

# FLORIDA ATLANTIC UNIVERSITY™

UGPC	APPROVAL
UFS	APPROVAL
SCNS	SUBMITTAL
CONFIRMED _____	
BANNER _____	POSTED
CATALOG _____	

## Graduate Programs—NEW COURSE PROPOSAL <sup>1</sup>

DEPARTMENT: **BIOLOGICAL SCIENCES**

COLLEGE: **Charles E. Schmidt College of Science**

**RECOMMENDED COURSE IDENTIFICATION:**

PREFIX \_BOT\_ COURSE NUMBER 6506 LAB CODE (L or C) \_\_\_\_\_

(TO OBTAIN A COURSE NUMBER, CONTACT [MJENNING@FAU.EDU](mailto:mjennin@fau.edu))

COMPLETE COURSE TITLE: **ADVANCED PLANT PHYSIOLOGY**

**EFFECTIVE DATE**

(first term course will be offered)

SUMMER, 2016

**CREDITS <sup>2</sup>:**

**2**

**TEXTBOOK INFORMATION:**

Introduction to Plant Physiology, William G. Hopkins and Norman P.A. Hüner, 4<sup>th</sup> edition, John Wiley & Sons, Inc. ISBN 978-0-470-24766-2

GRADING (SELECT ONLY ONE GRADING OPTION): REGULAR \_X\_ SATISFACTORY/UNSATISFACTORY \_\_\_\_\_

**COURSE DESCRIPTION, NO MORE THAN THREE LINES:**

A study of plant life involving growth, development, reproduction (flowering), and interaction with the environment. A detailed discussion of the related principles in cellular biology, biochemistry, biophysics, molecular biology, evolution biology and ecology, and research tools/methodology.

**PREREQUISITES\*:**

enrolled graduate students or instructor's permission

**COREQUISITES\*:**

NONE

**REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)\*:**

GRADUATE LEVEL OR INSTRUCTOR'S PERMISSION

\* PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE: PHD DEGREE IN PLANT BIOLOGY, WITH SPECIALIZATION IN PLANT PHYSIOLOGY, PLANT BIOCHEMISTRY AND PLANT MOLECULAR BIOLOGY, CONTINGENT UPON DEPARTMENTAL APPROVAL

Faculty contact, email and complete phone number:

Dr. Xing-Hai Zhang  
[xhzhang@fau.edu](mailto:xhzhang@fau.edu)  
561-297-1011

Please consult and list departments that might be affected by the new course and attach comments. <sup>3</sup>

THIS IS THE ONLY GRADUATE LEVEL PLANT PHYSIOLOGY COURSE TAUGHT AT FAU. NO CONFLICT WITH OTHER DEPARTMENTS OR COLLEGES.

**Approved by:**

Department

College

College Dean:

*[Handwritten signatures and dates]*  
Chair: \_\_\_\_\_  
Curriculum Chair: \_\_\_\_\_  
2-19-16

**Date:**

*02.09.16*

1. Syllabus must be attached; see guidelines for requirements: [www.fau.edu/provost/files/course\\_syllabus.2011.pdf](http://www.fau.edu/provost/files/course_syllabus.2011.pdf)

2. Review **Provost Memorandum: Definition of a Credit Hour**

[www.fau.edu/provost/files/Definition\\_Credit\\_Hour\\_Memo\\_2012.pdf](http://www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf)

3. **Consent** from affected departments (attach if necessary)

UGPC Chair: \_\_\_\_\_

Graduate

College

Dean:

UFS


President:

Provost: \_\_\_\_\_

Email this form and syllabus to [UGPC@fau.edu](mailto:UGPC@fau.edu) one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.



Charles E. Schmidt College of Science  
Department of Biological Sciences  
777 Glades Road  
Boca Raton, FL 33431  
tel: 561.297-3320  
fax: 561.297-2749

**TO:** University Graduate Programs Committee (UGPC)  
**FROM:** Rodney Murphey, Ph.D.   
Professor and Chair  
Department of Biological Sciences  
**DATE:** February 8th, 2016  
**RE:** New Course Proposal Consent

To Whom It May Concern:

This note constitutes acknowledgement and consent of the Department of Biological Sciences for the creation of a new course within the department: **BOT 6506:Advanced Plant Physiology.**

Best Regards,

Rodney Murphey, Ph.D.  
Chairman, Department of Biological Sciences  
Director, Life Science Initiative on the MacArthur Campus



Charles E. Schmidt College of Medicine  
777 Glades Road  
Boca Raton, FL 33431  
(561) 297-0706  
Fax: (561) 297-2519

Thursday, October 9<sup>th</sup>, 2014

To: Charles E. Schmidt College of Science  
Biology Department

The Biomedical Science Department in the Charles E. Schmidt College of Medicine has reviewed the new Biology course proposals for BOT 6506 (2 CREDITS)- ADVANCED PLANT PHYSIOLOGY and BOT 6506L (2 CREDITS)- ADVANCED PLANT PHYSIOLOGY LABORATORY, and does not have any objections to the proposed courses. The courses do not contain any material that could constitute a conflict with our Biomedical Science Graduate program curriculum.

Sincerely,

A handwritten signature in black ink that reads 'Marc Kantorow'. The signature is written in a cursive, flowing style.

Marc Kantorow, Ph.D.  
Professor and Director of Graduate Programs  
Charles E. Schmidt College of Medicine  
Florida Atlantic University  
777 Glades Rd.  
Boca Raton, FL 33431  
561-297-2910

Dear Departmental Graduate/Undergraduate Program Committee,

I have asked Dr. Janet Blanks (The Center for Complex Systems), Dr. David Wolgin (Psychology), Dr. Marc Kantorow (College of Medicine) and Dr. Jerry Haky (Chemistry). I have got no response from Blanks. All others express **no objection** (see below) to my new courses “Advanced Plant Physiology” and “Advanced Plant Physiology Laboratory”.

Thank you for consideration.

Xing-Hai Zhang

**Followings are their responses:**

**David Wolgin** <wolgindl@fau.edu>

Wed, Oct 8, 2014 at 1:03 PM

To: Xing-hai Zhang <xhzhang@fau.edu>

The Dept. of Psychology has no objections to adopting these courses.

David L. Wolgin, Chair

Sent from my iPhone

**Jerome Haky** <hakyj@fau.edu>

Thu, Oct 9, 2014 at 11:36  
AM

To: Xing-hai Zhang <xhzhang@fau.edu>

Dear Dr. Zhang,

The Department of Chemistry and Biochemistry has no objections to these courses.

Jerome E. Haky, Ph.D.  
InterimChair  
Department of Chemistry and Biochemistry  
Florida Atlantic University  
777 Glades Road  
Boca Raton, FL 33431  
[561-297-3338](tel:561-297-3338)

## **BOT 6506 (2 CREDITS) ADVANCED**

### **PLANT PHYSIOLOGY Summer, 2016**

**9:15- 11:25 am, M, W, Sanson Science 178, Boca Raton**

**Department of Biological Sciences**

**Charles E. Schmidt College of Science, Florida Atlantic University**

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

**Office Hours:** M, W, 3:30 to 5 pm, or by appointment. Office: SC 262/258.

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

**Prerequisites:** enrolled graduate students or instructor's permission.

#### **Course Description**

This course is a study of plant life involving growth, development, reproduction (flowering), and interaction with the environment. As plant physiology is becoming an integrative science, this course will discuss the related principles in cellular biology, biochemistry, biophysics, molecular biology, evolution biology and ecology, and emphasize the shared knowledge and genetic mechanisms with other life forms (animals and microbes). The research tools, methodology, and biotechnology that are needed to study plant physiological and molecular functions will also be discussed.

#### **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 cultivate 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, depending on the needs of the class.)

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: CO<sub>2</sub> 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 (in class discussion)

### **Course Procedure**

Dr. Zhang presents lectures. In-class discussion, questions or requests for clarification at any time are encouraged.

### **Attendance Policy**

I have high expectations of motivation and discipline from graduate students. I try to incorporate information from most recent research both in my lab and around the world into the lecture. Therefore, attendance of all classes and note writing are necessary to have a complete knowledge of this course, in addition to study of the textbook. Attendance is **MANDATORY**. Absence of any portion (more than 10 minutes) of the class without valid written documents will receive a penalty of 20 points per class. Please observe the relevant chapters of *FAU Graduate Catalog*. Your level of attention, attitude, and attendance will contribute significantly to your success and overall grade. Reasonable accommodation will also be made for students participating in a religious observance.

### **Quizzes and Exams**

There will be a total of three 30-minute quizzes throughout the semester, two of which will be recorded toward your final grade. A one-week notice in advance is given. There are no make-up quizzes and a score of zero is recorded for each missing quiz. This means that if you are absent for any reason (jury duty, personal reasons, car or traffic problems, etc) you use up your one freebie.

There will be two non-cumulative one-hour exams. However, the final exam may unavoidably, although minimally, overlap with the mid-term exam. Each exam consists of a variety of question types including multiple choice, short answer and short essay. There may be one or two "challenging" questions as extra credit (up to 20 points, at instructor's discretion) for each exam. **THERE WILL BE NO MAKE-UP EXAMS!** If you have an approved written excuse for missing one exam, your course grade will be calculated on the basis of the remaining points.

There will be numerous unannounced 5-minute "pop quizzes" throughout the semester, most often at the beginning of the class. Students who are late or absent will lose these credits. In

## **Grade Reporting**

Graded quizzes and exams will be returned to you as soon as possible or when appropriate. The final grades will be posted online. Instructors are not allowed to discuss grades over the telephone with anyone. please do not call to inquire about a grade.

## **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 [http://www.fau.edu/ctl/4.001\\_Code\\_of\\_Academic\\_Integrity.pdf](http://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 strongly encouraged. However, using others' work without proper acknowledgement is wrong and may fall into the category of academic dishonesty. Misconduct during exams will be closely monitored and, once discovered, will be dealt with accordingly.

## **Classroom Etiquette**

You are encouraged to actively participate in discussion and ask questions any time during the lectures. Coming late to class is disruptive and perhaps costly. I personally feel annoyed by late comers. I would appreciate your punctuality, and may show my gratitude in some tangible ways when necessary. All electronic devices must be turned off during class. Laptop computers are allowed under the condition that you do not bother others. Eating, drinking or any other disruptive behaviors are **NOT** allowed during the lecture.

## **Support Available**

If you experience any difficulty in this course for any reason, please do not hesitate to consult with me or TA. We will try our best to help you succeed this course. 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 (ADA), 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, however, disability services are available for students on all campuses.*

addition, several take-home credit-bearing assignments may be required. These attendance-linked quizzes/assignments are worth of a total of 60 points.

In addition, a special topic essay may be provided as a take-home assignment required for completion of this course.

### **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 Graduate 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.

### **Grading**

Your final grade will be based on 600 points.

- Two quizzes: 140 points.
- Exam I: 150 points.
- Exam II: 150 points.
- Special topic essays: 100 points.
- Attendance-linked tests/assignments: 60 points.
- Attendance: subtraction applies.

#### **Tentative schedule for Assessment**

- xxxx. 2015            Quiz I
- xxxx. 2015            Exam I
- xxxx. 2015            Quiz II
- xxxx. 2015            Quiz III
- xxxx,2015            Exam II

#### **Assignment of Grades**

Point Range	Percentage	Grade
553-600	93-100%	A
535-552	90-92%	<b>A-</b>
517-534	87-89%	B+
493-516	83-86%	B
475-492	80-82%	B-
457-474	77-79%	C+
433-456	73-76%	C
415-432	70-72%	<b>C-</b>
397-414	67-69%	D-
373-396	63-66%	D
355-372	60-62%	D-
354 or less	59% or less	F