AMBROSE UNIVERSITY COLLEGE | FACULTY OF ARTS & SCIENCE

Bot 203 - Introduction to Plant Physiology

Directed Study- Syllabus

Instructor: Dr. Diane Edwards
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Office hours: By appointment

Schedules: Lectures: Weekly, 2 hours
Labs: N/A
Classroom: TBA

Course prerequisites: Biology 131 and 133

Course Description:

This course teaches the basic physiology of plants, with topics such as germination, reproduction, transport within the plant, and the interaction with the environment. Emphasis will be placed on scientific writing and critical analysis of literature.

Further Course Information:

Plants must acquire resources, sense and respond to their changing environment to survive. In this course we will explore the processes plant use to grow and complete their lifecycle with a strong emphasis on plant interactions with their environment. A scientist must know how to assess the scientific literature, synthesize knowledge and communicate findings. The student will learn and practise scientific writing by preparing an analysis paper and a literature review.

Required Textbook:

Hopkins, W.G. and Huner, N.P.A. Introduction to Plant Physiology. 4th edition Wiley

Course Outline

Lecture	Date	Topic	Details	Text Chap
1.	Sept 6	Introduction to Course and plants		
2.	Sept 13	Water Relations	Cellular Water Relations	1
	Sept 20	No Meeting	Assignment 1 due	
3.	Sept 27	Water Relations	Whole plant Water Relations	2
4.	Oct 4	Water Relations	Paper Discussion	
5.	Oct 11	Scientific Writing	How to write a paper	
6.	Oct 18	Scientific Writing	Scientific Writing, Draft Review	

7.	Oct 25	Photosynthesis	The Light Reactions, Assignment 2 due	6, 7
7.	Nov. 1	Photosynthesis	Calvin Cycle regulation	8
8.	Nov. 8	Moving sugars	Phloem translocation	9
9.	Nov. 15	Plant Nutrition	Nutrient deficiencies, Assignment 3 due	4
10.	Nov. 22	Plant Nutrition	Nutrients and soil and micro-organism interactions	3
11.	Nov. 29	Plant Nutrition	Nitrogen assimilation, Assignment 4 a due	11
12.	Dec 6	Debrief	Assignment 4b due	
Total 26 hours				

Expected learning outcomes:

- Understand plant growth and development and how both are influenced/constrained by their environment.
- Recognize the resources plant require for life and understand the mechanisms and strategies plants use to acquire these resources.
- Understand the adaptations plants use to tolerate or avoid biotic and abiotic stresses.
- Recognize the limitations and advantages of the Calgary environment for plant growth.
- Appreciate the import role plants play in the natural ecosystem, agriculture and human society, and become familiar with some key species.
- Refine skills for: critical thinking, reading and writing.
- Learn and practise scientific writing skills.

Course Requirements:

Assignment 1	10%
Assignment 2	40%
Assignment 3	25%
Assignment 4	25%
Total	100%

Assignment 1	Reflection on plant growth in Calgary, Why do some plants survive here while others cannot. Why is the Calgary environment so difficult for plants to thrive in? Length 1.5 to 3 pages, double spaced 12 pt, 1 inch margins etc. Try to think analytically and cite the resources you use. Marked based on writing structure, grammar and also on the "thoughtfulness" (10%).
Assignment 2	Using McDowell et al. 2008 as a jumping off point. Select three water stress tolerance characteristics in trees and explain via a review article why these are important and effective for tree survival. Include at least 3 articles from the primary literature. The assignment should be between 1000 to 1500 words double spaced and 12 pt type. Include a title, short abstract, introduction, body, conclusions and literature cited. The introduction provides context for

	the paper and should end with your thesis statement. The body will support your thesis or argument (3 main points = 3 paragraphs, 3 main headings), use evidence from research articles to support your thesis. In the conclusions restate the thesis and summarize the supporting evidence (papers). Figures are ok when referenced. Use CSE Style (Council of Science Editors) for formatting references.
Assignment 2a	Polished draft of review paper (15%)
Assignment 2b	Final draft of review paper (25%)
Assignment 3	Take home exam on photosynthesis (Photosynthetic Electron Chain and Carbon Reduction Cycle). (25%)
Assignment 4	Summary Assignment and Analysis Paper.
Assignment 4a	Summary Assignment on a citation classic paper. The objective of the assignment is to extract and compile the main points from a research article (Suefet et al. 2012) without losing content or meaning. 175 to 225 words in length. (5%)
Assignment 4b	Analysis Paper – Using your findings from the summary assignment, write a well-supported and documented analysis of scientific discovery (or outcome) arising from the Suefet et al. (2012) paper. Consider what questions remain unanswered by the research; what areas do the authors suggest should be followed up in future experiments; what questions do you have about how the research progressed *after* this paper was written? The Suefet et al. paper has already been cited over 80 times, it is already a high impact paper. This paper has stirred interest and controversy in its field. Identify a question based on the Seufert paper and find three additional articles to help you answer the questions. Mention the summary article in your paper. The additional papers that you choose must be research papers that are more recent than the Seufert paper (2012 onward) and you must use information from the results and discussion sections of the paper. You can use other articles such as reviews for background information. Once you have found suitable resources, note the key results and conclusions of the papers making an effort to show how the paper fit together and help you to understand the question. See handout for additional details (20%).

Examinations:

There will be no final examination for this course.

Grade Breakdown: The available letters for course grades are as follows:

A+	95-100%	C+	67-69%
A	91-94%	C	63-66%
A-	84-90%	C-	60-62%
B+	78-83%	D+	55-59%
B	77-79%	D	50-55%
B-	70-76%	F	Below 50%

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Student Handbook and Academic Calendar. Personal information, that is information about an individual that may be used to identify that individual, may be collected as a requirement as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at privacy@ambrose.edu.

Academic dishonesty is taken seriously at Ambrose University College as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else's ideas, words, or work as one's own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to give credit to another person's ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from Ambrose. Students are expected to be familiar with the policy statements in the current academic calendar and the student handbook that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student's permanent record.

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university college. Students are expected to be familiar with the policies in the current Academic Calendar and the Student Handbook that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean.