

BZ120-001(GT-SC1) – PRINCIPLES OF PLANT BIOLOGY

Spring 2024

Canvas Page: https://colostate.instructure.com/courses/180922

INSTRUCTOR

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COMMUNICATION

- 1. Email is the best way of communication. If you need to send an email, please include BZ120-SP24 in the subject line.
- 2. Personal communication is also an option. This can be after the lectures and during office hours.
- 3. Special appointment: I will be happy to clarify material, discuss study strategies, and answer questions outside the office hours. Send me an email with a few options for when you can meet or drop in; knock at any time.

LECTURES

MWF 3:00-3:50 Yates building, room 104.

OFFICE HOURS

Monday, 4:00 – 5:00 AM (408 Biology) Friday, 4:00 – 5:00 PM (408 Biology)

REVIEW SESSIONS

In addition to the weekly office hours, I will schedule a review session before each exam. Time, location, and format will be discussed and announced ahead of time.

COURSE MATERIALS

1. Textbook (required): "Stern's Introductory Plant Biology" by Bidlack and Jansky, McGraw-Hill Publishing.

This eBook provides excellent and well-illustrated coverage of the topics that I will cover, but sometimes in more depth than is necessary and other times in less detail than what we want to learn. As a result, lectures will be the main guide for your study. You will be using the eBook as a reference to review and reinforce concepts covered in lectures and to answer the SmartBook assignments. You can register and access the inclusive eBook by clicking *"McGraw-Hill Connect"* on your Canvas page and follow the directions. Your CSU student account will be billed after the add/drop date.

Watch the <u>Video</u> to learn more about the resources that Connect provides. You can also download the ReadAnywhere App on your mobile device. ReadAnywhere App allows you to access, read, listen, and download the eBook and more.

I strongly urge you to review the "Course Information" under module to learn more about the course and resources.

You will be granted FIVE bonus points for submitting the "*Connect Orientation Assignment*" under module 1 after you review the course information.

2. Lab manual (required): Principles of Plant Biology. This lab manual is available for purchase at the CSU bookstore. You need to bring it to the lab every session. Lab has separate syllabus.

COURSE DESCRIPTION

This course is an in-depth introductory survey of botany, intended primarily for science majors in fields such as Natural Resources, Botany, Zoology, Horticulture, and so on. It is a prerequisite for later botany courses in most of these programs. My goal is to help you understand the basic biology of plants, the connections between plants and other forms of life and to acknowledge the crucial role of plants in continuation of life on our planet.

I will discuss the evolution of plants, the transition of life from water to land and the associated evolutionary changes, the structure of the plant body, how the structures fit the functions, the plant reproduction, the plant ecology, and the importance of plants to humans and civilization. I will introduce

the foundation knowledge of plant metabolism, plant growth, plant development, plant breeding, plant classification, and plant interaction with the environment. I will elaborate little more on plant biotechnology and GMOs.

SPECIFIC LEARNING OBJECTIVES

Upon completion of this course, students will be able to:

- Describe the basic features of biological life.
- Explain the fundamental aspects of plant structure and function.
- Synthesize and apply knowledge to better understand plant-based systems.
- Compare the characteristics of the major groups of plant kingdoms and the relationships among them.
- Understand the relationship between science and society.
- Apply knowledge of plant structure, function, and diversity to real-world questions with an emphasis on crop production, human health, nutrition, and ecology.
- Develop analytical and critical thinking skills, including hypothesis generation and testing.
- Explore if any of the plant biology fields could be your future career of interest.

STUDY TIPS

Ten golden tips that help you achieving both learning objectives and course goals:

- 1. Attend lectures, make your notes during lectures, re-work your notes the same day, and then make your summaries. While doing this, highlight the important parts.
- 2. I highly encourage you to write out your notes by hand (on paper or on a tablet), rather than using a laptop. Studies have shown that *"in the classroom setting students who write out their notes by hand have a stronger conceptual understanding and are more successful in applying and integrating the material than those who take notes with their laptops"*. Read or watch the "American taking notes with a laptop" under course information modules.
- 3. Important parts are those I repeat, mention as questions in the lecture, highlight or write in different fonts/different colors in the presentations, or those explained on the whiteboard.
- 4. Disable the notifications during the lecture.
- 5. Ask questions whenever needed. Never feel shy asking questions. By asking questions, you are helping yourself and your classmates. Do not underestimate the value of any question you might ask. "Part of my task is to answer your questions".
- 6. Be an active participant in the lecture. This improves your critical and higher-level thinking skills.
- 7. Study in groups and share notes whenever possible, especially during exam preparations.
- Participate in review sessions and office hours. My previous surveys in many courses have shown that "students who attend review sessions and office hours accomplish the highest grades among their peers".
- 9. Sit in the front rows if you can. Studies have shown that "students who are in the front rows are typically more attentive than those in the back". Also, you might need to work in a small groups to answer interactive Clicker questions.
- 10. Set up a high goal and be optimistic to achieve it. I will help you as long as you show motivation.

ASSESSMENTS

I. Midterms and final exam (400 point, 40%)

There will be THREE noncomprehensive midterms worth 100 points each and ONE, 200-point, comprehensive final. Midterms will be on Mondays and the final exam will be on scheduled. The score for the final exam will be divided by 2 and the average score will be counted twice. Thus, there will be five recorded lecture exam scores (100 points each). I will drop the lowest exam score. If the final exam is your lowest score, it will count only once. Therefore, you will have four exam scores worth a maximum of 400 points.

Exams	Date	Material	Points	Time and location
Midterm 1	February 12 (M)	Weeks 1 → 4	100	Class time
Midterm 2	March 18 (M)	Weeks 5 \rightarrow 8	100	Class time
Midterm 3	April 15 (M)	Weeks 9 → 12	100	Class time
Final	Will be scheduled	Weeks 1 → 15	200	Will be announced

You cannot skip the final exam and there will be no make-up exams. The dropped exam is intended to compensate for any emergencies. If you miss an exam for any reason, you will receive a score of zero on that exam, and it will be the grade that is dropped. If you belong to any University-sponsored group, I must be informed of known conflicts with exams with a letter signed by an appropriate authority at least one full week before the exam date. The exam MUST be taken in the classroom or in the Student Disability Center (SDC).

II. Weekly quizzes (125 points total, 12.5%)

A weekly quiz (12.5 pt) will be assigned each week (except the weeks when there will be a midterm). Quizzes will be posted on Canvas no later than Monday night and will be due on Canvas by Monday 11:59 pm following that week (i.e., seven days later). During this week period, you can open, save, and close the quiz as many times as you like but you have one-time submission (one attempt). You have opportunities to ask me questions during the two weekly office hour sessions (see office hours schedule). There will be a total of **11** weekly quizzes, and students may drop the lowest score. The reason for dropping the lowest score is to accommodate unforeseen events, including those that prevent on-time submission.

1. Weekly quiz 1 \rightarrow due on Monday, 1/22

- 2. Weekly quiz 2 \rightarrow due on Monday, 1/29
- 3. Weekly quiz 3 \rightarrow due on Monday, 2/5
- 4. Weekly quiz 4 \rightarrow due on Monday, 2/19
- 5. Weekly quiz 5 \rightarrow due on Monday, 2/26
- 6. Weekly quiz 6 \rightarrow due on Monday, 3/4
- 7. Weekly quiz 7 \rightarrow due on Monday, 3/25
- 8. Weekly quiz 8 \rightarrow due on Monday, 4/1
- 9. Weekly quiz 9 \rightarrow due on Monday, 4/8
- 10. Weekly quiz 10 \rightarrow due on Monday, 4/22
- 11. Weekly quiz $11 \rightarrow$ due on Monday, 4/29

III. SmartBook Assignments (SB) (125 point total, 12.5%)

Each chapter will have a SB assignment where you will read preselected concepts in the SmartBook and answer related questions. I will select and highlight the concepts that you need to comprehend. The time that you are predicted to spend in each SB assignment will vary but should be between 15-30 min. The awarded points for each SB assignment are different from chapter to chapter too. These SB assignments <u>are not punitive</u>, i.e., you will not be punished for the wrong answer, rather you will be directed to re-read the concept until you answer all the questions in the concept. All SB assignments will be open the first day of the semester, but specific SB assignments will close after we finish the module that cover this chapter. The due date for these SB assignments will be Mondays 11:59 pm as the case for weekly quizzes. Please review the Connect Orientation under course information module to learn more about SB assignments.

IV. iClicker participation (50 point total, 5%)

I will use iClicker Cloud technology to ask interactive questions during the lectures. Students must access the iClicker application while they are in the classroom during all sessions. There will be 1.25 points assigned for each iClicker session/lecture and a student will receive ONE points for just submitting answers even if those answers are incorrect and full credit (1.25 points) for submitting the correct answer. This is to incentivize engagement with the material being presented in lectures. As this is worth a significant percentage of the grade (5%), getting a good grade will require regular attendance and active participation in iClicker activities, as measured by iClicker responses.

What if you have an emergency/tech issue that makes you miss iClicker questions?

I will drop the lowest FOUR scores for iClicker participation, so you can still receive full credit (50 pts) if you miss up to four lectures/sessions. The reason for dropping the four lowest grades is to accommodate unforeseen events that prevent attendance and participation in individual lectures/sessions. Therefore, missed classes will have to count towards these four drops. Snow days, if happen, will be counted as attended days for all students.

Visit the Student iClicker Information page (<u>https://canvas.colostate.edu/iclicker/student-information/</u>) for instructions on setting up an iClicker Cloud account. <u>You can also join the BZ120 iClicker via this</u> <u>link (https://join.iclicker.com/FPFF)</u>. This technology allows you to answer polling questions with a personal device such as a smartphone, a tablet, or a laptop.

V. Laboratory grades (300 point, 30%)

Lab quizzes, reports, and assignments worth a total of 300 points. Since the course is recognized by the University as a Core Curriculum laboratory course, you must earn a passing grade in the lab portion of the class to pass the class. Any questions about the lab material or lab grades should be addressed to your lab TA and/or the lab coordinator; their contact information will be available in your lab syllabus.

GRADING SCALE

Grades will be calculated according to the following breakdown:

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	Lab components	300 pt	
•	Midterm 1	100 pt	
•	Midterm 2	100 pt	
•	Midterm 3	100 pt	
•	Final exam	200 pt	
•	Weekly quizzes	125 pt	
•	SmartBook assignments	125 pt	
•	iClicker participation	50 pt	

Total possible points 1100 -100 = 1000 points (100%)

Individual quizzes and individual exam grades will not be curved. In the end, the individual student's fractional grades will be rounded to the nearest whole number (*e.g.*, 69.6 = 70 and 69.4 = 69). Then grades will be calculated according to the following scale:

95 and above	A+
90 - 94	А
85 - 89	A-
80 - 84	B+
75 - 79	В
70 - 74	B-
65 - 69	C+
60 - 64	С
55 - 59	D
>55	F

REGRADING OF EXAMS AND ASSIGNMENTS

If a student has concerns about grading, he/she must present the exam/quiz for regrading within one week of when it was returned. I am happy to discuss how an exam or a quiz was graded at any point, but formal regrade requests will only be accepted within the one-week time window. For any regrade requests, the entire assignment (not just individual questions) will be regraded. Therefore, it is possible to lose points on a regrade if I find that credit was mistakenly given for incorrect answers.

STUDENTS WITH SPECIAL NEEDS

Students requesting exams or classroom accommodations should contact the Student Disability Center (SDC) located in room 121 TILT building (<u>https://disabilitycenter.colostate.edu</u>). The phone number is (970) 491-6385. They will approve the request and communicate with me.

HONESTY AND ACADEMIC INTEGRITY

Cheating and dishonesty are penalized at CSU and do not worth the academic risk. Exams are to be completed by each student on his/her own without assistance from other individuals, including other students in the course. For weekly quizzes, it is permitted to work with other students to arrive at an answer for each question. Also, you are permitted to ask the TA and the instructor. However, it is not acceptable to copy answers verbatim from another student, the textbook, online sources, or a solutions manual. Written answers must be provided in your own words. The use of online "homework helper" sites is not permitted in this course. Use of these types of resources will be considered receiving unauthorized assistance and, therefore, a violation of the student conduct code. This course will adhere to the CSU Academic Integrity Policy as found on the Student Responsibilities page of the CSU general catalog. http://catalog.colostate.edu/general-catalog/policies/students-responsibilities/#academic-integrity

Violations will result in a grading penalty in this course and a report to the Office of Conflict Resolution and Student Conduct Services.

More importantly, your character is more critical and longer lasting than your grade in any course.

TENTATIVE LECTURE SCHEDULE AND TOPICS					
Week	Dates	Торіс	Chapters and pages		
	1/15 (M)	No lecture.	No lecture		
4	1/17 (Ŵ)	Syllabus			
1		Introduction to plant biology.	Chapter 1		
	1/19 (F)	Attributes of living organisms.	Chapter 2		
	1/22 (M)	Plant evolution and classification.	Chapter 16, 17		
2		Kingdom Bacteria, Archaea, and Viruses.			
2	1/24 (W)	Kingdom Protista.	Chapter 18		
	1/26 (F)	Kingdom Fungi and Lichens	Chapter 19		
	1/29 (M)	Non-vascular, seedless land plants (Bryophytes)	Chapter 20		
3	1/31 (W)	Vascular, seedless land plants (Ferns and relatives)	Chapter 21		
	2/2 (F)	Non-flowering seed plants (Gymnosperms)	Chapter 22		
	2/5 (M)	Flowering seed plants (angiosperms)	Chapter 23		
4	2/7 (W)	Flowering plants and civilization.	Chapter 24		
	2/9 (F)	Exam 1 (Covers materials from 1/17 until 2/7)			
	2/12 (M)	Cell and cell organelles	Chapter 3		
5	2/14 (W)	Cell and cell organelles, continue.	Chapter 3, continues.		
	2/16 (F)	Cell cycle and mitosis	Chapter 3, continues.		
	2/19 (M)	Tissue systems	Chapter 4		
6	2/21 (W)	Tissue systems, continue.	Chapter 4		
	2/23 (F)	The root system and soil	Chapter 5		
	2/26 (M)	Stems and wood	Chapter 6		
7	2/28 (W)	Leaves	Chapter 7		
	3/1 (F)	Flowers, fruits, and seeds	Chapter 8, continues.		
	3/4 (M)	Transport of water in plants	Chapter 9		
8	3/6 (W)	Transport of organic molecules in plants	Chapter 9, continues.		
	3/8 (F)	Exam 2 (Covers materials from 2/12 until 3/6)			
9	Spring break				
-	3/18 (M)	Plant matchaliam:	Chapter 10		
	3/20 (\\/)	Plant metabolism.			
10	3/22 (V)	Filleria di effecte en alcate conthe dia (Olale d	Extra reading materials		
	0,22 (1)		(see Canvas)		
		warming)			
	3/25 (M)	Cellular respiration	Chapter 10, continues.		
11	3/27 (W)	Cellular respiration, continues.	Chapter 10, continues.		
	3/29 (F)	Plant Growth and Development (Mineral nutrition)	Chapter 11		
	4/1 (M)	Plant Hormones	Chapter 11, continues.		
12	4/3 (W)	Hormonal interactions	Chapter 11, continues.		
	4/5 (F)	Plant movements	Chapter 11, continues.		
	4/8 (M)	Photoperiodism and photoreceptor	Chapter 11, continues.		
13	4/10 (W)	Meiosis and alternation of generations	Chapter 12		
	4/12 (F)	Exam 3 (Covers materials from 3/18 till 4/10)			
	4/15 (M)	Sources of evolution	Extra resources		
14	4/17 (VV)	Plant genetics	Chapter 13		
	4/19 (F)	Plant genetics, continues.	Chapter 13, continues.		
4-	4/22 (M)	Molecular biology	Chapter 13, continues.		
15	4/24 (VV)	Molecular biology, continue.	Chapter 13, continues.		
	4/26 (F)	Artificial evolution and breeding	Chapter 14		
10	4/29 (M)	Plant propagation and biotechnology	Chapter 14, continues.		
16	5/1 (VV)	Open forum and course integration			
17	5/3 (F)	Kevision for course comprehension			
1 17	D/D	I FINALEXAME MONDAY 7:30-9:30 AML CLASSFOOM			

Wish you all a good luck, Salah