Natural Resources

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

The Natural Resource Program offers an AS Degree and a certificate in Natural Resources. 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. The Natural Resource curriculum provides this broad foundation for a wide range of career choices.

The AS Degree and the certificate are designed to train graduates for direct entry into jobs involving extensive fieldwork with State, Federal or Local Agencies as well as the private sector. Students completing the AS Degree can choose to continue their education towards degrees in wildlife biology, forestry, natural resource management or related disciplines.

The Natural Resources 20 unit Core Requirement serves both the degree major and certificate program. The degree major has an additional 18-21 unit concentration requirement in such areas as biological science, physical science, technical writing, statistics and computer information science. The Natural Resources Department additionally offers the general education student coursework that prepares them for a greater appreciation and understanding of our natural resources and current human threats to those resources.

Career Opportunities

There are entry-level technician and professional opportunities with private lumber and resource managing companies; city, state and national park systems and other state and federal resource agencies such as The California Department of Fish and Game, The California Department of Forestry and Fire Protection, the United States Forest Service, United States Fish and Wildlife Service, and the United States Bureau of Reclamation.

Requirements for Degree Major 40.5-42.5 units

<table>
<thead>
<tr>
<th>Core Requirements</th>
<th>Units</th>
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<tbody>
<tr>
<td>NATR 300</td>
<td>3</td>
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<tr>
<td>NATR 302</td>
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<tr>
<td>NATR 304</td>
<td>3</td>
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<tr>
<td>NATR 310; or 311, 312, 313, and 314</td>
<td>4</td>
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<tr>
<td>NATR 320</td>
<td>3</td>
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<tr>
<td>NATR 330</td>
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Concentration Requirements Units

<table>
<thead>
<tr>
<th>Courses Required</th>
<th>Units</th>
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<tbody>
<tr>
<td>BIOL 305</td>
<td>4</td>
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<tr>
<td>BIOL 310</td>
<td>4</td>
</tr>
<tr>
<td>ENGWR 344</td>
<td>1.5</td>
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<tr>
<td>GEOL 300 or GEOG 300</td>
<td>3</td>
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<tr>
<td>STAT 301</td>
<td>3</td>
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<td>and</td>
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<tr>
<td>CISA 305 or 306</td>
<td>2</td>
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<tr>
<td>CISA 315</td>
<td>2</td>
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<td>CISC 300</td>
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<tr>
<td>or GEOG 330</td>
<td>3</td>
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<tr>
<td>GEOG 334</td>
<td>4</td>
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Recommended Electives:

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<tr>
<th>Recommended Electives</th>
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<tbody>
<tr>
<td>ANTH 333; BIOL 320, 322, 330, 352, 370; GEOG 306; GEOL 305, 342, 345; NATR 332, 340, 342</td>
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Requirements for Certificate 20 Units

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>NATR 300</td>
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<tr>
<td>NATR 304</td>
<td>3</td>
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<tr>
<td>NATR 310</td>
<td>4</td>
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<tr>
<td>or NATR 311, 312, 313, 314</td>
<td>4</td>
</tr>
<tr>
<td>NATR 320</td>
<td>3</td>
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<tr>
<td>NATR 330</td>
<td>4</td>
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General Education Graduation Requirements: In addition to completing the degree requirements, students must also complete the general education graduation requirements for an AA/AS degree. See ARC graduation requirements.

Most Natural Resource courses are accepted for credit at CSU and several are accepted for credit at UC. The Natural Resource core courses 300, 302, 304, 320 satisfy the AA/AS area 3A Natural Science Requirement.
This course examines the historical developments of range management and 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 299 Work Experience in Natural Resources 1-4 Units
Formerly: NATR 98
Prerequisite: None
Hours: 18-72 hours LEC

NATR 300 Introduction to Natural Resource Management 3 Units
Formerly: NATR 1
Prerequisite: None
Course Transferable to UC/CSU
Hours: 36 hours LEC; 54 hours LAB
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
Formerly: NATR 3
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.

NATR 306 Introduction to Range Management 3 Units
Formerly: NATR 14
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
Formerly: NATR 4A
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
Formerly: NATR 4B
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
Formerly: NATR 4C
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
Formerly: NATR 4D
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.
## Natural Resources

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<thead>
<tr>
<th>Course Code</th>
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<th>Units</th>
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<tbody>
<tr>
<td>NATR 320</td>
<td>Principles of Ecology</td>
<td>3</td>
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<tr>
<td>Formerly:</td>
<td>NATR 2</td>
<td></td>
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<tr>
<td>Prerequisite:</td>
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<tr>
<td>Course Transferable to: UC/CSU</td>
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<tr>
<td>Hours:</td>
<td>36 hours LEC; 54 hours LAB</td>
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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.

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<tbody>
<tr>
<td>NATR 325</td>
<td>Black Bear Ecology and Management in California</td>
<td>2</td>
</tr>
<tr>
<td>Prerequisite:</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Course Transferable to: CSU</td>
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<tr>
<td>Hours:</td>
<td>27 hours LEC; 27 hours LAB</td>
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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.

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<tbody>
<tr>
<td>NATR 326</td>
<td>Analysis of a Predator: The Mountain Lion</td>
<td>1.5</td>
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<tr>
<td>Prerequisite:</td>
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<tr>
<td>Course Transferable to: CSU</td>
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<tr>
<td>Hours:</td>
<td>27 hours LEC</td>
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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.

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<tbody>
<tr>
<td>NATR 330</td>
<td>Identification of Native Trees and Shrubs</td>
<td>4</td>
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<tr>
<td>Formerly:</td>
<td>NATR 6</td>
<td></td>
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<tr>
<td>Prerequisite:</td>
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<tr>
<td>Course Transferable to: CSU</td>
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<tr>
<td>Hours:</td>
<td>54 hours LEC; 54 hours LAB</td>
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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.

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<tbody>
<tr>
<td>NATR 332</td>
<td>Wildflowers of the Sacramento Region</td>
<td>4</td>
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<tr>
<td>Formerly:</td>
<td>NATR 8</td>
<td></td>
</tr>
<tr>
<td>Prerequisite:</td>
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<td>Course Transferable to: UC/CSU</td>
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<tr>
<td>Hours:</td>
<td>54 hours LEC; 54 hours LAB</td>
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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.