

## Principles of Organic Crop Production

11:776:221 (3 credits)

Fall Semester (yearly)

### CONTACT INFORMATION

Instructor: Dr. Joseph R. Heckman  
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Office Hours: Wednesdays 4 to 5 p.m.; Thursdays 4 to 5 p.m.

### COURSE DESCRIPTION

*Principles of Organic Crop Production* will cover the cultural practices (crop rotations, cover crops, pest management, etc.) and biological processes (composting, soil food web, plant and animal health, etc.) that form the basis for organic production of plant and animal products (fruit, nuts, vegetables, grain, forage, pasture, milk, meat, and eggs) and land stewardship. The course will provide an overview of organic agriculture history, philosophy, and sociology in addition to organic production practices and the USDA National Organic Program. Several course topics will be presented as invited guest lectures.

The objectives of this course include:

1. To introduce students to the holistic concept organic farming as a system where there is a complex interrelationship of parts, similar to that of living ecosystems
2. To acquaint students with cultural production practices typically employed in organic farming
3. To examine challenges and trends in the production, processing, and marketing of organic farm products
4. To introduce students to the large body of literature relating to organic agriculture such that they will be well prepared to continue an independent education in organics after taking the course

In this course, students will be exposed to a wide range of topics, some of which may be controversial, relating to organic agriculture. Rational and intelligent discussions of differences of opinion are welcome. The course outline and syllabus may be modified if there are extenuating circumstances. Notify the instructor if you have any special learning needs.

### COURSE WEBSITE, RESOURCES AND MATERIALS

- Course website: Sakai
- Recommended textbook: Francis, C, ed. 2009. *Organic Farming: The Ecological System*. ASA, CSSA, SSSA, Agronomy Monograph 54. Madison, WI
- Additional references:
  - Heckman, JR. 2006. A History of Organic Farming: Transitions from Sir Albert Howard's War in the Soil to USDA National Organic Program. *Renewable Agriculture and Food Systems*. 21:143-150. Available on web: <http://www.westonaprice.org/farm-a-ranch/468-history-of-organic-farming.html>
  - Organic Transition – An On-line Course from Rodale Institute. <http://www.tritrainingcenter.org/course/>

- Additional handouts and online materials are required reading. Such material may appear on exams even if not specifically discussed in class.

## PREREQUISITE

None

## 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 role of soil health in organic crop production (addresses program goals 2 and 3)
2. Recognize the basic cultural practices and biological processes critical for successful organic farming (addresses program goal 1)
3. Give examples of ways to manage weeds, insects, and diseases in organic crop production (addresses program goal 3)

## ASSIGNMENTS/RESPONSIBILITIES AND ASSESSMENT

### Grading (100 points):

- |  |           |
|--|-----------|
| • Quizzes (5 at 10 points each)                      | 50 points |
| • Online Rodale Transition Course                    | 10 points |
| • Class attendance, participation, and discussion    | 10 points |
| • Homework (written assignments, field trip reports) | 10 points |
| • Book review  | 10 points |
| • Final exam   | 10 points |

Grading scale:

A = 90-100 pts

B = 80-89 pts

C = 70-79 pts

D = 60-69 pts

**Homework and writing assignments:** All homework and writing assignments must be typed on 8.5 x 11 white paper. Written homework assignments are due at the start of the following week class period. Homework may not be turned in by email to instructor, no exceptions.

**Field Trips:** Attendance on field trips is required. You are encouraged to take notes and photographs to be used to write field trip reports. Field trips: Rutgers Vegetable Research Farm: Making Compost Demonstration; Tour of Local Certified Organic Vegetable/Livestock Farm.

**Learning goals assessment:** Specific questions on quizzes will be used to assess student knowledge of all course learning goals. In the final exam writing assignment, students will integrate knowledge of practices essential for successful organic farming (learning goals 2 and 3). The percentage score on these assessments will determine the level of mastery: >90% outstanding; 80-89% good; 70-70% satisfactory; <69% unsatisfactory.

## **PARTICIPATION GRADE AND ABSENCE POLICY**

Attendance is mandatory. Missed class time will be reflected in the final course grade.

Students who expect to miss class may contact the instructor via e-mail prior to the missed class or 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 TOPICS**

### **Overview of Organic Agriculture Principles and Philosophy**

Introduction to course: objectives and goals  
Soil health as the basis for organic farming  
Origin, history, and philosophy of organic agriculture  
History of science in relation to organic agriculture  
Recent trends in the organic market place  
Organic certification and the USDA-NOP

### **Cultural Practices and Biological Processes**

Composting organic procedures  
Soil food web  
Nutrient cycles  
Crop rotations  
Cover crops

### **Organic Crop Production and Marketing**

Organic production systems for field and forage crops  
Vegetables (tomato, leafy greens, cruciferous crops, etc.)  
Fruit crops (blueberry, strawberry)  
Vegetable farm field trip  
Tree crops (fruit and nut)  
Rotational grazing and pasture management

### **Pest Management for Organic Producers**

Weed management  
Disease management  
Insect pest management

### **Organic Livestock Production and Marketing**

Pastured dairy  
Dairy cow, goat, milk, cheese  
Vegetable CSA, poultry, cattle, and hogs on pasture  
Animal health practices

### **Future Trends in Organic Agriculture**

Traditional diets (raw milk, fermented foods, pasture fed meat, milk, eggs)  
Grass-based agriculture and health benefits  
Building consumer-farmer relationships  
Organic Materials Review Institute

Directed reading and discussion of organic farming trends  
Hydroponics vs. Real Organic Initiative

## FINAL EXAM/PAPER DATE AND TIME

**Final exam:** Write a fact sheet about how to successfully produce or grow the crop of your choice using organic farming methods. The organic crop you choose is open to many possibilities and may include any vegetable, fruit, grain, or forage crop. Organic animal products such as meat, milk, or eggs are also acceptable “crops” to select for this assignment. A fact sheet should discuss all essential aspects of organic crop production: Organic Farm Plan, Soils, Crop Varieties (Animal Breeds), Planting Date, Seeding Rate, Plant Population, Crop Rotation, Plant Animal Integration, Soil Fertility, Pest Management, Harvesting, Marketing, etc. Write a maximum of five pages. In this special case of the Final Exam, it may be turned in before the end of the official course exam period by emailing your fact sheet essay to [jheckman@njaes.rutgers.edu](mailto:jheckman@njaes.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

Any documented incident involving academic dishonesty on exams or papers will result in a failing grade for the course and possible further consequences.

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/](http://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/](http://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.