

EMF Major Snapshot

UC Berkeley Rausser College of Natural Resources

Ecosystem Management & Forestry Major Snapshot

Department of Environmental Science, Policy, & Management

Overview

Conserving and restoring the earth's natural resources requires broad knowledge and experience. The Ecosystem Management and Forestry major offers specializations in Forestry and 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 studying topics such as ecology, business administration, and civil engineering may find this minor complementary to their professional career goals.

Advising for the major is available in the Rausser College of Natural Resources' Office of Instruction & Student Affairs, located in 260 Mulford Hall. Students may drop in or schedule an appointment during advising hours: Mon - Fri, 9am-12pm and 1-4pm. Visit [the EMF Major website](#) for more detailed information.

Research Opportunities

In addition to the UC Berkeley [Undergraduate Research Apprenticeship Program \(URAP\)](#), Rausser students can also apply for [the Sponsored Projects for Undergraduate Research \(SPUR\)](#).

Honors Program

Students with a GPA of 3.6 or higher may enroll in [the Rausser 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.

Forestry, Wildlife Management, & Other Career Options

EMF graduates are well-prepared for graduate school and careers in environmental consulting, public agencies, nonprofit conservation organizations, and private companies. Students also have the option of preparing for professional careers in forestry, wildlife, and range management.

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 the major requirements.

University & Campus Requirements

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

University & Campus Requirements

- Two courses in Reading & Composition (8 units): R1A and R1B
- 120 Total Units
- 36 Upper Division Units, 15 of which must be completed in Rausser College (ENVECON, ENERES, ESPM, MBN, PLANTBI)

GPA Requirements

Students must maintain a 2.0 cumulative GPA, a 2.0 GPA in their EMF upper division major requirements, and not receive a grade below C- in their major requirements (lower and upper division courses).

Lower Division Requirements

Chemistry (Chem 1A/1AL or Chem 3A/3AL)

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
CHEM 1A	General Chemistry	3	Yes	Yes	Yes
CHEM 1AL	General Chemistry Laboratory	2	Yes	Yes	Yes
CHEM 3A	Chemical Structure and Reactivity	4	Yes	Yes	Yes
CHEM 3AL	Organic Chemistry Laboratory	2	Yes	Yes	Yes

Biology

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
BIO 1B	General Biology Lecture and Laboratory	2	Yes	Yes	Yes

Calculus (Math 16A/16B OR Math 10A/10B OR Math 51/52 — formerly 1A/1B)

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
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MATH 16A	Analytic Geometry and Calculus	3	Yes	Yes	Yes
MATH 16B	Analytic Geometry and Calculus	3	Yes	Yes	Yes
MATH 10A	Methods of Mathematics: Calculus, Statistics, and Combinatorics	4	No	Yes	Yes
MATH 10B	Methods of Mathematics: Calculus, Statistics, and Combinatorics	4	Yes	No	No
MATH 51 (formerly 1A)	Calculus I	4	Yes	Yes	Yes
MATH 51 (formerly 1B)	Calculus II	4	Yes	Yes	Yes

Statistics (Complete one of the following)

Students who take [MATH 10A](#) and [MATH 10B](#) do not need to take a statistics course

*Note: ESPM 173 cannot be used for both statistics and elective requirement

**Note: Data C8 and Data C88S must both be taken in order to fulfill the statistics requirement

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
STAT 20	Introduction to Probability and Statistics	4	Yes	Yes	Yes
ESPM 173*	Introduction to Ecological Data Analysis	4	Yes	No	No
DATA C8**	Foundations of Data Science	4	Yes	Yes	Yes
DATA C88S**	Probability and Mathematical Statistics in Data Science	3	No	Yes	No
PBHLTH 142	Introduction to Probability and Statistics in Biology and Public Health	4	Yes	Yes	Yes

Economics (Complete one of the following)

*Note: ENVECON C1 is recommended for this requirement.

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ENVECON C1*	Introduction to Environmental Economics and Policy	4	No	No	Yes
ECON 1	Introduction to Economics	4	Yes	Yes	Yes
ECON 2	Introduction to Economics--Lecture Format	4	Yes	Yes	Yes

Physical Science (Complete one of the following)

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
EPS 50	The Planet Earth	4	Yes	No	Yes
GEOG N1	Global Environmental Change	3	No	No	No
GEOG 40	Introduction to Earth System Science	4	No	No	Yes

Geographic Information Systems (Complete one of the following)

*Note: GEOG C188 cannot be used for both GIS and elective requirement

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM 72	Introduction to Geographic Information Systems	3	No	No	No
GEOG 80	An Introduction to Geospatial Technologies: Mapping, Space and Power	4	No	No	No
GEOG C188*	Geographic Information Science	4	No	No	Yes

ESPM Environmental Science Core Course (Complete one of the following)

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM 2	The Biosphere	3	No	No	Yes
ESPM 6	Environmental Biology	3	No	No	No
ESPM 10	Environmental Issues	4	Yes	No	No
ESPM 15	Introduction to Environmental Sciences	3	No	No	Yes
ESPM C46	Climate Change and the Future of California	4	No	No	No

ESPM Social Science Core Course (Complete one of the following)

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM C11	Americans and the Global Forest	4	No	No	No
ESPM C52	History of Native American Land, Colonialism, and Heritage Preservation	3	No	No	No

ESPM C22AC	Fires: Past, Present, and Future Interactions with the People and Ecosystems of California	4	Yes	No	No
ESPM 50AC	Introduction to Culture and Natural Resource Management	4	Yes	Yes	Yes
ESPM 60	Environmental Policy, Administration, and Law	4	Yes	No	No

Upper Division Core Requirements

15 upper division units must be taken in the Rausser College of Natural Resources (ENVECON, ENERES, ESPM, MBN, PLANTBI).

Upper Division Requirements for ALL EMF majors:

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM 102C	Resource Management	4	Yes	No	No
ESPM 183	Forest Ecosystem Management and Planning	4	Yes	No	No

ONE of the following Ecology courses:

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM 137	Landscape Ecology	3	No	No	Yes
ESPM C153	Ecology	3	Yes	No	No

Forestry Specialization

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM 105 A , B , C , D	8-week Forestry Field Program ("Summer Camp") in the northern Sierra Nevada	11	No	Yes	No
ESPM 102B & 102BL or ESPM C110A	Natural Resource Sampling or Ecological Analysis	4	Yes	No	Yes
ESPM 108A	Trees: Taxonomy, Growth & Structure	3	No	No	Yes
ESPM 134	Fire, Insects, & Disease in Forest Ecosystems	3	No	No	No

ESPM 182	Forest Operations and Management	3	No	No	Yes
ESPM 185	Applied Forest Ecology	4	No	No	Yes
ESPM 102D or ESPM 60	Climate & Energy Policy or Environmental Policy, Administration, & Law	4	Yes	No	No

Electives 6-8 Units. Two courses from the following:

**Note: ESPM 173 and GEOG C188 can only apply to one requirement. They cannot count twice.*

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM C110A	Ecological Analysis	4	No	No	Yes
ESPM 116B	Grassland and Woodland Ecology	4	Yes	No	Yes
ESPM 120	Science of Soils	3	Yes	No	No
ESPM 121	Development & Classification of Soils	3	No	No	No
ESPM C129	Biometeorology	3	No	No	Yes
ESPM C130	Terrestrial Hydrology	4	No	No	No
ESPM 131	Soil Microbiology and Biogeochemistry	3	Yes	No	No
ESPM 157	Data Science in Global Change Ecology	4	No	No	Yes
ESPM 164	GIS & Environmental Science	3	No	No	No
ESPM C172	Remote Sensing of the Environment	4	No	No	No
ESPM 173*	Introduction to Analysis of Ecological Data	3	Yes	No	No
ESPM 174A	Applied Time Series Analysis for Ecology and Environmental Sciences	3	No	No	No
ESPM 181A	Fire Ecology	3	Yes	No	No
ESPM 186	Grassland and Woodland Management and Conservation	4	Yes	No	No
GEOG 180	Field Methods for Physical Geography	5	Yes	No	No
GEOG 185	Earth System Remote Sensing	3	Yes	No	No
GEOG C188*	Geographic Information Systems	4	No	Yes	Yes
GEOG C183	Cartographic Representation	4	No	No	No

Natural Resource Management Specialization

Two Options (Choose A or B)

Choice A: Select ONE field studies experience

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM 105A-D	UC Forestry Camp	11	No	Yes (application required)	No
ESPM C107	Biology & Geomorphology of Tropical Islands – Mo'orea	13	No	No	Yes
BIO/ENVS 188	UCNRS CA Ecology	15	Yes	Yes	Yes

- Three additional electives approved by NRM affiliated Faculty (see list below)

Choice B:

- 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

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM 108A	Trees: Taxonomy, Growth & Structures	3	No	No	Yes
ESPM 108B	Forest Genetics	3	Yes	No	No
ESPM 111	Ecosystem Ecology	4	No	No	No
ESPM 112	Microbial Ecology	3	Yes	No	No
ESPM 113	Insect Ecology	3	No	No	No
ESPM 114	Wildlife Ecology	3	Yes	No	No
ESPM C115A	Freshwater Ecology	3	No	No	No
ESPM 115B	Coral Ecology	3	No	No	No
ESPM 115C	Fish Ecology	3	Yes	No	No
ESPM 116B	Grassland and Woodland Ecology	4	Yes	No	Yes

ESPM 120	Science of Soils	3	Yes	No	No
ESPM 121	Development and Classification of Soils	3	No	No	No
ESPM C129	Biometeorology	3	No	No	Yes
ESPM C130	Terrestrial Hydrology	4	No	No	No
ESPM 131	Soil Microbial Ecology	3	Yes	No	No
ESPM C180	Air Pollution	3	No	No	No
INTEGBI 157LF	Ecosystems of California	4	No	No	Yes

B. Ecosystems Measurement & Assessment

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM 102B & BL	Natural Resource Sampling & Sampling Lab	4	Yes	No	No
ESPM C110A	Ecological Analysis	4	No	No	Yes
ESPM 139A	Genetics of Amphibian Declines CURE	3	No	No	No
ESPM 157	Data Science in Global Change Ecology	4	No	No	Yes
ESPM 164	GIS & Environmental Science	3	No	No	No
ESPM C172	Remote Sensing of the Environment	4	No	No	No
ESPM 173	Introduction to Analysis of Ecological Data	3	Yes	No	No
ESPM 174A	Applied Time Series Analysis for Ecology and Environmental Sciences	3	No	No	No
GEOG 180	Field Methods for Physical Geography	5	Yes	No	No
GEOG C188	Geographic Information System	4	No	No	Yes

C. Ecosystems Value & Policy

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM 101A	The Politics and Practice of Sustainability Transitions	4	No	No	Yes
ESPM 102D	Climate and Energy Policy	4	Yes	No	No
ESPM 155AC	Sociology & Political Ecology of Agro-Food Systems	4	No	No	No
ESPM 161	Environmental Philosophy and Ethics	4	No	Yes	No

ESPM 162	Bioethics & Society	4	No	No	No
ESPM C162A	Health, Medicine, Society and Environment	4	No	No	No
ESPM 163AC	Environmental Justice: Race, Class, Equity & Justice	4	No	Yes	No
ESPM 168	Political Ecology	4	No	No	No
ESPM 169	International Environmental Politics	4	No	Yes	No
ESPM C176	Climate Justice	4	Yes	No	No

D. Ecosystem Management

Course ID	Course Title	Credits	Offered SP. 26	Offered SU. 26	Offered FA. 26
ESPM C103	Principles of Conservation Biology	4	No	No	Yes
ESPM 106	American Wildlife: Management and Policy in the 21st Century	3	Yes	No	No
ESPM 134	Fire, Insects & Disease in Forest Ecosystems	3	No	No	No
ESPM 152	Global Change Biology	3	Yes	Yes	No
ESPM C167	Environmental Health & Development	4	Yes	No	No
ESPM 181A	Fire Ecology	3	Yes	No	No
ESPM 182	Forest Operations Management	3	No	No	Yes
ESPM 185	Applied Forest Ecology	4	No	No	Yes
ESPM 186	Management & Conservation of Grassland & Woodlands	4	Yes	No	No