NRM 102 Course Outline as of Fall 2010

CATALOG INFORMATION

Dept and Nbr: NRM 102 Title: NATIVE PLANTS TO RESTORE
Full Title: Selection and Propagation of Native Plants for Restoration
Last Reviewed: 4/25/2005

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	0.50	Lecture Scheduled	0.50	17.5	Lecture Scheduled	8.75
Minimum	0.50	Lab Scheduled	0.50	3	Lab Scheduled	8.75
		Contact DHR	0		Contact DHR	0
		Contact Total	1.00		Contact Total	17.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 17.50 Total Student Learning Hours: 35.00

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Selection and propagation of native plants for ecosystem restoration. Topics include: seed collection, storage, treatments, sowing, and germination; guidelines for ecologically sound collection and restoration; identification of local native species. Class takes field trips to local sites for seed collection and identification. Includes overview of the goals and foundations of ecological restoration and how restoration nurseries grow appropriate restoration species.

Prerequisites/Corequisites:

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Selection and propagation of native plants for ecosystem restoration. Topics include: seed collection, storage, treatments, sowing, and germination; guidelines for ecologically sound collection and restoration; identification of local native species. Class takes field trips to local sites for seed collection and identification. Includes overview of the goals and

foundations of ecological restoration and how restoration nurseries grow appropriate restoration species. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended:
Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Outcomes and Objectives:
Upon successful completion of this course, students will be able to:
1. Describe the objectives and expectations of ecosystem restoration, rehabilitation, and reclamation and the role of native plant propagation in such programs.
2. Discuss native plant uses, their advantages and disadvantages, and scientific/ethical principles for their collection and use.
3. Identify ecological zones in Sonoma County and the principle native plant species associated with those zones.
4. Employ basic techniques for native plant identification.
5. Utilize common techniques of plant propagation from seed and vegetative materials with an emphasis on species occurring in Sonoma County.
6. Select, use and manage facilities, equipment, structures, media, and other supplies appropriate for native plant propagation.
7. Collect native plant seeds and cuttings from local sites.
8. Employ proper sanitation procedures in the use of propagation materials and equipment.
9. Select native plant materials based on quality and to meet a range of ecosystem restoration objectives.
10. Implement plant labeling associated with good propagation practices and record keeping.
11. Describe various enterprises that specialize in different propagation methods to supply restoration needs.
12. Perform outplanting and field-monitoring at restoration sites.

Topics and Scope:

I. Overview

A. Restoration, rehabilitation, and reclamation
1. Definitions
2. Objectives and expectations
B. The role of artificial propagation and ecosystem restoration
C. Rehabilitation and reclamation
D. Why native plants?
1. Advantages
2. Disadvantages
E. Other uses of native plants
1. First Nations use
2. Residential
3. Commercial and institutional
4. Landscaping, etc.
F. Scientific and ethical principles of collecting plant materials for propagation

II. Ecological Zones of Sonoma County
A. Principles of species and provenance selection
1. Topography and aspect
2. Ecological succession
3. Climate
4. Geology and soils
5. Moisture regimes
6. Keystones and ecological function
B. Key native species for propagation by ecological zone
C. Restoration objectives

III. Plant Identification and Plant Communities
A. Botanical names of important restoration plants
B. Plant associations
C. Techniques for identification
D. Plant/soil relationships

IV. Plant Propagation
A. Propagation structures and materials
1. Propagation structures
a. Small greenhouses
b. Mist benches
c. Cold frames and shade houses
d. Nursery beds
2. Media for propagation native plants
3. Sanitation techniques in propagation
4. Soil, water and supplementary fertilizers
5. Containers for propagation native plants
6. Heating cables and pads

V. Propagation by seed
A. Plant types propagated based on restoration needs
B. Seed germination and collection
1. Collection
2. Storage
3. Germination
a. Environmental factors
i. Light
ii. Temperature
iii. Moisture
iv. Aeration

b. Seed treatments
i. Scarification
ii. Stratification
iii. Heat
iv. Chemical
c. Transplanting
d. Hardening off

VI. Vegetative propagation - cutting and other types
A. Clones and genetic uniformity
B. Root inducing treatments
1. Hormones
2. Wounding
C. Types of cuttings
1. Hardwood
2. Semihardwood
3. Softwood
4. Dormant evergreen cuttings
5. Root cuttings
6. Propagating with rhizomes, tubers, corms, and bulbs
7. Leaf cuttings
8. Plant division
9. Ground layering and air layering
D. Greenhouse control of cuttings
1. Types of rooting media
2. Bottom heat
3. Leaf surface reduction
4. Overhead intermittent mist

VII. Propagating Special Cases
A. Ferns
B. Grasses
C. Sedges and rushes

VIII. Evaluation of propagation methods
A. Costs
B. Growing methods
C. Species selection for restoration projects
D. Producing quality plant material
E. Labeling and record keeping

IX. Post-Propagation Care
A. Types and choices of containers
B. Soil mixes
C. Pricking-out and transplanting
D. After-care of seedlings
E. After-care of cuttings

X. Enterprises Specializing in Restoration
A. Nurseries
B. Landscape design companies
C. Landscape installation and maintenance companies
D. Creating a successful restoration nursery
1. Strategies
2. Restoration nurseries
a. Operations
b. Current methods

XI. Plant Salvage Considerations and Techniques
XII. Site Inventory
XIII. Outplanting Requirements and Techniques
A. Site preparation for planting
B. Field monitoring practices
C. Record keeping

Assignment:

1. Weekly reading assignments (approximately 10 pages per week).
2. Plant species report (approximately 3-5 pages).
3. Oral presentation of report.
4. Field trip for propagation materials collection and plant identification
5. Lab activities: plant propagation.
6. Quizzes (1-3); final exam.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Species reports.	Writing 10 - 30%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Field work	Problem solving 10 - 40%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Oral presentations.	Skill Demonstrations 5 - 20%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, True/false, Matching items, Completion, Short answer.	Exams 30 - 60%

Other: Includes any assessment tools that do not logically fit into the above categories.

Field trip participation.	Other Category 10 - 30%

Representative Textbooks and Materials:
A Flora of Sonoma County. Best, C., Howell, J.T., Knight, W.&I., and Wells, M. California Native Plant Society, Sacramento, Ca., 1996.
Seed Propagation of Native California Plants. Emery, Dara. Santa Barbara Botanical Garden,

Santa Barbara, Ca., 1988.
The Jepson Manual. Hickman, J., editor. University of California Press, Berkeley, Ca., 1993.
Growing California Native Plants. Schmidt, Marjorie. University of California Press, Berkeley, Ca., 1981.
(Textbooks are classics in the field.)
Instructor prepared materials.