ODD SEMESTER LECTURE PLAN

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

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

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

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

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	Exercise/Assignments	ICT Tools	Reference books
July 2024	01/07/	06/07	02	**Lecture 1-** Module 1: Transport of water, inorganic and organic solutes	List the types of solutes transported in plants	Power Point Presentation,	Bajracharya, D (1999).

				Lecture 2: Plant water relations: Water potential and its components;	Define water potential in one sentence.	Chalk And Board, You Tube Study Videos	Experiments in Plant Physiology - A Laboratory Manual. Narosa Publishing House, New Delhi. 2. Evert, RF (2012). Raven Biology of Plants. International Edition. 8th edition. Palgrave Macmillan, U.K. 3. Hopkins, WG and Huner, NP (2009). Introduction to Plant Physiology. 4 th edition. John Wiley & Sons, U.S.A. 4. Jain, VK
July 2024	08/07/	13/07	02	Lecture 3: water transport through xylem (ascent of sap);	dentify the main tissue involved in the ascent of sap.	Power Point Presentation, Chalk And Board, You Tube Study Videos	
				Lecture 4: transpiration and its significance; factors affecting transpiration;	Name one factor that affects transpiration.		
July 2024	15/07/	20/07	02	Lecture 5: root pressure and guttation.	Describe root pressure in one sentence.	Power Point Presentation, Chalk And Board, You Tube Study Videos	
				Lecture, 6: Mineral nutrition: Criteria for determining essentiality of elements;	List two criteria for determining the essentiality of an element.		
July 2024	22/07/	27/07	02	Lecture 7: macronutrients and micronutrients;	Differentiate between macronutrients and micronutrients.	Power Point Presentation, Chalk And Board, You Tube Study Videos	
				Lecture 8: role and deficiency symptoms of essential elements;	Name one deficiency symptom of nitrogen in plants.		
July/August 2024	29/07/	03/08	02	Lecture 09: carriers and pumps).	Identify one type of pump involved in solute transport.	Power Point Presentation, Chalk And Board, You Tube Study Videos	
				Lecture 10: Translocation of organic solutes; composition of phloem sap;	Mention one component of phloem sap.		
August 2024	05/08/	10/08	02	Lecture 11: path of translocation (girdling experiment);Lecture	Explain the girdling experiment in one sentence.	Power Point Presentation, Chalk And Board, You Tube Study Videos	
				12: mechanism of translocation of organic solutes (Pressure Flow Model);	Describe the Pressure Flow Model in one sentence.		

August 2024	12/08/	17/08	02	Lecture 13: assimilate partitioning.	Explain assimilate partitioning in one sentence.	Power Point Presentation, Chalk And Board, You Tube Study Videos	(2022). Fundamentals of Plant Physiology. S. Chand and Company, Delhi. 5. Kochar, SL and Gujral, SK (2020). Plant Physiology: Theory and Applications. Cambridge University Press India Private Limited, New Delhi. 6. Pandey, SN and Sinha, BK (2006). Plant Physiology. Vikas Publication House, New Delhi. 7. Sinha, R (2015). Modern Plant
				Lecture 14: Module 3: Nitrogen metabolism, phytohormones and plant responses Nitrogen metabolism: Biological nitrogen fixation;.	Name the process of biological nitrogen fixation.		
August 2024	19/08/	24/08	02	Lecture 15: Module 3: Nitrogen metabolism, phytohormones and plant responses Nitrogen metabolism: Biological nitrogen fixation;	Name the process of biological nitrogen fixation.	Power Point Presentation, Chalk And Board, You Tube Study Videos	
				Lecture 16: assimilation of nitrate and ammonia.	State how ammonia is assimilated in plants.		
August 2024	26/08/	31/08	02	Lecture 17: Phytohormones: Discovery and physiological roles of auxins,	Identify one physiological role of auxins.	Power Point Presentation, Chalk And Board, You Tube Study Videos	
				Lecture 18: gibberellins,	List one physiological role of gibberellins.		
September , 2024	02/09/	07/09/	02	Lecture 19: cytokinins,	Describe one function of cytokinins.	Power Point Presentation, Chalk And Board, You Tube Study Videos	
				Lecture 20: abscisic acid and ethylene.	State one role of abscisic acid in plants.		
September , 2024	09/09/	14/09	02	Lecture 21: Plant responses to light, temperature and stress	Identify one plant response to light.	Power Point Presentation, Chalk And Board, You Tube Study Videos	
				Lecture 22: : Discovery and role of phytochrome and cryptochrome;	Define phytochrome in one sentence.		
September , 2024	16/09/	21/09	02	Lecture 23: Responses of red and far-red light on photomorphogenesis;	Mention the effect of red light on photomorphogenesis.	Power Point Presentation, Chalk And Board,	

				Lecture 24: technique, mechanism and applications of vernalization	Describe vernalization in one sentence.	You Tube Study Videos	Physiology. Narosa Publishing House, New Delhi. 8. Taiz, L, Zeiger, E, Moller, IM and Murphy, A (2015). Plant Physiology
September 2024	23/09/	28/09	02	Lecture 25: Plant responses to stress (drought)	List one plant response to drought stress.	Power Point Presentation, Chalk And Board, You Tube Study Videos	
				Lecture 26: Plant responses to stress (salt).	State one plant response to salt stress.		
September/ October 2024	30/09	5/10	02	Lecture 27: Plant responses to stress (metals and radiations).	State one plant response to salt stress.	Power Point Presentation, Chalk And Board, You Tube Study Videos	
				Lecture 28: REVISION	REVISION		
October 2024	07/10	12/10	02	Lecture 29: REVISION	REVISION		
				Lecture 30 REVISION	REVISION		
October 2024	14/10	19/10	02	Lecture 31: REVISION	REVISION		
				Lecture 32 REVISION	REVISION		

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

*** Assessment Rubrics**

Component	**Max Marks**
ISA 1	**10**
ISA 2	**10**
ISA 3 (Best 2 of 3)	**10**
Practical	**NA**
Project	**NA**
Semester End Exam	**80**