

**BOT 4503 -001-(XXXXX)(2 CREDITS)
PRINCIPLES OF PLANT PHYSIOLOGY**

SPRING, January 13 – May 4, 2022

W, 9:00 am – 10:50 am

Live online lecture via Webex Broadcast

Department of Biological Sciences, Boca Raton

Charles E. Schmidt College of Science, Florida Atlantic University

Please Note: Anything stipulated in this syllabus is subject to change by FAU, due to evolving situations with the Covid-19 pandemic. Any changes will be announced on Canvas and via e-mail.

Make sure you enable all notifications in Canvas, so that you receive important announcements related to changes in course structure due to COVID-19. Also, be sure to visit both your Canvas homepage and your FAU e-mail account at least once a day.

IMPORTANT: The following section contains important information related to disruptions due to COVID-19. Please read this entire section carefully.

- You will need a computer to access Canvas and be able to have a live connection with internet for Webex meetings and office hours. If this is a problem, go to: <https://library.fau.edu/policy/laptop-computer-loan-policy> and learn more about how to get computer access via FAU program.
- All Covid-19 related services, advising and how-to questions can be found at <https://www.fau.edu/coronavirus/services/>

Instructor: Dr. Xing-Hai Zhang (pronounced like “shing-hi jong”), Professor of Plant Molecular Biology, SC 262, Phone: 561-297-1011, e-mail: xhzhang@fau.edu

Office Hours: W, 1 pm to 3 pm, via Canvas-BOT4503-Cisco Webex-Meeting, or by appointment via e-mail (e-mail is the most effective way of reaching me).

Required Textbook: Introduction to Plant Physiology, William G. Hopkins and Norman P.A. Hüner, 4th edition (2009), John Wiley & Sons, Inc. **ISBN 978-0-470-24766-2**

Prerequisites: BSC 1010 or BSc 1010l with grades of C- or better or permission of instructor.

Co-requisites: none

Required Devices: This online, remote course requires a reliable computer, internet access, a webcam, and a microphone for live lectures, discussion and online quizzes and exams. Without these devices, you will not be able to complete this course.

Course Description

This course covers aspects of plant life involving growth, development, reproduction, and interaction with the environment, with underlining principles in cell biology, biochemistry, biophysics, genetics, physiology, evolution and ecology.

Course Objectives

To help you gain basic knowledge of plant physiological and molecular functions

To introduce to you the current advance in plant molecular biology research.

To familiarize you with the current status and thought in plant biotechnology.

To nurture your interests in pursuing advanced studies in plant biology.

Students are expected to study for a minimum of two hours for every hour of class time.

Students are expected to complete all assigned readings and homework.

Course Content (The schedule of topics to be discussed is subject to change during the semester.)

1. The Plant Cell (must read Ch 1)
2. Water, Fountain of Life (must read Ch 1)
3. Water Movement in Plants (must read Ch 2)
4. Nutrient Uptake (must read Ch 3)
5. Plant Nutrients (must read Ch 4)
6. Sun and Photoreceptors (must read Ch 5, 6)
7. Photosynthesis: Harvesting Sunlight (must read Ch 7)
8. Photosynthesis: CO₂ Assimilation (must read Ch 8, 15)
9. Photosynthesis: Where do photosynthetic products go? (must read Ch 9)
10. Respiration: Use of Photosynthesis Products, from Calvin to Krebs (must read Ch 10)
11. Nitrogen, a Constituent of Life (must read Ch 11, 12)
12. Environmental Stress (must read Ch 13, 14)
13. Growth and Development (must read Ch 16, 17)
14. Plant Hormones and Development (must read Ch 18 ~ 21)
15. Photomorphogenesis and Phototropism: Responding to Light (must read Ch 22, 23)
16. Gravitropism and Nastic Movement (must read Ch 23)
17. Plant Biological Clock and Photoperiod (must read Ch 24)
18. Temperature and Development (must read Ch 25, 26)
19. Secondary Metabolism - Plants, a Pharmaceutical Factory (must read Ch 27)
20. Biotechnology: Plants for the Future (lecture discussion)

Course Procedure

I present live lectures via **Canvas-BOT4503-Cisco Webex**. Lecture recordings are posted on **Canvas-BOT4503-Modules** as soon as they are generated (usually within 6 hours after each lecture). Lecture slides and other learning materials are posted on **Canvas-BOT4503-Files**.

In my opinion, the best way to study is (1) focus on my lectures and (2) join in office hours often, to ask questions and allow me to quiz you before (not after) exams. I expect students to have a positive attitude, attend live lectures and/or watch the recordings, and review the relevant contents in the text book. Your self-motivation and self-discipline are particularly important for this online virtual format.

Because of lack of direct in-person communications during this online course, please pay particularly close attention to my announcements and e-mails throughout the semester. You can find the answers to many of your questions and concerns in those communications, whereas many misunderstandings or misconceptions could also be easily resolved.

I will try my best to answer your e-mails as soon as I can, usually within 24 hours. But you should not expect an immediate response. I may collect and compile questions and post answers in “Announcement” on Canvas or via e-mail to the entire class. The most effective way to get my immediate response is to talk to me during the lectures and the office hours.

Attendance Policy

Attending classes is the most significant landmark of attending school. Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor.

Attending my live lectures helps you learn and improve your grade; it is also the best chance for you to have “in-person”, real time communications with me and your classmates. For this reason, I demand attendance. Perfect attendance is rewarded.

To meet the University’s requirement of student attendance record (such as for purpose of financial aid), I will take attendance to track students’ verifiable academic activities. It is the student’s responsibility to communicate with me **in writing** prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence.

Please note: All exams and quizzes take place during the lecture time, starting at 9 am on Wednesday. The final exam is scheduled on April 28 by FAU. You cannot afford to miss these tests. You would almost certainly fail this course if you miss one of the tests. Please make yourself available for these particular dates listed below. Due to the nature of online exams and to be fair to all other students, make-up exam is not possible. No exceptions will be allowed, unless FAU-approved absence is provided or under a real extraordinary circumstance.

This class is one of the uppermost level undergraduate courses intended for “veteran” students. I have high expectations of maturity, motivation and discipline from my students. Your level of attention, attitude, and effort will contribute significantly to your learning and overall grade.

Tentative Course Schedule

Note: Schedule changes are possible as we progress through the course

Date	Topic	Reading
Week 1	Plant Cells and Water	Chap 1
Jan 14	Last day to drop the course	
Week 2	Roots, Soil and Nutrients	Chap 2-4
Week 3	Sun and Photoreceptors, Photosynthesis	Chap 5-8, 15
Week 4	Photosynthesis	Chap 9, 15
Week 5	9:00-9:45 am, Quiz I, Cellular Respiration Feb 9th	Chap 10
Week 6	Nitrogen, Stress	Chap 11-14
Week 7	Development, Plant Hormones	Chap 16, 17-20

Week 8	9:00-10:30 am, Exam I March 2nd	
Week 9	Hormones, Photomorphogenesis	Chap 21, 22
Week 10	Phototropism, Gravitropism	Chap 23
Mar 25	Last day to drop the course with "W"	
Week 11	9:00-9:45 am, Quiz II, Nastic movement March 23	Chap 23
Week 12	Photoperiod, Temperature	Chap 24-26
Week 12	9:00-9:45 am, Quiz III, 2 nd Metabolism March 30	Chap 27
Week 14	2 nd Metabolism, Biotechnology	Chap 27
Week 15	7:45-10:15 am; Exam II April 28 th	
May 9	Final grades due	

Quizzes and Exams

My main goal for this class is for students to appreciate and understand basic life processes of plants. In my opinion, logic and rational analysis, case study and problem solving are more useful skills than the ability of simply memorization of facts.

Therefore, all quizzes and exams are carried out online in the **timed, open-book format**. You may consult with textbook, lectures and notes during the test, but only from your own efforts and within the assigned time. Any form of communication with anyone else during the test is categorically cheating.

I fully expect all students uphold a high degree of academic integrity and have the maturity and honesty to resist any impulse for improper and unworthy activities during quizzes and exams.

There will be three 45-minute quizzes, two of which are counted towards your final grade, and two non-cumulative 90-minute exams. Each quiz or exam consists of all question types including multiple choice, filling blank, short answer and short essay. There will be no make-up tests!

Grading

Your final grade will be based on 600 points.

- Two of three quizzes: 100 points each (total 200 points).
- Exam I: 200 points.
- Exam II: 200 points.
- Perfect attendance: 10 points.

Grading Scale

Point Range	Percentage	Grade
553-600	93% or higher	A
535-552	90-92%	A ⁻
517-534	86-89%	B ⁺
493-516	82-86%	B
475-492	79-82%	B ⁻
457-474	76-79%	C ⁺

433-456	72-76%	C
391-432	65-72%	C ⁻
355-390	59-65%	D ⁺
325-354	54-59%	D
301-324	50-54%	D ⁻
300 or less	50% or less	F

Grade Reporting

The scores will be posted on Canvas as soon as I complete the manual grading. I am not allowed to discuss grades over the telephone or e-mail with anyone. I will set up private meetings at **Canvas-BOT4503-Webex-Meetings** with individual students to discuss grade-related matters.

Incomplete Grades

Students should be aware that grades of Incomplete (“I”) are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances. A grade of “I” will only be given under certain conditions and in accordance with the academic policies and regulations put forward in FAU’s University Catalog. The student must show exceptional circumstances why requirements cannot be met. A request for an incomplete grade has to be made in writing with supporting documentation, where appropriate.

Limitations on Number of Withdrawals

FAU policy requires that undergraduate students may not withdraw from more than two courses at the lower-division level (1000- and 2000-level courses) and from more than three courses at 3000- and 4000-levels (which includes this “Plant Physiology” course), within the course of their degree program at FAU. Zero- and one-credit courses and exceptional Circumstance Withdrawals, which carry the “WM” grade, are excluded from these limitations.

Code of Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at https://www.fau.edu/ctl/4.001_Code_of_Academic_Integrity.pdf. For this class, use of internet for learning is very helpful for your study and is encouraged. However, misconduct during quizzes and exams is a very serious matter and will be dealt with accordingly.

Classroom Etiquette and Netiquette

You are encouraged to ask questions and actively participate in discussion during lectures. You are expected to display respect and courtesy to each other and consideration of others. Any types of disruptive behaviors, online cheating and online bullying are obviously not tolerated.

During this online-teaching course, everyone must respect and protect privacy, confidentiality, and security in all electronic communications. For all course related cyber activities, all electronic

communication resources must be used for the course and in alignment with to the University mission.

During this course, use of false identity, false identity pseudonyms, or anonymous (sender's name or electronic identification is hidden), access without consent, internet hacking, disruption of services including introducing computer contaminants (viruses), harassment of any kind are all prohibited and may potentially be illegal.

Please see the Office of Information Technology's policies on Cyber Security Awareness.

Support Available

If you experience any difficulty in this course for any reason, please do not hesitate to consult with me. I will try my best to help. Time management and effort are often the key factors to your success. Students who really want to learn rarely fail this course.

Students with Disabilities

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with the Office of Student Accessibility Services (SAS) and follow all SAS procedures. SAS are available for students on all three FAU campuses — in Boca Raton, SU 133 (561-297-3880); in Davie, LA 203 (954-236-1222); or in Jupiter, SR 117 (561-799-8585). For more information, please visit the SAS website at www.fau.edu/sas/.

Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

FAU Attendance Policy Statement:

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University, approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without reduction in the student's final course grade as a direct result of such absence.

*****Important information that every student should know**

Don't waste your time and money! Use the below tips to get and stay on track for a timely graduation.

1) Learn how to navigate the “**MY FAU**” web portal. Familiarize yourself with features available through “**FAU Self-Service**” located within the “**Home**” tab as well as the features available in the “**Students**”, “**Money Matters!**” and “**Success Network**” tabs.

2) Use the **flight plans** available on the FAU website to build your own academic plan. The flight plans are suggested four-year course schedules leading to completion of the **Biology B.A.** or the **Biology B.S.** (blueprints for graduation within four years!). For Biology majors who wish to apply to a medical or professional program upon graduation, a suggested **Pre-Health** version of the Biology B.S. flight plan is also available.

3) Use the “**Departmental Schedule**” (not the “Searchable Schedule”) to see **all** courses available (by department) within a given semester when working to schedule your classes.

4) Use the **Degree Audit Reporting System (DARS)** to keep track of which requirements you still need to fulfill in order to graduate. When running your degree audit, you may audit your progress against the catalog year in which you first entered FAU (provided that you have maintained continuous enrollment) OR the current catalog year. You may also select alternate degree options to see if you are closer to completing one degree than another (e.g. compare the Biology B.S. with the Biology B.A.).

*****Please note the excess credit hour policy. It is your responsibility to work with your academic advisor to minimize additional costs to you associated with the completion of excess credits.**

Credit Hour Policy: Excess Hours Surcharge

[Florida Statute 1009.286](#) defines “excess hours” as credit hours that exceed the completion requirements for a baccalaureate degree program at state universities. For students enrolling in a state university or a Florida State College System institution for the first time in or after the fall 2009 semester, a tuition rate surcharge will be applied for excess hours. The surcharge is assessed only on the tuition portion of the semester hour cost, not on the fees. The amount of the surcharge and the allowable “excess hours” are determined by the initial term of entry as indicated in the catalog. For the complete Policy see

<http://www.fau.edu/academic/registrar/FAUcatalog/academics.php#excess>.