

- A. This course contributes substantially to the diversity of general education offerings at RVCC. It is the only general education lab science course that combines the traditional focus on a body of scientific knowledge, method and theory with its real-world applications in understanding and addressing contemporary and historical environmental and social problems; in this case, related to the human uses of plants.
- B. The laboratory component is essential for students to gain hands-on experience in the science of plant biology and ecology as they relate to traditional and modern uses of plants.
- C. Course transferability:
 - a. This course may transfer as a General Education course in Science with Lab. This is similar to the Plants and People or Plants and Society courses offered at most four year institutions.
 - b. This course may transfer as a program requirement for ethnobotany or economic botany majors.
 - c. This course may transfer as a plant science, ecology, or related program elective.

IV. Place of Course in College Curriculum

- A. Free Elective
- B. This course serves as a General Education course in Science with Lab.
- C. This course is a science elective for the non-science track of the Liberal Arts (Environmental Studies Option) A.A. The course meets the environmental science (lab) elective requirements for the Environmental Science A.S. and the science track of the Liberal Arts (Environmental Studies Option) A.A.
- D. Course transferability: This course has been accepted for credit by numerous colleges over the 30 years it has been offered. It is equivalent to a standard introductory course in Economic Botany, Ethnobotany, or Plants and Society courses. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

Outline of Course Content

Lecture:

A. Food and Agriculture

1. Food Crop Diversity and Origins

a. Plant Diversity, Ecology and Conservation

i. Taxonomy and Plant Names

ii. Artificial and Natural Selection

- iii. Ecology and Conservation
 - 2. Agricultural Systems
 - a. Traditional vs. Modern Approaches
 - i. Plant Propagation Methods
 - ii. Cultural and Economic Consequences of Industrial Agriculture
 - iii. Environmental and Health Consequences of Industrial Agriculture
 - b. Organic and Other Sustainable Agriculture Methods
 - i. Organic Agriculture Principles
 - ii. USDA Organic Standards – History and Criteria
 - iii. Modern Industrial Organic Agriculture
 - 3. Farm Subsidies and Nutrition
 - a. Plan(e)t-based Diets
 - b. Politics and Economics of Farm Subsidy System
 - c. Environmental and Health Consequences of Farm Subsidies
 - 4. Genetic Engineering, World Hunger and Food Waste
 - a. Green Revolution
 - b. Principles and Practice of Genetic Engineering
 - c. Food Waste
 - d. Causes of Famines and Hunger
 - 5. Lawns and Landscaping
 - a. Conventional vs. Ecological Approaches
- B. Other Cultural Uses of Plants
 - 1. Biofuels
 - 2. Fibers and Dyes
 - 3. Herbs, Spices and Stimulating Beverages
 - a. Coffee, Cacao and Slavery
 - 4. Medicines, Drugs, and Poisons
 - 5. Wood Products and Forestry
 - a. Wood Products and Preservatives
 - i. Paper Production and Recycling
 - ii. Pressure-Treated Wood and Other Engineered Wood Products
 - b. Consequences of Deforestation
 - i. Illegal Logging Causes and Solutions
 - c. Sustainable Forestry and Certification
 - d. Natural Building Methods and Materials

Lab:

- A. Understanding the scientific method
 - a. Scientific vs. other forms of knowledge
 - b. Framing a research question
 - c. Testing hypotheses
 - d. Standards and methods of data collection
 - e. Analyzing and interpreting data
 - f. Forming conclusions
- B. Lab Projects

- a. Adaptive significance of crop varieties and diversity: evolution through artificial selection
- b. Using online databases to analyze health and environmental consequences of pesticide use
- c. Testing the effectiveness and feasibility of different composting methods for campus and home food waste
- d. Effects of seed stratification and other propagation methods on growing food plants
- e. Analyzing personal and other diets from around the world using online databases and FDA nutritional guidelines
- f. Energy budgets and plant fibers: comparing traditional and industrial cordage production
- g. Biology of fermentation
- h. Chemistry of biofuel and soap production
- i. Analysis of arsenic contamination from pressure-treated wood
- j. Lawns and landscaping: The ecology of our backyards

VI. General Education and Course Learning Outcomes

A. General Education Learning Outcomes:

At the completion of the course, students will be able to:

1. Apply the scientific method to analyze and evaluate the environmental and health consequences of different human uses of plants (GE-NJ3);
2. Evaluate the ethical implications of human activities for plants (GE-NJ ER);

B. Course Learning Outcomes:

At the completion of the course, students will be able to:

1. Describe basic aspects of plant biology and their relevance to human uses of plants
2. Describe the importance of representative plants to human economies, cultures, and history
3. Describe the role of science, politics, economics, and culture in shaping our use of plants;
4. Demonstrate the process of producing food, fiber, fuel, and/or other useful products from plants

C. Assessment Instruments

Given the outcomes described above, the following assessment methods may be used:

- A. laboratory products
- B. research papers (required)
- C. demonstrations
- D. essays

E. journals

VII. Grade Determinants

The following may be used to determine the final grade:

- A. mid-term and final exam
- B. field quizzes
- C. landscape design project
- D. book report
- E. presentations
- F. service learning incorporating ethical standards (required)
- G. laboratory assignments

Given the goals and outcomes described above, the primary formats, modes, and methods for teaching and learning that may be used in the course include:

- A. lecture/discussion
- B. small-group work
- C. computer-assisted instruction
- D. guest speakers
- E. laboratory
- F. student oral presentations
- G. student collaboration
- H. independent study

VIII. Texts and Materials

The following types of course materials may be used:

- A. Suggested Texts:
 - 1. Estabrook, Barry. Tomatoland. 2011. Andrews McMeel Publishing.
 - 2. Levetin, E. and K. McMahon. 2011. Plants and Society. 6th Ed. McGraw-Hill.
- B. Articles from scientific journals and periodicals
- C. Interview transcripts
- D. Book Reviews
- E. Student Writing
- F. Films and Documentaries
- G. Radio Recordings
- H. Internet Databases and Information Sources
- I. Library Article Databases

(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

IX. Resources

- A. RVCC van and/or bus rental;
- B. Library databases and other computer and library resources;

- C. RVCC organic garden plot, landscaped and natural areas on campus;
- D. RVCC greenhouse and plant propagation supplies;
- E. Blender, hot plates and paper making supplies;
- F. Films and documentaries from RVCC Science Library;
- G. Field guides, posters, and literature from RVCC Science Library

X. Honors Option

Not applicable.