



COURSE CHANGE REQUEST

Undergraduate Programs

**FLORIDA
ATLANTIC
UNIVERSITY**

Department Biological Sciences
College Science

UUPC Approval 3-1-21
 UFS Approval _____
 SCNS Submittal _____
 Confirmed _____
 Banner Posted _____
 Catalog _____

Current Course Prefix and Number BOT 4503L **Current Course Title** Plant Physiology Lab

Syllabus must be attached for ANY changes to current course details. See Checklist. Please consult and list departments that may be affected by the changes; attach documentation.

Change title to:

Change prefix
From: To:

Change course number
From: To:

Change credits*
From: To:

Change grading
From: To:

Change WAC/Gordon Rule status**
Add Remove

Change General Education Requirements***
Add Remove

*Review Provost memorandum
 **WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See WAC Guidelines.
 ***General Education criteria must be indicated in syllabus and approval attached to this form. See GE Guidelines.

Change description to:
This course uses a series of lab exercises to study the principles of plant physiology, focusing on hands-on lab experience and learning of experiment design, research tools and methodology, and scientific writing skills

Change prerequisites/minimum grades to:
BSC 1010 or BSC 1010L with grades of "C-" or better, or permission of instructor

Change corequisites to:
None

Change registration controls to:
unlink to BOT 4503

Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).

Effective Term/Year for Changes: fall, 2021 **Terminate course? Effective Term/Year for Termination:**

Faculty Contact/Email/Phone Dr. Xing-Hai Zhang, xhzhang@fau.edu, 7-1011

Approved by

Department Chair Sarah L. Nathan

College Curriculum Chair Jerry Hakey

College Dean [Signature]

UUPC Chair Jerry Hakey

Undergraduate Studies Dean Edward Pratt

UFS President _____

Provost _____

Date

2-2-2021

2-15-21

2-25-2021

3-2-21

3-2-21

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

**BOT 4503L-001 (XXXXX) (2 CREDITS)
PLANT PHYSIOLOGY LABORATORY**

SPRING, January 08 – May 4th, 2022

F, 1:00 pm – 4:50 pm, Sanson Science 108

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.

Personal Protection Equipment for COVID-19

All students in face-to-face classes are required to wear face masks during class, and students must sanitize their own workstations upon entering the classroom. Eye glasses, goggles or face shield are encouraged but not required. Taking these measures supports the safety and protection of the FAU community. Students who do not adhere to these rules will be asked to leave the classroom and/or be removed from the course. Students experiencing flu-like symptoms (fever, cough, shortness of breath), or students who have come in contact with an infected person should immediately contact FAU Student Health Services (561-297-3512).

Teaching Assistant: Nicholas Nifakos, e-mail: nnifakos@fau.edu; office: SC 259. Office hours: Fridays, 10 am – 12 noon, or by appointment.

Instructor: Dr. Zhang, SC 262, e-mail: xhzhang@fau.edu-561-297-1011

Required Textbook: Lab manual posted on Canvas. You print it out and bring to the lab.

Prerequisites: BSC 1010 or BSC 1010L with grades of C- or better, or permission of instructor.

Co-requisites: none

Course Description

This course uses a series of lab exercises to study the principles of plant physiology, forcing on hands-on lab experience and learning of experiment design, research tools and methodology, and scientific writing skills.

Course Objectives

To help you understand more about the lectures (BOT 4503) with hands-on experiments.

To introduce to you some of the research methods and techniques used in plant biology.

To provide an opportunity to improve your scientific writing skills.

To create a lab environment for you to experience scientific research and culture.

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

Course Content (Changes/rearrangements are possible.)

Laboratory Safety
 Scientific Research
 Ethics in Science
 Microscope
 Cell Structure
 The Organelles
 The Cell Boundary
 Cell Membrane and Water Movement
 Water Movement — Diffusion
 Photosynthesis
 Plant Respiration
 Mineral Nutrition
 Plant Growth, Light and Gravity
 Seed Germination, Hormones and Phytochrome
 Enzymes — Biological Catalysts (Polyphenol oxidase)
 Plant Biochemistry — Isolation and Measurement of Proteins from Plant Tissues
 Visualization of Transgene Action
 Segregation of Transgenes and Homozygosity
 Isolation and PCR Analysis of DNA from Plant Cells

Tentative Course Schedule

- Note: Schedule adjustments may be needed as we progress through the course

Date	Experiment Topic	Lab Manual
Week 1	Introduction, Planting, Microscope, Cell Structure, Organelles, Cell Boundary	Lab 1-4
Week 2	Cell, Membrane and Water Movement	Lab 5,6
Week 3	Seed Germination, Hormones, Light, Gravity	Lab 8, 12, 18
Week 4	Quiz 1, Mineral nutrition Feb4th.	Lab 11
Week 5	Plant regeneration and cloning	Lab 16
Week 6	Photosynthesis	Lab 9
Week 7	Quiz 2, Plant respiration, Tissue culture Feb 25h	Lab 10, 16
Week 8	Seed germination analysis	Lab 8, 12, 18
Week 9	Hormones and Leaf Senescence	Labs 8, 12, 13

Week 10	Quiz 3, Visualization of Transgene Action, Gene Segregation and Homozygosity March 18th	Lab 17, 18
March 25	Last day to drop the course with “W”	
Week 11	Measurement of Water Potential	Lab 7
Week 12	Quiz 4, DNA extraction from leaves, PCR analysis Apr 1st	Lab 19
Week 13	PCR analysis, DNA extraction from strawberry	Lab 19, 20
Week 14	Quiz 5, Isolation & Measurement of Proteins, Data analysis, Final observations, Clean up lab April 15th	Lab 15, 20
Week 15	Lab report Due to Canvas April 22nd.	
May 9	Final grades due	

Lab Exercise

The main purposes of this lab course are (1) to help students better understand principles of plant physiology conveyed in the lectures (BOT 4503), and (2) to provide a basic training of research hands-on skills and a “feel” of working in a research lab.

This course is administrated by TA, with assistance and supervision from Dr. Zhang.

Each student must bring the lab manual (protocols) and a notebook to each class, which can be a paper notebook or a computer. Lab notebook is an important component of the final grade.

It is an essential learning experience for students to physically work in the lab to conduct and complete their own experiments and observations. However, due to the COVID pandemic, students may decide whether to attend in-person lab (**Option 1**) or entirely online (**Option 2**). Students must notify TA of their choice by **January 11, 2021**, so that we can plan the labs accordingly.

Lab Option 1 (in-person)

Each student works alone or with a partner to do lab exercises. Students are required to take meticulous lab notes to record the process, observations and data, and write a full length, formal lab report in a format of a manuscript.

The hands-on, “Do-It-Yourself”, experiments will be carried out in the lab. Throughout the course, students are engaged in setting up treatments, monitoring project progress, recording data, troubleshooting and problem solving, planning and assessing next steps. We will attempt to complete most of the experiments within the allotted time. However, depending on the need of the project, you should be prepared to take care of your experiments beyond the class schedule.

Every effort will be made to practice “social distancing” and preventive safety measures, to protect the health and safety of everyone involved. Whenever practical, we will try to space your individual experiments as far apart as possible, to avoid overcrowd.

Lab Option 2 (online)

Students are required to attend the lab sessions in real time via Webex to participate virtually in lab activities by observing operations by TA and students. In order to do well on the quizzes, students should study the lab manual and if applicable, the lectures, follow up closely with the experiments in the lab, record experiment procedures, measurements and data, and understand the rationales and mechanisms behind each step. Same as students in Option 1, everyone is required to write a full length, formal lab report on a virtual experiment, and take quizzes.

Assessment (for all students)

Assessment consists of quizzes, lab worksheets/notebook and lab report in a format of a scientific manuscript.

There will be five quizzes in both in pen-paper and online formats. These quizzes cover lab-related contents and may be cumulative. Understanding of the knowledge, procedures and observations involved in the lab experiments will be tested. Each quiz may consist of all question types including multiple choice, filling blank, drawing, short answer and short essay. There are no make-up quizzes and a score of zero will be recorded for each missing quiz.

Lab worksheets will be handed in at the end of the course for grading. Missing, unfinished, altered or grossly erroneous record of lab exercises will receive a penalty of up to 10 points per experiment.

Lab report is written in the format of a manuscript for a scientific publication and submitted to Canvas. The topic, due date and requirements will be announced in advance. Late submission will receive a penalty of 10 points per day late.

Attendance Policy (for all students)

According FAU's policies, students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor.

This course is aimed at providing students with hands-on research experience. Since each lab exercise requires your participation and cannot be easily made up, attendance is necessary for you to successfully complete this course. Regardless of options, all students are required to attend the class on time. Absence or late to class (15 minutes or more late) may incur penalty.

To meet the University's requirement of student attendance record (such as for purpose of financial aid), attendance will be taken to track students' verifiable academic activities. It is the student's responsibility to communicate with TA **in writing** about unexpected or anticipated absence or lateness.

Grading

Your final grade will be based on 500 points.

- Five quizzes: 250 points.
- Lab report: 200 points.
- Lab worksheets & Lab notebook: 50 points.
- Attendance: up to 20 points deducted for every lab missed.
up to 10 points deducted for each late to class.

Assignment of Grades

Point Range	Percentage	Grade
463-500	93% or higher	A
448-462	90-92%	A ⁻
433-447	87-89%	B ⁺
413-432	83-86%	B
398-412	80-82%	B ⁻
383-397	77-79%	C ⁺
361-382	73-76%	C
325-360	65-72%	C ⁻
291-324	59-64%	D ⁺
266-290	54-58%	D
251-265	50-53%	D ⁻
250 or less	50% or less	F

Incomplete Grades

A grade of I (incomplete) will be an option only under specific circumstances and through certain procedures. For the FAU policy on “I” grade, please consult with *FAU Undergraduate Catalog*.

Grade Reporting

The scores of quizzes and report will be posted on Canvas as soon as the manual grading is completed. Instructors are not allowed to discuss grades over the telephone or e-mail with anyone. TA will set up private meetings at **Canvas-BOT4503L-Webex-Meetings** with individual students to discuss grade-related matters.

Honor Code of Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty 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 and go to

https://www.fau.edu/ctl/4.001_Code_of_Academic_Integrity.pdf

For this class, use of internet for learning is necessary. But copying/plagiarizing in any fashion is wrong and is not permitted. In lab exercises you may work with a partner and share the data obtained. However, your lab note and report must be the work of your own.

Classroom Etiquette and Lab Safety

Please strictly follow social distancing. No eating, drinking or any other disruptive behaviors are allowed during the lab. Refrain from excessive or unnecessary vocal activities to reduce the risk of distribution of respiratory fluids. Refrain from hand shaking and hugging.

We will try to cultivate a relaxed and engaging environment in class to encourage discussion and debates. Students are encouraged to actively participate in discussion and ask questions any time during the labs. However, lab safety rules and procedures must be strictly followed since we may be dealing with biohazardous and transgenic materials, in addition to the challenging condition of the very contagious coronavirus. To successfully carry out an experiment, you should follow instructions intelligently, pay attention to details, use instruments/reagents properly and ask when uncertain.

Coming late to class is disruptive and rude, particularly to your partner and perhaps costly. Being considerate and respectful is always appreciated.

Support Available

Lab course often brings a relaxed and informal environment. You should apply your motor skills as well as your intelligent judgment to each experiment. Enjoy it while you learn something important from each experiment. However, if you experience any difficulty in this course for any reason, please do not hesitate to consult with the TAs or Dr. Zhang. We will try our best to help you.

Students with Disabilities

In compliance with the Americans with Disabilities 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 has offices across three of FAU's campuses- Boca Raton, Davie, and Jupiter. Disability services are available for students on all campuses. 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>.