



### **III. Statement of Course Need:**

This is an introductory course in floristics, providing laboratory and field observations of N.J. vascular plant species – focusing on taxonomy and ecology. It complements our other courses with strong field study components: Introduction to Geology, and General Ecology. It is of interest especially to students of Biology, Environmental Science, the visual arts, and to the general public.

### **IV. Place of Course in College Curriculum**

- A. Free Elective
- B. This course satisfies the Environmental Science Elective for the Environmental Science A.S., Environmental Studies A.A., and the 200-level Electives for the Biology A.S..
- C. Course Transferability: although the course is similar to many courses in four-year programs, transferability will have to be determined.

### **V. Outline of Course Content**

- A. Plant Taxonomy and Field Study
  - 1. Plant Morphology
  - 2. Identification and Taxonomic Keys
  - 3. Collecting and Preserving Specimens
  - 4. Botanical Inventories
  - 5. Technical Guides and References
- B. Life Forms and Major Taxonomic Groups
  - 1. Mosses and Liverworts
  - 2. Ferns and Fern-Allies
  - 3. Gymnosperms: Conifers and Ginkgos
  - 4. Flowering Plants
    - a. Woody Trees, Shrubs and Vines
    - b. Forbs
    - c. Grasses, Sedges and Rushes
- C. New Jersey Flora
  - 1. Climate and Geology of New Jersey
    - a. Physiographic Provinces
  - 2. Representative Plant Communities and Habitats
    - a. Riparian Forests
    - b. Mixed Hardwood Forests
    - c. Meadow, Grasslands, and Old Field Succession
    - d. Beaches, Dunes and Salt Marshes
    - e. Swamps, Bogs and Marshes
    - f. Pine Barrens
    - g. Rocky Outcrops and Mountain Glades
    - h. Street Trees and Landscape Plants
  - 3. Economy, Ecology and Conservation
    - a. Human Uses of Plants

- b. Indigenous vs. Non-Indigenous Species
  - c. Plant Pests and Diseases
  - d. Herbivory
  - e. Fire Ecology
  - f. Endangered Plant Species
- D. Winter Plant Identification

## **VI. General Educational Goals and Learning Outcomes**

### **A. General Education Learning Outcomes:**

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

1. develop a basic knowledge of plant taxonomy and use it to identify plant species in New Jersey (GE-NJ 3);
2. develop a working knowledge of field research techniques for conducting plant surveys and botanical inventories in the wild (GE-NJ 3);
3. recognize, analyze and assess ethical issues and situations related to the effects of human activities on plants and their environments (GE-NJ 9);

### **B. Learning Outcomes:**

Students will be able to:

1. correctly identify common trees, shrubs, vines, wildflowers, mosses, grasses and ferns of NJ
2. identify the scientific and common names of common NJ plants
3. identify unknown plants using taxonomic keys
4. describe important biological structures needed to identify mosses, ferns, conifers and flowering plants
5. locate and record species in their natural habitats in a botanical inventory format

### **C. Assessment Instruments**

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

- A. laboratory products
- B. research papers
- C. demonstrations
- D. essays
- E. journals
- F. portfolios
- G. art work

## **VII. Grade Determinants**

The following may be used to determine the final grade:

- A. mid-term and final exam

- B. field quizzes
- C. research projects
- D. book report
- E. presentations
- F. service learning
- G. laboratory assignments

### **VIII. Texts and Materials**

The following texts and course material may be used:

- A. Suggested Texts:
  1. Newcomb, L. 1989. Newcomb's Wildflower Guide; Little, Brown & Co., New York.
  2. Kershner, B. et al. 2008. Field Guide to the Trees of North America. National Wildlife Federation.
  3. Cobb, Farnsworth & Lowe. 2005. Ferns of Northeastern and Central North America (Peterson Field Guide). 2<sup>nd</sup> Ed.
- B. Articles from scientific journals and periodicals
- C. Field Journals
- D. Student Writing
- E. Films and Documentaries
- F. Internet Databases and Information Sources
- G. 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 internet and library resources;
- C. Natural areas on campus and elsewhere;
- D. RVCC Herbarium, dissecting scopes, plant presses, and related supplies
- E. Field guides and botanical manuals from RVCC Science Library
- F. Calipers, hand lenses and other related field equipment for botanical studies

### **X. Honors Options**

Students pursuing the Honors Option in Field Botany will apply the principles of botany to conduct a botanical inventory in a local natural area. While other students will engage in field identification of plants in situations that have been designed and structured by the professor, the Honor's Option students will be required to demonstrate a higher level of independence and proficiency by planning and carrying out their own botanical inventory in a previously unstudied location. By independently designing, implementing, and presenting their own research, students will be required to employ a more sophisticated level of

creative and critical thinking, practical and logistical reasoning, and personal responsibility.

#### **A. Educational Goals and Learning Outcomes:**

In addition to the educational goals and learning outcomes listed in section VI above, students will be able to:

1. design and implement a sampling methodology to conduct the botanical inventory;
2. acquire permission from landowners and submit any permits needed to collect plants for study;
3. search the primary literature for relevant journal articles;
4. submit data forms for any endangered or invasive plant species found to local governmental and non-profit institutions;
5. present results in the form of a scientific paper and/or presentation.

#### **B. Honors Option Content**

Students who participate in the Field Botany Honors Option must carry out an independent botanical inventory involving both literature and field research components. Students will decide upon an instructor-approved project by the third week of class, complete a literature review and formal proposal for research by the fifth week of class, and complete the data collection, analysis, report preparation and presentation, by the end of the semester. Sample locations include land owned by federal, state, or local governments, non-profit land trusts or other non-governmental organizations, or private-owned preserves.

With support from the instructor, students will define the goals of the project and design appropriate techniques and procedures. Students will be responsible for completing their research outside of regular class time. The results will be analyzed, and the entire project will be reported in the form of a scientific paper and oral presentation.

#### **C. Assessment Instruments for Honors Option Work**

Honors Option students will be assessed for their ability to plan and carry out the research project, as well as for the analysis of their data and the communication of their results.

1. Find an appropriate location to conduct the botanical inventory.
2. Develop reasonable and clearly defined goals for the project.
3. Design and implement appropriate field botany techniques that are appropriate for conducting a botanical inventory.

4. Analyze and interpret the data in a logical manner.
5. Compile, organize and submit data to local authorities on rare or invasive plants.
6. Compare findings to similar studies in the scientific literature.
7. Present the project in the form of a scientific paper and oral presentation.

**D. Grade Determinants for Honors Option Work**

In addition to the homework assignments, quizzes, exams, and reports normally required for the class, the final grade for students participating in the Honors Option will be based upon students successfully completing and presenting the results of a botanical inventory as described above.