

Degree: A.S. - Natural Resources  
 Certificate: Natural Resources

Area: Technical Education  
 Dean: Gabriel Meehan  
 Phone: (916) 484-8354  
 Counseling: (916) 484-8572

Natural Resources Management is broadly defined as the art, science and business of managing, conserving and preserving non-renewable and renewable natural resources such as air, water, land and their biological resources for the benefit of present and future generations. Today's natural resource technicians and professionals need a strong foundation in ecological and natural resource science as well as specific technical skills related to natural resource management.

## Natural Resources Degree

Requirements for Degree Major		40.5-42.5 units
BIOL 305	Natural History	4
BIOL 310	General Biology	4
ENGWR 344	Technical/Professional Communication: Writing Reports	1.5
GEOG 330	Introduction to Geographic Information Systems (3)	5-7
and GEOG 334	Introduction to Desktop GIS (4)	
or CISC 300	Computer Familiarization (1)	
and CISA 315	Introduction to Electronic Spreadsheets (2)	
and CISA 305	Beginning Word Processing (2)	
or CISA 306	Intermediate Word Processing (2)	
GEOG 300	Physical Geology (3)	3
or GEOG 300	Physical Geography: Exploring Earth's Environmental Systems (3)	
NATR 300	Introduction to Natural Resource Management	3
NATR 302	Introduction to Wildlife Biology	3
NATR 304	Introduction to Forestry	3
NATR 310	Natural Resource Measurements (4)	4
or NATR 311	Natural Resource Measurements-Land Surveying Methods (1)	
and NATR 312	Natural Resource Measurements-Field Methods and Study Design (1)	
and NATR 313	Natural Resource Measurements-Vegetation Analysis and Forest Sampling (1)	
and NATR 314	Natural Resource Measurements-Aquatic Resource Sampling (1)	
NATR 320	Principles of Ecology	3
NATR 330	Identification of Native Trees and Shrubs	4
STAT 301	Introduction to Probability and Statistics	3

**Associate Degree Requirements:** The Natural Resources Associate in Science (A.S.) Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

## Natural Resources Certificate

Requirements for Certificate		20 Units
NATR 300	Introduction to Natural Resource Management	3
NATR 302	Introduction to Wildlife Biology	3
NATR 304	Introduction to Forestry	3
NATR 310	Natural Resource Measurements (4)	4
or NATR 311	Natural Resource Measurements-Land Surveying Methods (1)	
and NATR 312	Natural Resource Measurements-Field Methods and Study Design (1)	
and NATR 313	Natural Resource Measurements-Vegetation Analysis and Forest Sampling (1)	
and NATR 314	Natural Resource Measurements-Aquatic Resource Sampling (1)	
NATR 320	Principles of Ecology	3
NATR 330	Identification of Native Trees and Shrubs	4

### NATR 294 Topics in Natural Resources 5-5 Units

*Prerequisite:* To be determined for each topic.

*Advisory:* ENGRD 116 or ESLR 320.

*Hours:* 9-90 hours LEC; 27-270 hours LAB

Topics in natural resources management will be examined through various course offerings designed to cover field study activities and subjects relevant to natural resources and forestry not covered by regular catalog offerings. Topics and field study locations vary. Course content and unit credit to be determined by instructional area. Course topics may include advanced subjects related to wildlife, fisheries, conservation biology, forest resources and management, restoration ecology or aquatic ecology. Field trips required. This course may be taken four times.

### NATR 298 Work Experience in Natural Resources 1-4 Units

*Prerequisite:* None

*Hours:* 18-72 hours LEC

### NATR 300 Introduction to Natural Resource Management 3 Units

*Prerequisite:* None

*Course Transferable to UC/CSU*

*Hours:* 54 hours LEC

This course is an overview of ecosystems and natural resource management. It considers non-renewable and renewable natural resources such as water, land, soils, air, wildlife and their vegetative communities. Additionally, this course provides a greater appreciation and understanding of the field of natural resource management, current human threats, and the protection and maintenance of natural resource systems. Field trips are required. AA/AS area 3A.

### NATR 302 Introduction to Wildlife Biology 3 Units

*Prerequisite:* None

*Course Transferable to CSU*

*Hours:* 36 hours LEC; 54 hours LAB

This course is an introduction to Wildlife Biology and the basic principles and techniques related to the practice of Wildlife Management. Emphasis is based on ecological principles of populations and communities as they relate to the interdependence of wildlife and human populations. This course includes the discussion of the social, political and biological implications of Wildlife Management. Additionally, this course includes habitat and population sampling, radio telemetry and the development of a wildlife management plan. Field trips are required. AA/AS area 3A.

### NATR 304 Introduction to Forestry 3 Units

*Formerly:* NATR 5

*Prerequisite:* None

*Course Transferable to UC/CSU*

*Hours:* 54 hours LEC

This course covers basic biological and physical science concepts important to a general understanding in forestry. Topics include forest history, forests of the United States, general tree taxonomy, forest ecology, soils, silvics, insects and diseases of forest trees, role of fire in forest management, forest measurements, multiple use management, forest issues and policies. Field trips are required. AA/AS area 3A.

## Natural Resources

### **NATR 306 Introduction to Range Management 3 Units**

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 36 hours LEC; 54 hours LAB*

This course examines the historical developments of range management and theory and application of grazing strategies. This course focuses on the effects of grazing on range ecosystems, the taxonomy and physiology of range plants, ruminant nutrition and physiology. In addition, sampling techniques of field vegetation, the use of fire and other methods for range conversion and maintenance are explored. Field trips are required.

### **NATR 310 Natural Resource Measurements 4 Units**

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 54 hours LEC; 54 hours LAB*

This course provides basic natural resource measurement and survey skills. Included are elementary surveying, public land surveying, distance and direction measurement, topographic map reading, stream flow measurement, basic aquatic and water quality sampling. It focuses on forest and herbaceous vegetation sampling techniques such as transects and quadrates. Also included are the fundamentals of wildlife sampling techniques such as radio telemetry, population sampling techniques, Global Positioning Systems (GPS), Geographic Information Systems (GIS), and use of the internet as a research tool. Field trips are required.

### **NATR 311 Natural Resource Measurements-Land Surveying Methods 1 Unit**

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 9 hours LEC; 27 hours LAB*

This course provides basic natural resource land survey skills. Included in this course are elementary surveying, public land survey, distance and direction measurements, and topographic map reading. Field trips are required.

### **NATR 312 Natural Resource Measurements-Field Methods and Study Design 1 Unit**

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 9 hours LEC; 27 hours LAB*

This course provides basic statistics and study design as well as fundamental wildlife sampling techniques and an introduction to field applications of Global Positioning Systems (GPS) and Geographic Information Systems (GIS). Field trips are required.

### **NATR 313 Natural Resource Measurements-Vegetation Analysis and Forest Sampling 1 Unit**

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 9 hours LEC; 27 hours LAB*

This course provides basic forest and vegetation sampling skills. Included in this are forest sampling techniques such as tree heights, diameters, volume, and age. Vegetation sampling techniques such as quantitative and semi-quantitative analysis, and single species surveys will be covered. Field trips are required.

### **NATR 314 Natural Resource Measurements-Aquatic Resource Sampling 1 Unit**

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 9 hours LEC; 27 hours LAB*

This course provides basic aquatic resource sampling skills. Included in this course are stream flow measurements and water quality sampling. Sampling techniques for fisheries and other aquatic organisms will also be addressed. Field trips are required.

### **NATR 320 Principles of Ecology 3 Units**

*Prerequisite: None*

*Course Transferable to UC/CSU*

*Hours: 36 hours LEC; 54 hours LAB*

This course covers basic principles of ecology, including the physical and biological factors of different environments in relation to the distribution of plants and animals. Emphasis will be on the management of ecosystems using ecological principles and the understanding of current ecological issues. Field trips are required. AA/AS area 3A.

### **NATR 325 Black Bear Ecology and Management in California 2 Units**

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 27 hours LEC; 27 hours LAB*

This course explores the natural history, habitat, and management of the black bear. Topics include the distribution, abundance, physiology, reproduction, and behavior of black bears. A field trip into black bear country is required to allow observation of bear sign and appreciation of the natural habitat of this animal.

### **NATR 326 Analysis of a Predator-The Mountain Lion 1.5 Units**

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 27 hours LEC*

This course explores the natural history and political history of the mountain lion. Topics include the distribution and abundance of mountain lions in California and throughout western North America; the important ecological role of these predators; problems associated with mountain lions, and the legal status of mountain lions in California. A field trip into mountain lion country is required to allow observation of lion sign and appreciation of the natural habitat of this predator.

### **NATR 330 Identification of Native Trees and Shrubs 4 Units**

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 54 hours LEC; 54 hours LAB*

This course will focus on the identification of native trees and shrubs of California by means of plant keys. In addition, this course will also include sight identification of some grasses, and other herbaceous and wetland plants. The ecology of vegetative communities and the natural history of native plants will be explored. A collection of at least seventy-five plant specimens is required. Field trips are required.

### **NATR 332 Wildflowers of the Sacramento Region 4 Units**

*Prerequisite: None*

*Course Transferable to UC/CSU*

*Hours: 54 hours LEC; 54 hours LAB*

This course focuses on the wildflowers of the Sacramento Region. The identification, distribution, and interrelationships of herbaceous plants in their natural environment, ecological principles, and representative plant communities are examined. Special emphasis will be given to the study of plant families in our local grasslands, vernal pools, oak woodlands and foothills, and the use of taxonomic keys. AA/AS area 3A

### **NATR 340 John Muir "Conservationist" 2 Units**

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 36 hours LEC*

This course covers the life, writings and philosophy of one of the founders of the American Conservation Movement. This course focuses on John Muir's significant contributions to the formation of the National Park System. This course is recommended to Elementary and Secondary Educa-

tors and those interested in natural resources, conservation and California history. Some class sessions will be held at the Muir National Historical Site in Martinez, the Muir Redwoods and Yosemite National Park. Field trips are required.

**NATR 342 Forest Resource Protection 4 Units**

*Formerly: NATR 24*

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 54 hours LEC; 54 hours LAB*

This course examines impacts to forest resources by destructive agents such as plant diseases, insects, fire, animals, and weather. Identification of causal agents and principles of forest protection are covered along with practical management concepts. Field trips are required.

**NATR 498 Work Experience in Natural Resources 2-4 Units**

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 0-18 hours LEC; 0-150 hours LAB*

This course is a cooperative effort between the college and a federal, state, local, private or nonprofit organizations involved in natural resource planning, management or public information. Internship sponsors assist students in acquisition of skills and the application of knowledge learned in the classroom. In addition to applied job related skills, students will be provided general employment training and skills such as: resume writing, job applications, taking job interviews, how to look for jobs and develop job performance objectives.