

## BIOL 403/803P: Plant Physiology

**Term:** Fall 2024

**Course Credits:** 3

**Course Delivery:** Online -  
Asynchronous

**Instructor:** Dr. Gregory J. Pec

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**Office hours (link to schedule appointments on Canvas homepage):** Mondays 10 AM – 12 PM, Wednesdays 12 PM – 1 PM and Fridays 10 AM – 12 PM Central Time, or by appointment. Please take advantage of office hours to check-in, ask questions, or follow-up on anything you would like to understand better. Email should be used judiciously to address questions pertaining to course administration/scheduling or urgent matters. I respond to messages as quickly as I can, generally within 24-48 hours. Direct issues related to the course content should be posted to the Canvas forum described below.

**Course Description:** An introduction to the physiological processes underlying plant growth and development and plant responses to the environment.

**Course Learning Objectives:** At the completion of the course, students will be able to: (1) explain the key physiological processes that drive plant growth and development, including photosynthesis, respiration, and nutrient uptake; (2) evaluate how plants respond to various environmental factors such as light, temperature, water, and soil conditions; (3) describe the role of plant hormones in regulating growth, development, and stress responses; (4) apply their understanding of plant physiology to solve problems related to agriculture, horticulture, and ecosystem management; (5) critically analyze scientific literature on plant physiology to develop informed perspectives on current issues in the field; and (6) effectively communicate complex physiological concepts and their implications for plant growth and environmental interaction through written and oral presentation.

### Required Texts and Materials

**Required Text:** Taiz, Moller, Murphy, and Zeiger. Plant Physiology and Development. Seventh Edition. 2022. ISBN: 9780197577240.

All other resources for this class can be found online and in Canvas or through online or UNK Library searches.

### Required Technology

- As an online course, access to an up-to-date computer and Canvas several times a week is required (checking in daily is encouraged).
- An updated PDF reader will also be needed to read course materials.
- You may need to use software, such as Microsoft Word or PowerPoint or another equivalent.
- Microsoft365 software is available to UNK students for free download.
- Ability to use search engines (for example, [Google Scholar](#) or [the Calvin Library search engine](#)) to locate scholarly works is expected of graduate students. If you are not already comfortable with this, I encourage you to reach out to me or the [Natural Sciences Librarian](#) at Calvin Library for assistance.

- For issues with Canvas or other technologies associated with your university account, please contact the [University technology help desk](#).

## **Course Organization**

### **Canvas**

For this class we will use an online course management system called Canvas. Course information, updates, and related information, etc. will be posted here. I have also created a forum in Canvas for asking/answering questions about course information.

### **Participation**

The more students are engaged in a course, the more they tend to get out of it. I encourage you to spend at least a little time each day with course material or activities though I recognize this is not always possible.

### **Communication**

Please check course announcements in Canvas frequently. This the primary way I will communicate. Please feel free to reach out to me at any time via Canvas messages, email, or office phone. I will respond as quickly as possible, usually within 24-48 hours. Emails sent after 3 pm (CST) on Fridays will be answered by the following Monday. If sending an email or leaving a voicemail, please be sure to include BIOL 403/803P in the subject (email) or message (voicemail) so I can prioritize responding to it.

### **Course Structure and Assessment**

All work is due by 11:59 PM Central Time on the date listed in Canvas and on the course schedule, unless otherwise indicated. This course consists of recorded information sessions, reading assignments, and online discussion boards. All materials for each week will be posted on Canvas. This is not a self-paced course. You will be expected to keep up with the pace of the course, and the course structure is designed to help with this. If this is your first distance class, you will find that these classes can be fast paced. Understandably, everyone in this class has several commitments other than this class. Nonetheless, as a student who has registered for this class, it is your full responsibility to ensure that you can meet the requirements and commit the needed time for this course. Students are responsible for all material covered, even for assignments that are missed. If you start to fall behind, it may be difficult to catch up. Please do not hesitate to contact me.

**Information Sessions:** Audio/video information sessions, accompanying presentations, and supplementary resources will be posted on Tuesdays and Wednesdays to Canvas.

### **Assignments:**

**Discussion Boards (D):** Discussion boards will begin on Tuesdays and run through to Monday of the following week. Students will be expected to respond to the discussion question(s) and to other students' comments. This will allow us to talk about the information sessions and answer any questions that students might have. There will be a total of 4 weeks of discussion, each week being worth 10 points (40 points total). Participation marks will be based on the following criteria:

- For the initial post, you will reply to the question(s) posted by Friday (5 points).
- The second part of the assignment is to respond to another of your classmates' postings by expanding on what they have written. These responses are due by the following Monday (5 points).

Further details will be provided for each discussion board assignment. In addition to this weekly mechanism for student participation, please become familiar with all other such policies on attendance found in the [University Graduate catalog](#).

**Mini-Assignments (mA):** There will be 2 small assignments done throughout the semester to reinforce introduced concepts, encourage critical thinking, research skills, and effective communication on controversial topics in plant physiology. Instructions will be posted on Canvas.

**Presentation (P):** There will be 1 oral presentation assignment done throughout the semester to deepen understanding of advanced plant physiology topics and enhance communication of scientific information effectively. Instructions will be posted on Canvas.

**Quizzes (Q):** There will be 14 short-answer quizzes done throughout the semester to evaluate understand and retention of information. Each short-answer quiz will have one attempt. Instructions will be posted on Canvas.

### **Basis for final grade**

<b>Assessment</b>	<b>Points</b>
Discussions (4 @ 10 points each)	40
Mini assignments (2 @ 25 points each)	50
Quizzes (14 @ 10 points each)	140
Presentation (1 @ 50 points)	50
<b>Total</b>	<b>280</b>

Grades will be assigned using the standard grading scale for the Department of Biology, as follows: A (93-100%), A- (90-92%), B+ (88-89%), B (83-87%), B- (80-82%), C+ (78-79%), C (73-77%), C- (70-72%), D+ (68-69%), D (63-67%), D- (60-62%), and F (below 60%).

### **Course Policies and Resources**

I take my role as your instructor very seriously; I care about how well you do in this course and that you have a challenging and rewarding experience. It is my commitment to you to respond individually to the work you submit in this class and to return your work promptly.

### **Grading Policy**

Scores for each assignment will be posted on the course Canvas page. If you think there was a grading error or do not understand the feedback you receive on graded work, please contact me as soon as possible. If you would like me to regrade your work, requests should be made within three days after the graded work has been returned to you. Regrade requests may result in a lower grade.

### **Late Work Policy**

As a student enrolled in this course, one of your responsibilities is to submit course work on time. With that said, I recognize there may be times when you are unable to complete or submit these tasks by their due dates. To accommodate this, late assignments will be accepted up to 3 days late. If more than 3 days late, the submission will not be accepted and a grade of 0 (zero) will be recorded for that assignment. Course work will not be accepted late unless prior arrangements have been made due to documented professional or extenuating personal circumstances (e.g., family emergency, participation in university-sanctioned activities, religious observation, etc.). Please contact me as soon as possible to discuss alternative arrangements.

### **Acceptable Use of Artificial Intelligence (A.I.) Tools**

The use of A.I. tools such as ChatGPT is allowed in this course under certain circumstances. For writing assignments, you must clearly indicate any use of A.I. tools and provide appropriate citations for any A.I. generated content produced. This should include a full documentation of how the tool was used. A.I. should not replace your individual effort or original work but rather can be used as a supplemental resource to support your own critical thinking and should not be used to produce first

and only drafts. For quizzes/exams, use is strictly prohibited. Misuse or violation of this policy for the course, including unauthorized or excessive use of A.I. will be considered a breach of the academic honesty policy. If it is found in violation, you will receive a grade of 0 (zero) for the assignment. A subsequent violation after receiving a 0 (zero) for any assignment will result in failure of the course for the semester and/or referral to the Senior Vice Chancellor for Academic Affairs.

For my class, a responsible use of A.I. based tools in completing writing assignments must be done in accordance with the following:

1. You must clearly identify the use of A.I. based tools in your work. Any work that utilizes A.I. based tools must be clearly marked as such, including the specific tool(s) used. For example, if you use ChatGPT-4, you must cite "ChatGPT-4. (YYYY, Month DD of query). "Text of your query" generated using OpenA.I. <https://chat.openai.com/>"
2. You must be transparent in how you used the A.I. based tool, including what work is your original contribution. An A.I. detector such as GPTZero (<https://gptzero.me/>) may be used to detect A.I.-driven work.
3. You must ensure your use of A.I. based tools does not violate any copyright or intellectual property laws.
4. You must not use A.I. based tools to plagiarize without proper citation (see previous points above).

***All students at the University of Nebraska Kearney should be aware of the following university-wide course policies and resources.***

### **Attendance Policy**

Your instructor may have indicated on their syllabus an attendance policy specific to their class. If so, that is the policy with which you must comply. If no other policy is stated, the University-wide attendance policy will apply.

[Undergraduate Student Attendance Policy](#)

[Graduate Student Attendance Policy](#)

### **Academic Honesty Policy**

Academic honesty is essential to the existence and integrity of an institution of higher education. The responsibility for maintaining that integrity is shared by all members of the academic community. To further serve this end, the University of Nebraska at Kearney has a policy relating to academic integrity.

[Undergraduate Academic Integrity Policy](#)

[Graduate Academic Integrity Policy](#)

### **Finals Week Policy**

The final exam will be administered in the time period scheduled during finals week in accordance with University policy ([Final Exam Schedule](#)). More information about UNK's Finals Week Policy, including when it is appropriate to ask for special accommodations to move a course's final exam, can be found here: [Finals Week Policy](#).

### **Mental Wellness**

The UNK Counseling Center provides mental health services to support the academic success of students. The Counseling Center provides a full range of short-term professional mental health services. Getting help is a smart and courageous thing to do. Contact the UNK Counseling Center at 308-865-8248 or visit their website for more

information: [https://www.unk.edu/offices/counseling\\_healthcare/counseling\\_care/index.php](https://www.unk.edu/offices/counseling_healthcare/counseling_care/index.php)

### **Military and Veteran Services**

Military and Veteran Services assist veterans, service members, and their dependents with education benefits and academic and supporting resources. They serve as a liaison between students and the Veterans Administration and branches of the military. Contact the UNK Military and Veteran Services office at 308-865-8677 or visit their website for more information: [https://www.unk.edu/offices/financial\\_aid/veterans\\_services/index.php](https://www.unk.edu/offices/financial_aid/veterans_services/index.php)

### **Reporting Student Sexual Harassment, Sexual Violence or Sexual Assault**

Reporting allegations of rape, domestic violence, dating violence, sexual assault, sexual harassment, and stalking enables the University to promptly provide support to the impacted student(s), and to take appropriate action to prevent a recurrence of such sexual misconduct and protect the campus community. Confidentiality will be respected to the greatest degree possible. Any student who believes they may be the victim of sexual misconduct is encouraged to report to one or more of the following resources:

- **Local Domestic Violence, Sexual Assault Advocacy Agency** 308-237-2599
- **Campus Police (or Security)** 308-865-8911
- **Title IX Coordinator** 308-865-8655

Retaliation against the student making the report, whether by students or University employees, will not be tolerated.

### **Students with Disabilities**

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students with documented disabilities. To receive accommodation services for a disability, students must be registered with the UNK Disabilities Services for Students (DSS) office, 175 Memorial Student Affairs Building, 308-865-8214 or by email [unkdso@unk.edu](mailto:unkdso@unk.edu)

### **Students Who are Pregnant**

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students who are pregnant. To receive accommodation services due to pregnancy, students must contact the Student Health office at 308.865.8218. The following links provide information for students and faculty regarding pregnancy rights. <https://thepregnantscholar.org/title-ix-basics/>  
<https://nwlc.org/resource/faq-pregnant-and-parenting-college-graduate-students-rights/>

### **UNK Policy for Inclusive Excellence**

**At UNK, inclusive excellence is rooted in our values.**

- **People matter.** The diversity of our students, faculty and staff is essential to our educational mission. Our backgrounds, identities, and lived experiences enrich our learning community.
- **The learning environment matters.** We are committed to an inclusive and equitable student-centered learning environment. In our classrooms we exchange ideas and opinions with respect for one another.
- **Learning matters.** Preparing students to value critical thinking, mutual respect, and open communication is essential for lifelong learning. We are building a community that protects and fosters intellectual inquiry and embraces diverse perspectives.

The following link provides information for students regarding UNK's commitment to inclusive excellence and procedures for improving classroom experience with inclusion and belonging: <https://www.unk.edu/about/dei/inclusive-excellence-in-the-classroom.php>.

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**Distribution of course materials:** The materials on the course website are only for the use of students enrolled in this course for purposes associated with this course and may not be retained or further disseminated. The materials on the course website may be protected by copyright, and any further use of this material maybe in violation of Federal copyright law.

**Disclaimer:** Any typographical errors in this Course Outline are subject to change and will be announced on the course Canvas page.

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### **Tentative Fall 2024 Course Schedule**

All work due by 11:59PM Central Time unless otherwise indicated. Required content not listed here may be provided in Canvas.

<b>Week</b>	<b>Topics</b>	<b>Assessment</b>
1	Plant cells and water	Q1
2	Whole plant water relations	Q2
3	Nutrient uptake to roots	Q3
4	Plant and inorganic nutrients	Q4; D1
5	Plant development: overview	Q5
6	Nitrogen assimilation	Q6; D2
7	Stomata	Q7; mA1
8	Plant development: growth and development of cells	Q8
9	Fall semester break	
10	The dual role of sunlight	Q9
11	Energy conservation in photosynthesis: harvesting sunlight	Q10; D3
12	Energy conservation in photosynthesis: CO <sub>2</sub> assimilation	Q11
13	Adaptations to the environment	Q12
14	Thanksgiving break	
15	Auxins; Gibberellins; Cytokinins; Plant hormone IV: ABA and Ethylene	Q13; D4
16	Photoperiodism; Tropisms and nastic movements	Q14; mA2
17	Finals week	P1

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