

Greenhouse Systems Management

11:776:321 (3 credits)
Spring Semester (odd years)

CONTACT INFORMATION

Instructor: Joseph V. Florentine
Office Location: NJAES Research Greenhouse, 10 College Farm Road, New Brunswick, NJ 08901
Phone: 848-932-9034
E-mail: florentine@njaes.rutgers.edu
Office Hours: by e-mail appointment

COURSE DESCRIPTION

This course will cover the various technologies and management skills needed to operate greenhouses. Students will learn how to identify and trouble shoot greenhouse climate control systems and components through an interactive problem solving approach. Greenhouse computer control systems will be presented including data graph interpretation skills.

COURSE WEBSITE, RESOURCES AND MATERIALS

- Required textbook: Greenhouse Operation and Management, 7th edition. Paul V. Nelson, ed.
- Course materials will be distributed to students prior to class

PREREQUISITE

01:119:115 General Biology OR equivalent OR 11:776:211 Introduction to Horticulture OR 11:776:242 Plant Science

COURSE LEARNING GOALS

(Link to Plant Biology Undergraduate Program Goals: <http://plantbiology.rutgers.edu/undergrad/plantbiology/>)

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

1. Explain the basic technical knowledge needed to operate a commercial or research greenhouse (addresses program goal 1)
2. Describe the needs of plants in regards to: insect/disease management, irrigation and fertilization, soils and substrates, regulation of plant growth, and basic business management (addresses program goal 1)
3. Use and manage computer environmental control systems to determine irregular conditions and provide corrective needs in the greenhouse (addresses program goal 1)
4. Develop and communicate an understanding of the responsibilities required for effective greenhouse management (addresses program goals 2 and 3)

ASSIGNMENTS/RESPONSIBILITIES AND ASSESSMENT

Grading

• Class participation	10%
• Independent project	25%
• Quizzes (4)	15%
• Mid-term examination	25%
• Final exam	25%

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

Learning goals assessment

Specific questions on exams and quizzes will be used to assess student knowledge of all course learning goals. In the independent project, students will demonstrate their understanding of components required for effective greenhouse management (learning goals 2 and 4). The percentage score on these assessments will determine the level of mastery: >90% outstanding; 80-89% good; 70-79% satisfactory; <69% unsatisfactory.

ABSENCE POLICY

Students who expect to miss more than three classes may use the University absence reporting website (<https://sims.rutgers.edu/ssra/>) to indicate the date and reason for the absence. An e-mail is automatically sent to the instructor.

COURSE SCHEDULE

Week	Topic
1	Introduction to course Planning and site selection Designing a greenhouse: who should do it? Construction management issues
2	Greenhouse structures and materials Bench efficiency and materials; floor materials
3	Quiz Greenhouse glazing: different types, pros and cons, re-glazing projects Heating and cooling greenhouses Energy use and conservation
4	Greenhouse lighting Shade systems Lab (NJAES Research Greenhouse)
5	Greenhouse environment and climate control, part 1 Lab (NJAES Research Greenhouse): relays
6	Greenhouse environment and climate control, part 2 Introduction to computer controls
7	Soils and substrates Lab (NJAES Research Greenhouse)
8	Mid-term (first period, 2:15 p.m. to 3:35 p.m.)

Week	Topic
	Refrigeration and environmental chambers
	Tour of Foran Hall growth chambers
	Spring recess
9	Quiz
	Irrigation and fertilization
	Hydroponics (guest speaker)
10	Independent projects reviewed
11	Insect and disease management
12	Quiz
	Regulation of plant growth and post production quality
13	Greenhouse maintenance
14	Greenhouse business management
Final exam (date to be determined)	

FINAL EXAM/PAPER DATE AND TIME

The Online Final exam Schedule: <http://finalexams.rutgers.edu/>

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.