

# Ecosystem Management and Forestry Major Snapshot

## Department of Environmental Science, Policy & Management

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Conserving and restoring the earth's natural resources requires broad knowledge and experience. The Ecosystem Management and Forestry major offers specializations in *Forestry & Natural Resource Management*. Students in the program, regardless of concentration, have ample opportunity to acquire interdisciplinary skills in the ecology, stewardship, and management of ecosystems such as forests, woodlands, and grasslands. Within the program, students can choose to emphasize such topics as wildlife biology, water policy, fire science, ecosystem restoration, environmental justice, remote sensing and GIS, and rural sociology.

A minor in Forestry is available for students who are interested in learning about forestry and renewable resource management as an adjunct to their chosen fields. Students in many diverse majors such as zoology, business administration, and civil engineering may find this minor complementary to their professional career goals. For more information on the minor, please visit [http://nature.berkeley.edu/site/minoring\\_cnr.php](http://nature.berkeley.edu/site/minoring_cnr.php).

Student Affairs is located in 260 Mulford Hall. The academic advisor for EMF is available to answer your questions about the major. Students are encouraged to drop in weekdays between 9:00 – 12:00 and 1:00 to 4:00.

### Research Opportunities ♦ Honors Program ♦ Forestry, Wildlife Management, & Other Careers

Students with a minimum 3.6 GPA may enroll in the College of Natural Resources Honors Program (H196) once they have reached upper division standing. To fulfill the program requirements, students design, conduct, and report on an individual research project working with a faculty sponsor. For more information, visit [http://nature.berkeley.edu/site/honors\\_program.php](http://nature.berkeley.edu/site/honors_program.php).

In addition to the Berkeley campus Undergraduate Research Apprenticeship Program (URAP), CNR students can also apply for the CNR Sponsored Projects for Undergraduate Research (SPUR). Visit [http://nature.berkeley.edu/site/undergraduate\\_research.php](http://nature.berkeley.edu/site/undergraduate_research.php) for details.

EMF graduates are well-prepared for graduate school and careers in environmental consulting, public agencies, non-profit conservation organizations, and private companies. Students also have the option of preparing for professional careers in forestry, wildlife, and range management. The EMF career snapshot is located at [http://nature.berkeley.edu/site/forms/oisa/fnr\\_career\\_snapshot.pdf](http://nature.berkeley.edu/site/forms/oisa/fnr_career_snapshot.pdf).

### Getting a Degree

To earn a Bachelor of Science from U.C. Berkeley in Ecosystem Management and Forestry, students must fulfill unit and GPA requirements, university and campus requirements, college requirements, and major requirements. Please see the major advisor for more details about these requirements.

### Unit and GPA Requirements

In order to graduate, students must complete a total of 120 units, 36 of which must be upper division units. Students must have at least a 2.0 cumulative GPA, and a 2.0 GPA in the courses required for the major.

### University and Campus Requirements

- Entry Level Writing Requirement
- American History & Institutions
- American Cultures (if taken for a letter grade, this course may overlap with a major requirement)

### College Requirements

- Two courses in Reading & Composition: R1A and R1B
- Complete 36 upper division units with at least 15 of the upper division units completed in the College of Natural Resources (EEP, ES, ESPM, NST, PMB)
- 120 total units

# ECOSYSTEM MANAGEMENT AND FORESTRY MAJOR REQUIREMENTS

Note: ALL major courses must be taken for a letter grade

## Lower Division Requirements for all EMF majors

- Chemistry (4 units): Chem 1A/1AL or Chem 3A/3AL
- Biology (4 units): Biology 1B
- Calculus (6-8 units): Math 16A-B or Math 1A-B or Math 10A-B
- Statistics (4 units): Stat 20 (student who take Math 10A **and** 10B are not required to take Stat 20)
- Economics (4 units): EEP C1 (rec), Econ 1 or 2
- Physical Science (4 units): EPS 50, Geog 1 or 40
- Geographic Information Systems: ESPM 72 or ESPM C177
- ESPM Science core: ESPM 2, ESPM 6, ESPM C10 (LS C30V), or ESPM 15
- ESPM Social Science Core: ESPM C11(LS C30U), ESPM C12, ESPM 50AC, or ESPM 60

## Upper Division Requirements for all EMF majors:

- Ecology (3-4 units) : ESPM 137 or IB 153
- Resource Economics (4 units): ESPM 102C
- Ecosystems Management Capstone (4 units): ESPM C183

### Forestry Specialization

- 8-week Forestry Field Program ("Summer Camp")** in the northern Sierra Nevada (11 units). ESPM 105A-D
- Natural Resource Sampling** (4): ESPM 102B/102BL
- Environmental Policy** (4): ESPM 102D or ESPM 60
- Trees: Taxonomy, Growth & Structure** (3): ESPM 108A
- Fire, Insects, & Disease in Forest Ecosystems** (3): ESPM 134
- Forest Operations and Management** (3): ESPM 182
- Applied Forest Ecology** (4): ESPM 185
- Electives 6-8 Units:** Two courses from ESPM 120,121,129; LD Arch 110, LD Arch C188

### Natural Resource Management Specialization

*Two Options (Choose A or B)*

#### **Choice A**

- Either the Forestry Field Program** (11 units, ESPM 105A-D) **or Biology & Geomorphology of Tropical Islands – Moorea** (13 units, ESPM C107)
- Three additional approved by NMR affiliated Faculty**

#### **Choice B**

- Complete an approved six course resource concentration track (see list below) or design your own six course concentration with NMR faculty approval with at least one elective from each of the following categories:**  
*Ecosystem Knowledge, Ecosystem Measurement & Assessment, Ecosystem Value & Policy, Ecosystem Management*

## Restricted Electives by Concentration for Natural Resource Management Specialization

### A. Ecosystems Knowledge

ESPM 108A: Trees: Taxonomy, Growth & Structures  
 ESPM 108B: Forest Genetics  
 ESPM 111: Ecosystem Ecology  
 ESPM 112: Microbial Ecology  
 ESPM 113: Insect Ecology  
 ESPM 114: Wildlife Ecology  
 ESPM 115C: Fish Ecology  
 ESPM 116B: Range Ecology, Improvement and Management  
 ESPM 120: Soil Characteristics  
 ESPM 121: Development and Classification of Soils  
 ESPM 129: Biometeorology  
 ESPM 131: Soil Microbial Ecology  
 ESPM C180: Atmosphere Chemistry

### B. Ecosystem Measurement & Assessment

ESPM 173: Introduction to Analysis of Ecological Data  
 ESPM 102B/L: Natural Resources Sampling  
 ESPM 164: GIS & Environmental Science  
 ESPM 174: Design & Analysis of Ecological Research  
 LD Arch 110: Ecological Analysis  
 LD Arch C188: Geographic Information System

### C. Ecosystems Value and Policy

ESPM 102D: Resource & Environmental Policy  
 ESPM 155: Sociology & Political Ecology of Agro-Food Systems  
 ESPM 162: Bioethics & Society  
 ESPM 163AC: Environmental Justice: Race, Class, Equity & Justice  
 ESPM 168: Political Ecology  
 ESPM 169: International Environmental Politics

### D. Ecosystem Management

ESPM C103: Principles of Conservation Biology  
 ESPM C104: Modeling & Management of Biological Resources  
 ESPM 134: Fire, Insects & Disease in Forest Ecosystems  
 ESPM 152: Global Change Biology  
 ESPM 158: Biodiversity Conservation in Working Landscapes  
 ESPM 167: Environmental Health & Development  
 ESPM 181A: Wildland Fire Science  
 ESPM 182: Forest Operations Management  
 ESPM 185: Applied Forest Ecology  
 ESPM 186: Management & Conservation of Grassland & Woodlands

## Approved Resource Concentration Tracks for Natural Resource Management

**Water and Watersheds** (ESPM 120, ESPM 164, ESPM 182, EPS 117, CE 103, ESPM 102D)

**Wildlife Conservation and Management** (ESPM 103, ESPM 106, ESPM 114, ESPM 115, ESPM 173, ESPM 102D)

**Management in Changing Climates** (ESPM 129, ESPM 173, ENVECON 175, ESPM 181A, ESPM 152, ESOM 102D)

**Human Dimensions of Natural Resource Management** (ESPM 160AC, ESPM 168, ENVECON 153, ESPM 164, ESPM 167, ESPM 114)