

Pre-requisites: BIOLOGY 106, BIOLOGY 107, BIOLOGY 120, or HORT 202; junior standing. Recommended preparation: BIOLOGY 420.

Credits: 3. Credit not granted for both HORT 416 and HORT 516.

Schedule - Monday, Wednesday and Friday - 11:10 am to 12:00 pm
CUE 114

Instructor: Professor Amit Dhingra

Co-instructor: Dr. Richard Sharpe, Postdoctoral Scientist

Office: Johnson 155 (AD), 155E (RS)

Office hours: AD - By appointment, RS – Fri 3 – 4:30 and by appointment

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Teaching Assistant: Evan Stowe, evan.stowe@wsu.edu; 509-335-6586

Overview

This goal of **Hort 416/516 Advanced Horticulture Crop Physiology** is to enable the students to utilize various plant biology concepts learned in previous classes and integrate them with advanced and applied concepts of physiological processes related to growth, development, and productivity of horticultural crops. The class content has been designed to address current issues in applied horticulture and the cross-talk of this discipline with other emerging disciplines. The course will be comprised of class lectures, invited presentations, reading materials and assignments and class presentations and group discussions.

How to access lecture video recordings?

Video recordings will be available via Blackboard. The videos will be available under the 'Zoom' link on the Adv Horticultural Crop Physiology course side bar menu. You can access the course by logging into <https://learn.wsu.edu> and then finding your course ID in the list in the My Courses module. In addition, within your course space there will be a place for students to report technical problems.

Student Learning Objectives/Goals

Objective 1: Describe how a plant obtains and uses energy.

Objective 2: Describe how plants adjust to changes in their environments.

Objective 3: Illustrate the concepts of homeostasis and regulation.

Objective 4: Describe how cell, tissue and whole-plant structures relate to their function.

Objective 5: Explain the underlying chemistry of biological functions.

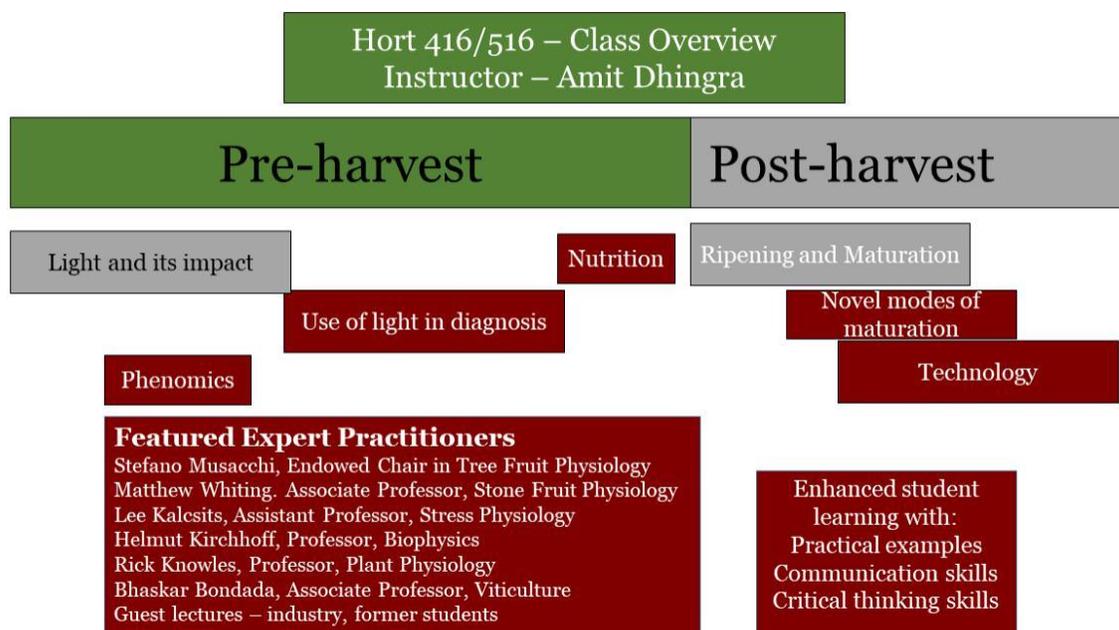
Plan of study:

1. A typical class will consist of a lecture, student presentation, or group discussion addressing provided questions.
2. For each topic, a slide show and relevant reading material will be made available prior to the class.
3. Students are encouraged to review the study material prior to the class and prepare answers for discussion questions.

4. Each group will be expected to present the answer to the assigned question to the rest of the class. These answers will be collected and made available on Blackboard.

*The exams will be primarily based on the discussion questions.

The goal of this course is to provide students with the tools necessary to research, write about, and discuss advanced concepts in plant physiology. The diagram below provides a conceptual overview of the areas to be covered.



Grading Policy:

Undergraduate (416): Final grade will be a cumulative grade of attendance (10%), three review exams (65%), and student group discussion (25%) for undergraduate students.

Graduate (516): The 516 students will be required to make a class presentation on an assigned topic or paper (10%).

	Undergraduate	Graduate
Attendance	10%	5%
1 st Review Exam	20%	20%
2 nd Review Exam	20%	20%
3 rd Comprehensive Review Exam	25%	20%
Student Group Discussion	25%	25%
Class presentation (for graduate students only)		10%
Total	100%	100%
Extra credit – interviews	5%	5%
Extra credit – paper review (off campus) or attending Academic Showcase (Pullman)	5%	5%

Attendance policy: Classroom attendance is expected. All students are expected to attend and participate in all meetings of the courses in which they are enrolled; any absence is incurred at the student's own risk and will impact your grade. For Hort 416/516 a total of **5 absences are excused** after which each absence will result in 2% grade loss of your attendance grade. This is meant to apply to unforeseen illness, traveling for academic meetings, collegiate sports, and general malaise, Mondays, etc. Please plan accordingly and do not expect special treatment except perhaps for the most unusual of circumstances. Extremely unusual. Examples include, and are probably limited to: extended alien abduction (with video proof) and the Monday following the Super Bowl*. Refer to Academic Regulation section 71-73 for additional information.

**only applicable if the Seahawks play and are victorious. (pun intended)*

Examinations

Each exam will be worth 100 points. 1st and 2nd review exam will cover the topics that have been covered prior to the test. The 3rd comprehensive review exam will cover the entire content of the class including all invited presentations. It will also include take home essay questions to be provided one week prior to the exam and are due by the beginning of the final exam. Before each review exam, a set of sample/example/practice questions will be provided to the students, representing the format and level of expected knowledge for the exam. After each review exam, correct answers will be discussed in the class prior to final grading.

Extra Credit

There will be an opportunity to earn 10% extra credit towards your final grade. Two 5% instances for a total of 10%: 1) 5% for an interview of a plant physiology Scientist and how they use plant physiology in their work whether it is in research or in an industry setting. 2) 5% for attending and writing a synopsis on 5 poster presentations from the Academic Showcase on the Pullman campus or a paper review from a recent, within past 2 years, article pertinent to crop physiology (article must be approved by one of the instructors).

Group Discussions

Each concept in the course will conclude with a set of group discussion questions. These will be distributed throughout the semester and are known only to the course instructors. The goal of these questions is to promote group problem solving and enhancing communications skills as practiced in the real world. Inter-group collaboration is encouraged. If interpersonal and/or communication problems arise, the instructors reserve the right to "realign the group dynamics"*** at their discretion.

***ambiguous wording of this phrase is meant to keep students wary and unsure of the nature of the potential consequences of failing to work together. (pun intended)*

A final letter grade will be assigned based on the following grading scheme where the numbers represent total percentage of marks scored.

A 94-100	B+ 87-89	C+ 77-79	D+ 67-69	F<60
A- 90-93	B 84-86	C 74-76	D 60-66	
	B- 80-83	C- 70-73		

Students with Disabilities: Reasonable accommodations are available for students with a documented disability. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center (Washington Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center. For more information contact a Disability Specialist on your home campus:

Pullman or WSU Online: 509-335-3417 <http://accesscenter.wsu.edu>, Access.Center@wsu.edu
Spokane:

Tri-Cities: <http://www.tricity.wsu.edu/disability/>

Vancouver: 360-546-9138 <http://studentaffairs.vancouver.wsu.edu/student-resource-center/disability-services>

WSU Academic Integrity: Academic integrity is the cornerstone of the university. You assume full responsibility for the content and integrity of the academic work you submit. You may collaborate with classmates on assignments, with the instructor's permission. However the guiding principle of academic integrity shall be that your submitted work, examinations, reports, and projects must be your own work. Any student who violates the University's standard of conduct relating to academic integrity will be referred to the Office of Student Conduct and may fail the assignment or the course. You can learn more about Academic Integrity on your campus using the URL listed in the Academic Regulations section or at <http://conduct.wsu.edu/academic-integrity-policies-and-resources>. Please use these resources to ensure that you don't inadvertently violate WSU's standard of conduct.

WSU Safety: Pullman: “Washington State University is committed to enhancing the safety of the students, faculty, staff, and visitors. It is highly recommended that you review the Campus Safety Plan (<https://safetyplan.wsu.edu/>) and visit the Office of Emergency Management web site (<https://oem.wsu.edu/>) for a comprehensive listing of university policies, procedures, statistics, and information related to campus safety, emergency management, and the health and welfare of the campus community.”

Tri-Cities: “In order to receive notification regarding campus emergencies (including campus closures), all faculty, staff, and students register their emergency contact information for the Crisis Communication System (CCS) through myWSU. Click “Update Now!” under “Tri-Cities Emergency Info” to register for notification by text message, e-mail, telephone, or any combination of the three. Providing multiple contact methods will help ensure you receive notifications in a timely manner, and your information will NOT be used for any other purpose. Messages regarding campus emergencies will also be distributed through local media. Please also review the Campus Safety Plan, which contains a listing of emergency contacts, and university policies, procedures, statistics, and information relating to campus safety and the health and welfare of the campus community. The Campus Safety Plan can be found at <http://www.tricity.wsu.edu/safetyplan/>.”

Lauren's Promise

I will listen and believe you if someone is threatening you.

Lauren McCluskey, a 21-year-old honors student athlete, was murdered on Oct. 22, 2018, by a man she briefly dated on the University of Utah campus. We must all take actions to ensure that this never happens again.

If you are in immediate danger, call 911.

If you are experiencing sexual assault, domestic violence, and stalking, please report it to me and I will connect you to resources or call the National Alternatives to Violence at 877-334-2887 (24-hour crisis hotline).

Any form of sexual harassment or violence will not be excused or tolerated at Washington State University. WSU has instituted procedures to respond to violations of these laws and standards, programs aimed at the prevention of such conduct, and intervention on behalf of the victims.

National Resources for Domestic Violence, Sexual Assault, and Stalking: National Domestic Violence Hotline: 1-800-799-SAFE and <https://www.thehotline.org/help/>

RAINN (Rape, Abuse & Incest National Network): 1-800-656-HOPE (4673) and <https://www.rainn.org/>

Victim Connect Resource Center: 1-855-484-2846 and <https://victimconnect.org/>

Love is Respect – National Dating Abuse Hotline: 1 (866) 331- 9474

o Text: 22522 and <https://www.loveisrespect.org/>

Anti-Violence Project Hotline: 212-714-1141 and <https://avp.org/get-help/>

Any form of sexual harassment or violence will not be excused or tolerated at Washington State University. WSU has instituted procedures to respond to violations of these laws and standards, programs aimed at the prevention of such conduct, and intervention on behalf of the victims.

WSU Police officers will treat victims of sexual assault, domestic violence, and stalking with respect and dignity. Confidentiality is of the utmost importance and WSU Police will assist by providing resources to victims. In addition to its law enforcement efforts regarding sexual assault, domestic violence and stalking, WSU Police refer victims to the appropriate university and/or local community counseling and other resources devoted to assisting victims. Advocates help survivors determine their own needs in regards to their physical and emotional health, reporting options, and academic concerns. They connect survivors to campus and community services, and provide accompaniment to important appointments (court, hospital, and police) and support throughout the process. WSUPD can also connect you with advocacy services, if desired. The local advocacy group is Alternatives to Violence of the Palouse, whose services are free, immediate, and confidential.

Other confidential resources include WSU Counseling and Psychological Services. If you would like to speak with a counselor after business hours, WSUPD can contact the on-call counselor and have them call you directly or a crisis telephone number is provided. Information shared with the counselor will not be provided to WSUPD without expressed permission from you. WSU Counseling and Psychological Services 509-335-2159 (crisis services line).