmotic potential of different plant tissues and explain the differences.	Powe rpoint Presentation And You Tube Videos	Bajracharya, D (1999). Experiments in Plant Physiology - A Laboratory
July 2024	08/07/	13/07	02	**Practical 2:** Study of the effect of	Compare the osmotic potential of different plant tissues and		

				environmental.	explain the differences.		Manual. Narosa Publishing House, New Delhi. Evert, RF (2012). Raven Biology of Plants. International Edition. 8th edition. Palgrave Macmillan, U.K. Hopkins, WG and Huner, NP (2009). Introduction to Plant Physiology. 4 th edition. John Wiley & Sons, U.S.A. Jain, VK (2022). Fundamentals of Plant Physiology. S. Chand and Company, Delhi. Kochar, SL and Gujral, SK (2020). Plant Physiology: Theory and Applications. Cambridge University Press India Private Limited, New Delhi. Pandey, SN and Sinha, BK
July 2024	15/07/	20/07	02	**Practical 3:** Calculation of stomatal index and stomatal frequency of a mesophyte.	Calculate and compare stomatal index and frequency in different mesophyte plants.		
July 2024	22/07/	27/07	02	**Practical 4:** Calculation of stomatal index and stomatal frequency of a xerophyte.	Calculate and compare stomatal index and frequency in xerophyte plants.		
July/August 2024	29/07/	03/08	02	**Practical 5:** Qualitative tests to detect mineral nutrients in plants (any four)	Test for four mineral nutrients in plants and explain their importance.		
August 2024	05/08/	10/08	02	**Practical 6:** Separation of chlorophyll pigments by paper chromatography.	Separate chlorophyll pigments from leaves and compare the results.		
August 2024	12/08/	17/08	02	**Practical 7:** Demonstration of Hill's reaction.	Demonstrate Hill's reaction and explain its role in photosynthesis.		
August 2024	19/08/	24/08	02	**Practical 8:** Comparison of anatomical features of C3 and C4 plants.	Compare the leaf anatomy of C3 and C4 plants and discuss their differences.		
August 2024	26/08/	31/08	02	**Practical 9:** Determination of chlorophyll a, chlorophyll b and total chlorophyll content in shade and sun plants.	Measure chlorophyll content in sun and shade plants and compare the results.		
September , 2024	02/09/	07/09/	02	**Practical 10:** Determination of oxygen evolution during photosynthesis in aquatic plants by titrimetric method	Measure oxygen production in aquatic plants under different light conditions.		
September , 2024	09/09/	14/09	02	**Practical 11:** Study of photo-oxidation of photosynthetic pigments.	Measure oxygen production in aquatic plants under different light conditions.		
September , 2024	16/09/	21/09	02	**Practical 12:** Comparative study of rate of respiration in any two parts of a plant.	Compare the respiration rates of different plant parts.		

September 2024	23/09/	28/09	02	**Practical 13:** Determination of Q10 of germinating seeds.	Measure the Q10 value for germinating seeds and explain its significance.		(2006). Plant Physiology. Vikas Publication House, New Delhi. Sinha, R (2015). Modern Plant Physiology. Narosa Publishing House, New Delhi. Taiz, L, Zeiger, E, Moller, IM and Murphy, A (2015). Plant Physiology
September/ October 2024	30/09	5/10	02	**Practical 14**: Study of bacteria from root nodule suspension by Gram staining technique.	Stain bacteria from root nodules and identify them.		
October 2024	07/10	12/10	02	**Practical 15**: Study of the effect of auxins on rooting.	Observe how different auxin levels affect root growth in plant cuttings.		
October 2024	14/10	19/10	02	**Practical 16**: Revisions	Revision		

*****Note: Data filled in the above form is sample data.

*** Assessment Rubrics**

Component	**Max Marks**
ISA 1	**NA**
ISA 2	**NA**
Practical	**25**
Project	**NA**
Semester End Exam	**NA**