

Applied Physiology of Horticultural Crops

11:776:202 (3 credits)

Fall Semester (yearly)

Hybrid Format

CONTACT INFORMATION

Instructor: Dr. Edward Durner
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Office Hours: by arrangement

COURSE DESCRIPTION

An examination of plants and the physiology that allows them to survive the complexities of our environment.

COURSE WEBSITE, RESOURCES AND MATERIALS

- Course website: Canvas
- Required text: Durner, EG. 2013. Principles of Horticultural Physiology. CABI

PREREQUISITE

01:119:115 General Biology OR 01:119:103 Principles of Biology OR 11:776:242 Plant Science

COURSE LEARNING GOALS (link to Plant Biology Undergraduate Program Goals:

[\(http://plantbiology.rutgers.edu/undergrad/plantbiology/\)](http://plantbiology.rutgers.edu/undergrad/plantbiology/)

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

1. Recognize and describe the basic processes underlying plant water-relations, plant metabolism, and plant growth and development (addresses program goals 1 and 3)
2. Recognize the effects of temperature, light, and water on plant growth, development, and productivity (addresses program goal 1)
3. Describe the movement of water, nitrogen, and carbon dioxide through the plant (addresses program goals 1 and 3)

ASSIGNMENTS/RESPONSIBILITIES AND ASSESSMENT

Grading:

- Quizzes 75%
- Research paper 25%

Grades will be classified based on Rutgers approved system: A, B+, B, C+, C, D, and F.

Weekly quizzes will test knowledge gained from online learning modules and reading assignments. Also assigned will be a 5- to 7-page research paper covering a physiological abnormality of a horticultural crop chosen by the student.

Learning goals assessment: Specific questions on weekly quizzes and the graded research paper will be used to assess student knowledge of course learning goals, including demonstrated mastery of horticultural physiological processes. The percentage score on these assessments will determine the level of mastery: >90% outstanding; 80-89% good; 70-79% satisfactory; <69% unsatisfactory.

COURSE TOPICS

- Horticulture – whole plant integration of many disciplines
- The plant hormones
- Growth, development, and plant movement
- Physiology of growth in specific organs: roots, stems, leaves
- Physiology of growth in specific organs: flowers, fruit, seeds
- Some abiotic plant stressors – oxygen, minerals, and salt
- Water and plants
- Light energy and plant function
- Temperature effects on growth and development of plants
- The soil and its environment
- The greenhouse environment
- Seeding and Seedling establishment
- Pruning, training, growth, and plant size
- Grafting and rootstocks
- From harvest to market
- Post-harvest physiology
- Human nutrition, phytonutrients, nutraceuticals, and horticulture

FINAL EXAM/PAPER DATE AND TIME

There is no final exam for this course. The research paper is due during the final weeks of class.

ACCOMODATIONS FOR STUDENTS WITH DISABILITIES

Please follow the procedures outlined at <https://ods.rutgers.edu/students/registration-form>. Full policies and procedures are at <https://ods.rutgers.edu/>

ACADEMIC INTEGRITY

The university's policy on Academic Integrity is available at <http://academicintegrity.rutgers.edu/>

The principles of academic integrity require that a student:

- Properly acknowledge and cite all use of the ideas, results, or words of others.
- Properly acknowledge all contributors to a given piece of work.
- Make sure that all work submitted as his or her own in a course or other academic activity is produced without the aid of impermissible materials or impermissible collaboration.
- Obtain all data or results by ethical means and report them accurately without suppressing any results inconsistent with his or her interpretation or conclusions.
- Treat all other students in an ethical manner, respecting their integrity and right to pursue their educational goals without interference. This requires that a student neither facilitate academic dishonesty by others nor obstruct their academic progress.
- Uphold the canons of the ethical or professional code of the profession for which he or she is preparing.

Adherence to these principles is necessary in order to ensure that:

- Everyone is given proper credit for his or her ideas, words, results, and other scholarly accomplishments.
- All student work is fairly evaluated and no student has an inappropriate advantage over others.
- The academic and ethical development of all students is fostered.
- The reputation of the University for integrity in its teaching, research, and scholarship is maintained and enhanced.

Failure to uphold these principles of academic integrity threatens both the reputation of the University and the value of the degrees awarded to its students. Every member of the University community therefore bears a responsibility for ensuring that the highest standards of academic integrity are upheld.

STUDENT WELLNESS SERVICES

Just In Case Web App <http://codu.co/cee05e>

Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ www.rhscaps.rutgers.edu/

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Scarlet Listeners

(732) 247-5555 / <http://www.scarletlisteners.com/>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.