

# Plant Growth and Development

CPSC 486/IB 479

Fall 2021

Tuesdays @ 9:30 - 10:50 am

W-223 Turner Hall (section A) or Online (section B)

[Zoom Meeting ID: 863 4210 9273](#) [Passcode: 276458](#)

**Instructor:** Dr. Sarah R. Hind  
Department of Crop Sciences  
Edward R. Madigan Laboratory room 259A  
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[Zoom Meeting ID: 892 2255 4836](#) [Passcode: 289102](#)

**Grading:** 3 credit hours

**Prerequisites:** IB 103; CPSC 352 or IB 204, or equivalent

## Course Description:

Plant growth and development is a complex and highly regulated process that occurs over various spatiotemporal scales. This advanced interdisciplinary course integrates genetic, molecular, cellular, biochemical, anatomical, and physiological information in order to explore the life of a plant from its embryonic origins to its final death. The format of the course includes lectures and both small- and large-group discussions, and requires weekly reading from the textbook and selected primary literature articles.

## Specific Learning Objectives:

By the end of this course, students will be able to:

1. Recognize key plant structures and describe the origin, development, function, and/or purpose of each.
2. Distinguish between the different plant hormones by comparing their mechanisms and regulation of synthesis, perception, and signaling.
3. Trace the lifecycle of plants from the formation of the embryo through the death of the plant.
4. Illustrate the various means by which plants sense and respond to changing environmental conditions.
5. Identify how interactions with other organisms and with their environment affects plant growth and development.
6. Read, interpret, and analyze the experimental evidence from primary literature articles.
7. Develop critical questions, lead comprehensive discussions, and create insightful responses about current scientific advances related to the course topics.

**Required Texts:**

Plant Physiology and Development by Lincoln Taiz, Eduardo Zeiger, Ian M. Møller, Angus Murphy, 6<sup>th</sup> Edition (ISBN: 9781605352558) by Oxford University Press or as an eBook through RedShelf.com (book 6723310, eISBN-13: 9781605354354). The textbook also has a companion website with additional content that can be accessed at <http://6e.plantphys.net/index.html>.

**Textbook and Article Readings:**

Throughout the semester, you will be responsible for reading textbook chapters and occasionally recent journal articles related to the course topics. Articles will be discussed on Tuesdays and article readings will be posted on the course website at least 2 weeks in advance.

**Course Website:**

The course website is located on the University of Illinois Canvas system. To access the course webpage, go to the following website: <https://canvas.illinois.edu/>. You can log in using your University of Illinois NetID and password. This website provides important course information, discussion board and assessments, materials related to class lectures and readings, and links to the Zoom meetings.

**Classroom Rules:**

Students are expected to abide by University policy set forth in Article 1, part 2 of the student code: *"It is expected that students enrolled in the University will conduct themselves at all times in accordance with accepted principles of responsible citizenship and with due regard for the rights of others"* (<http://studentcode.illinois.edu/article1/part2/1-201/>). Additionally, the University has committed to cultivating a diverse and equal opportunity community through its *"Inclusive Illinois: one campus, many voices"* campaign, and all members of the University of Illinois community are encouraged to commit to the vision statements found at <https://www.inclusiveillinois.illinois.edu/commitment.html>. In order to define the specific behavior and conduct that we expect from each other, we will discuss and generate our classroom rules during the first week of class, and the rules will be posted on the Canvas course website for the remainder of the semester.

**Class Format and Procedures:**

It is expected that you will read the assigned textbook and article readings and watch the lecture recordings **before** coming to class on Tuesdays, while class meetings will focus on discussion of the materials, answering questions you may have about the content, and learning skills and information related to the course. Students are expected to participate in class activities in a respectful manner as outlined in the course rules, and to abide by the university student code of conduct.

**Class Attendance and Participation Policy:**

In accordance with University policy set forth in Article 1, Part 5 of the student code: *"Regular class attendance is expected of all students at the University"* (<http://studentcode.illinois.edu/>). For scheduled events, such as religious observances and university-sponsored extracurricular activities, please provide a written absence request **at least one week prior to the date of**

**absence.** The policy and request forms for accommodation for religious observances can be found at <http://odos.illinois.edu/community-of-care/resources/faculty/religious-observances/>. For other absences, students have the option to request an absence letter through the Office of the Dean of Students (<https://odos.illinois.edu/community-of-care/resources/students/absence-letters/>). Students are permitted one class meeting absence without penalty; however, in cases of multiple unforeseeable or unavoidable absences, please contact me to arrange alternative assignments.

**Grading Procedures:**

Weekly Assignment	# per Semester	Points per Assignment	% of Final Grade
Attendance & In-Class Participation	14 (15 total)	10 (140 total)	13%
Discussion Board Posts	13 (14 total)	15 (195 total)	19.5%
Classwork/Homework	13 (14 total)	20-30 (315 total)	32.5%
<b>Exams</b>			
	<b>Dates</b>	<b>Points</b>	<b>% of Final Grade</b>
Exam #1	10/5-10/6	100	10%
Exam #2	11/16-11/17	100	10%
Final Exam	TBD	150	15%
<b>Total</b>		<b>1000</b>	<b>100%</b>

**Grades:**

Letter Grade	Range	Points
A+	100-97	1000-965
A	96-93	964-925
A-	92-90	924-895
B+	89-87	894-865
B	86-83	864-825

Letter Grade	Range	Points
B-	82-80	824-795
C+	79-77	794-765
C	76-70	764-695
D	69-60	694-595
F	<59	<594

**Attendance and In-Class Participation:**

Attendance and participation during class is required, either in-person or online, particularly as class meetings will not be recorded. Students in Section A (in-person) who cannot attend a certain meeting in-person are permitted to attend the concurrent online Zoom meeting instead. Attendance of each class meeting will be worth 5 points, while each in-class assignment will be worth 5 points, so that each class meeting will be worth a total of 10 points. The highest 14 scores will be included in your final grade.

**Weekly Online Discussion Board Posts:**

Students will be responsible for posting three responses on the Discussion Board each week, including 1-2 original posts and 1-2 responses to peer posts. Individual postings will be awarded between 1 and 5 points, depending on the quality of the response. Postings are **due by 11:59 pm on Monday evenings**. While you are encouraged to keep the Discussion threads going

indefinitely, there will be no credit given for responses posted after the weekly deadline. Interesting postings will be discussed further during Tuesday class meetings. The highest 13 scores will be included in your final grade.

When posting an original response to a thread prompt, you should include some or all of the following components: mention specific information from course readings or articles; make connections to content covered previously in the course; include critical analysis of the material; and/or relate the information to topics or experiences outside the scope of the course. When posting a reply to other students' posts, you should discuss one point that you either agree or disagree with, and introduce new or relevant information. **For all posts, you should include the reference for the source of your information**, which can be the textbook, journal articles, or reputable websites; references should include details needed to find the information, such as pages or sections from the textbook, website URLs, or alternatively you can attach the source to your post.

#### **Classwork/Homework Assignments:**

These assignments are designed to support and reinforce student understanding of course concepts. Assignments will allow you to re-submit an unlimited number of times, with the highest score included in your final grade, so please give yourself enough time to complete the homework assignments. Assignments **must be submitted by Monday evenings at 11:59 pm**. The highest 13 scores will be included in your final grade.

#### **Exams and Final Exam:**

The exams will test student competency on material presented in the readings and during class. There will be two exams each worth 100 points and you will have 90 minutes to complete each exam. There will also be one final exam worth 150 points, and you will have 120 minutes to complete it. Each exam will be available on the Canvas course website immediately following the end of class on **Tuesday and due by Wednesday at 11:59 pm**, with the exception of the final exam. No make-up exams will be given. Question types may include but are not limited to the following: multiple choice, true/false, short answer, matching, fill in the blanks, and essay. For the final exam, approximately one-third of the questions will be on the material covered after Exam #2, and the rest of the questions will focus on content from the rest of the semester (i.e., cumulative). If you feel that an exam question has been graded incorrectly, it must be brought to the instructor's attention within one week after receiving the corrected exam.

#### **Extra Credit:**

Opportunities for earning extra credit may be given throughout the semester at the discretion of the instructor.

### **Academic Integrity, Plagiarism Policy, and Academic Misconduct:**

The University of Illinois at Urbana-Champaign *Student Code* should also be considered as a part of this syllabus. Students should pay particular attention to Article 1, Part 4 on Academic Integrity: *“It is the responsibility of each student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions”*. You can read the code at the following website: <http://studentcode.illinois.edu/>. Academic dishonesty may result in a failing grade. Every student is expected to review and abide by the Academic Integrity Policy found in the *Student Code*. Ignorance is not an excuse for any academic dishonesty – it is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask me you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

You are **encouraged** to study together to learn concepts covered in the course. However, while students may collaborate in discussions of the course materials, documents submitted for grading (e.g., Exams) must represent **individual student work**. For violations of the above-listed policies, the penalty may include failure of the assignment, failure of the course, and University disciplinary action.

For the online exams, you may use your notes, your textbook, and the materials posted on the Canvas website. Talking or discussion with others is not permitted during the exams, nor may you compare papers, copy from others, or collaborate in any way. Any inappropriate behavior during the timed exams may result in failure of the assignment, and could also lead to failure of the course and/or University disciplinary action.

### **Accommodations for Students with Disabilities or Accessibility Needs:**

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact me and the Disability Resources and Educational Services (DRES) as soon as possible to ensure that disability-related concerns are properly addressed from the beginning of the course. If you need particular accommodations for any sort of disability, please speak to me after class, or make an appointment to see me. DRES provides students with academic accommodations, access, and support services. To contact DRES you may visit 1207 S. Oak St., Champaign, call 217-333-4603 (V/TDD), e-mail a message to [disability@uiuc.edu](mailto:disability@uiuc.edu), or visit their website at <http://www.disability.illinois.edu/>.

### **Emergency Response Recommendations:**

Emergencies can happen anywhere and at any time, so it is important for you to know the different ways that you should respond to different emergency situations. When faced with almost any kind of emergency, you have three options: Run, Hide, or Fight. Please review the Turner Hall building plan <https://police.illinois.edu/wp-content/uploads/2018/06/u0197.pdf> so that you will know how to quickly exit the building if necessary (Run). If it is not possible or safe to leave the building, you will need to take shelter indoors, either in the classroom or, in cases of inclement weather, in the basement level tunnel (Hide). As a last resort, you may need to work together with your fellow students to fight back to stay safe (Fight). More information about Run, Hide, Fight can be found at <https://police.illinois.edu/wp->

<content/uploads/2017/08/syllabus-attachment.pdf>. General campus emergency response recommendations can be found at <http://police.illinois.edu/emergency-preparedness/>.

### **Family Educational Rights and Privacy Act (FERPA):**

Any student who has suppressed their directory information pursuant to *Family Educational Rights and Privacy Act* (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <http://registrar.illinois.edu/academic-records/ferpa/> for more information on FERPA.

### **Sexual Misconduct Policy and Reporting:**

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options. A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found at [wecare.illinois.edu/resources/students/#confidential/](http://wecare.illinois.edu/resources/students/#confidential/). Other information about resources and reporting is available at [wecare.illinois.edu/](http://wecare.illinois.edu/).

### **Stress Management:**

As members of the Illinois community, we each have a responsibility to express care and concern for one another. If you are feeling overwhelmed by academic or personal stress, or if you encounter a classmate whose behavior concerns you, there are many ways to receive assistance. I encourage you to seek support from me or from one of the services listed below:

- Academic and personal support for students through the Student Assistance Center: <http://odos.illinois.edu/community-of-care/student-assistance-center/> (217-333-0050)
- Counseling support for academic, relational, and emotional concerns through the Counseling Center: <https://counselingcenter.illinois.edu/counseling> (217-333-7557)
- Mental health, wellness, and stress management programs through the McKinley Health Center: <http://mckinley.illinois.edu> (217-333-2701)

### **COVID-19 Policies:**

Following University policy, all students are required to engage in appropriate behavior to protect the health and safety of the community, including wearing a facial covering properly, maintaining social distance (at least 6 feet from others at all times), disinfecting the immediate seating area, and using hand sanitizer. Students are also required to follow the campus COVID-19 testing protocol. Students who feel ill must not come to class. In addition, students who test positive for COVID-19 or have had an exposure that requires testing and/or quarantine must not attend class. The University will provide information to the instructor, in a manner that complies with privacy laws, about students in these latter categories. These students are judged to have excused absences for the class period and should contact the instructor via email about making up the work. Students who fail to abide by these rules will first be asked to comply; if

they refuse, they will be required to leave the classroom immediately. If a student is asked to leave the classroom, the non-compliant student will be judged to have an unexcused absence and reported to the Office for Student Conflict Resolution for disciplinary action. Accumulation of non-compliance complaints against a student may result in dismissal from the University. Additional resources and information can be found at <https://covid19.illinois.edu/> and <https://aces.illinois.edu/aces-and-covid-19>.

Currently all students, faculty, staff, and visitors are required to wear face coverings in classrooms and university spaces. This is in accordance with CDC guidance and University policy and expected in this class. Please refer to the University of Illinois Urbana-Champaign's COVID-19 website for further information on face coverings (<https://covid19.illinois.edu/health-and-support/face-coverings/>). Students will be allowed to abide by any changes made during the semester to campus policies regarding face covering, if applicable.

To attend class meetings in-person, students are required to show only the Building Access Status screen or the Boarding Pass, which shows compliance without specifying whether it was through COVID-19 vaccination or regular on-campus testing. To protect personal health information, this screen does not say if a person is vaccinated or not. Students are not required to show anyone the screen that displays their vaccination status. No university official, including faculty members, may ask students why they are not vaccinated or any other questions seeking personal health information.

**Schedule:**

<b>Week</b>	<b>Topic</b>	<b>Readings</b>	<b>Assignments</b>
1 Tuesday 8/24	Course Introduction; Plant & Cell Architecture	Chapter 1	Discussion Board #1 Homework #1
2 Tuesday 8/31	Genome Structure and Gene Expression	Chapter 2	Discussion Board #2 Homework #2
3 Tuesday 9/7	Cell Walls	Chapter 14	Discussion Board #4 Homework #4
4 Tuesday 9/14	Hormones and Signal Transduction	Chapter 15	Discussion Board #5 Homework #5
5 Tuesday 9/21	Signals from Sunlight	Chapter 16	Discussion Board #6 Homework #6
6 Tuesday 9/28	Crop Genetic Improvement	Article Readings	Discussion Board #3 Homework #3
<b>Exam #1 on 10/5-10/6</b>			
7 Tuesday 10/5	Embryogenesis	Chapter 17	Discussion Board #7 Homework #7
8 Tuesday 10/12	Seeds and Seedlings	Chapter 18	Discussion Board #8 Homework #8
9 Tuesday 10/19	Vegetative Growth and Organogenesis	Chapter 19	Discussion Board #9 Homework #9
10 Tuesday 10/26	Flowering and Floral Development	Chapter 20	Discussion Board #10 Homework #10
11 Tuesday 11/2	Gametophytes, Pollination, Seeds, and Fruits	Chapter 21	Discussion Board #11 Homework #11
12 Tuesday 11/9	Plant Senescence and Cell Death	Chapter 22	Discussion Board #12 Homework #12
<b>Exam #2 on 11/16-11/17</b>			
13 Tuesday 11/16	Biotic Interactions	Chapter 23	Discussion Board #13 Homework #13
<b>Fall Break</b>			
14 Tuesday 11/30	Environmental Interactions	Chapter 24	Discussion Board #14 Homework #14
15 Tuesday 12/7	Course Conclusion; Q&A Session		
<b>Final Exam – TBD</b>			