

# Range Management

The Master of Science in Range Management prepares students with a bachelor's degree in resource management or related disciplines to pursue advanced study of rangelands and range management. Graduate study in range management serves as the basis for a professional career in rangeland livestock production systems; grassland, savanna, wetland and shrubland ecology and management; native plants; rangeland rehabilitation; conservation easements; wildlife habitat; water quality issues; working landscapes; and rangeland economics and policy.

The graduate program in range management is administered by an interdepartmental group of faculty members from the Department of Environmental Science, Policy, and Management (ESPM) and related departments at UC Berkeley.

Excellent laboratory and field facilities are available for student research. These include several experimental range properties as well as large wildland ranges easily accessible from Berkeley. The faculty is actively engaged in both theoretical and practical research.

Doctoral work in Range Management may be pursued as part of the PhD program in ESPM.

## Admission to the University

### Minimum Requirements for Admission

The following minimum requirements apply to all graduate programs and will be verified by the Graduate Division:

1. A bachelor's degree or recognized equivalent from an accredited institution;
2. A grade point average of B or better (3.0);
3. If the applicant comes from a country or political entity (e.g., Quebec) where English is not the official language, adequate proficiency in English to do graduate work, as evidenced by a TOEFL score of at least 90 on the iBT test, 570 on the paper-and-pencil test, or an IELTS Band score of at least 7 on a 9-point scale (note that individual programs may set higher levels for any of these); and
4. Sufficient undergraduate training to do graduate work in the given field.

### Applicants Who Already Hold a Graduate Degree

The Graduate Council views academic degrees not as vocational training certificates, but as evidence of broad training in research methods, independent study, and articulation of learning. Therefore, applicants who already have academic graduate degrees should be able to pursue new subject matter at an advanced level without the need to enroll in a related or similar graduate program.

Programs may consider students for an additional academic master's or professional master's degree only if the additional degree is in a distinctly different field.

Applicants admitted to a doctoral program that requires a master's degree to be earned at Berkeley as a prerequisite (even though the applicant already has a master's degree from another institution in the same or a closely allied field of study) will be permitted to undertake the second master's degree, despite the overlap in field.

The Graduate Division will admit students for a second doctoral degree only if they meet the following guidelines:

1. Applicants with doctoral degrees may be admitted for an additional doctoral degree only if that degree program is in a general area of knowledge distinctly different from the field in which they earned their original degree. For example, a physics PhD could be admitted to a doctoral degree program in music or history; however, a student with a doctoral degree in mathematics would not be permitted to add a PhD in statistics.
2. Applicants who hold the PhD degree may be admitted to a professional doctorate or professional master's degree program if there is no duplication of training involved.

Applicants may apply only to one single degree program or one concurrent degree program per admission cycle.

## Required Documents for Applications

1. **Transcripts:** Applicants may upload *unofficial* transcripts with your application for the departmental initial review. *If the applicant is admitted*, then *official* transcripts of all college-level work will be required. Official transcripts must be in sealed envelopes as issued by the school(s) attended. If you have attended Berkeley, upload your unofficial transcript with your application for the departmental initial review. *If you are admitted*, an official transcript with evidence of degree conferral *will not* be required.
2. **Letters of recommendation:** Applicants may request online letters of recommendation through the online application system. Hard copies of recommendation letters must be sent directly to the program, not the Graduate Division.
3. **Evidence of English language proficiency:** All applicants from countries or political entities in which the official language is not English are required to submit official evidence of English language proficiency. This applies to applicants from Bangladesh, Burma, Nepal, India, Pakistan, Latin America, the Middle East, the People's Republic of China, Taiwan, Japan, Korea, Southeast Asia, most European countries, and Quebec (Canada). However, applicants who, at the time of application, have already completed at least one year of full-time academic course work with grades of B or better at a US university may submit an official transcript from the US university to fulfill this requirement. The following courses will not fulfill this requirement:
  - courses in English as a Second Language,
  - courses conducted in a language other than English,
  - courses that will be completed after the application is submitted, and
  - courses of a non-academic nature.

If applicants have previously been denied admission to Berkeley on the basis of their English language proficiency, they must submit new test scores that meet the current minimum from one of the standardized tests. Official TOEFL score reports must be sent directly from Educational Test Services (ETS). The institution code for Berkeley is 4833. Official IELTS score reports must be mailed directly to our office from the British Council. TOEFL and IELTS score reports are only valid for two years.

## Where to Apply

Visit the Berkeley Graduate Division application page (<http://grad.berkeley.edu/admissions/apply>).

Two types of programs lead to the MS degree in Range Management, Plan I requires course work and a thesis, and Plan II requires course work and an oral examination.

## Unit Requirements

Two types of program plans lead to the M.S. degree in ESPM. Most range students participate in ongoing research during their studies, and generally follow Plan II (non-thesis). However, Plan I (thesis) is also available.

### Plan I: Coursework and Thesis

Consists of 20 semester units of upper division and graduate courses, at least 8 of which must be in graduate-level courses in the major subject. A substantial part of the coursework will be designed to acquire in-depth knowledge relevant to the thesis. Before starting thesis research, the student must have a research plan approved by the guiding professor and the graduate advisor. The thesis may be on any subject selected by the student with the approval of the chair of the graduate advisors and the Graduate Division.

### Plan II: Coursework and Exam

Consists of 24 semester units of upper division and graduate courses, at least 12 of which must be in graduate-level courses in the major subject. This plan requires that students pass a comprehensive oral exam before the degree can be awarded. The examination will emphasize the student's program of graduate study, but the student must also demonstrate an understanding of other principles and issues related to the study of Range Management.

## Curriculum

In addition to the core courses below, the program of study might include courses in resource economics, hydrology, wildlife, plant ecology, fire ecology, remote sensing, GIS, biogeochemistry, policy, soils, etc. Course requirements must be completed with a GPA of at least 3.0. The minimum core courses required for completion of the M.S. in Range Management include courses from each of the following three categories:

The minimum core courses required for completion of the MS in Range Management include:

ESPM 116B	Grassland and Woodland Ecology	4
ESPM 186	Management and Conservation of Rangeland Ecosystems	4
INTEGBI 102LF	Introduction to California Plant Life with Laboratory	4
ESPM 173	Introduction to Ecological Data Analysis	3

Select two of the following:

ESPM 268	Seminar in Range Ecology [2]
ESPM 278	Range Assessment [3]
ESPM 279	Seminar on Pastoralism [3]
ESPM 280	Seminar in Range Ecosystem Planning and Policy [3]

Select one course in Western land use policy, such as:

CY PLAN 252	Land Use Controls [3]
ESPM C205	Quantitative Methods for Ecological and Environmental Modeling [3]
ESPM 280	Seminar in Range Ecosystem Planning and Policy [3]

GEOG 203	Nature and Culture: Social Theory, Social Practice, and the Environment [4]	
Select one course in statistics, such as:		
PB HLTH 142	Introduction to Probability and Statistics in Biology and Public Health	4
PB HLTH 245	Introduction to Multivariate Statistics	4

## Range Management

Each of the core courses below must be completed:

### ESPM 116B Rangeland Ecology- 4 Units

*Terms offered: Fall 2018, Fall 2017, Spring 2010*

An introduction to the ecology of selected grasslands, woodlands, and shrublands in the western U.S. through a biogeographical survey of rangeland ecosystems. Selected plant communities and their response to management, climate, and environmental factors, and the effects of fire, grazing, and direct manipulation on ecological structure and function. Includes an introduction to rangeland plants.

### ESPM 186 Management and Conservation of Rangeland Ecosystems- 4 Units

*Terms offered: Spring 2019, Spring 2018, Spring 2017*

Begins with the evolution and domestication of grazing animals, continues through ranching and rangeland stewardship practices, and explores new institutional arrangements for conservation and restoration. Woodlands, grasslands, and shrublands provide biodiversity, wildlife habitat, watershed, recreation, open space, and forage. Human practices and ecosystem dynamics meet in rangeland management. Methods for changing, predicting, or assessing the results.

### ESPM 173 Introduction to Ecological Data Analysis- 3 Units

*Terms offered: Fall 2018, Fall 2016, Fall 2015*

Introduces concepts and methods for practical analysis of data from ecology and related disciplines. Topics include data summaries, distributions, and probability; comparison of data groups using t-tests and analysis of variance; comparison of multi-factor groups using analysis of variance; evaluation of continuous relationships between variables using regression and correlation; and a glimpse at more advanced topics. In computer laboratories, students put concepts into practice and interpret results.

### INTEGBI 102L Introduction to California Plant Life with Laboratory 4 Units, or equivalent

*Terms offered: Spring 2018, Spring 2015, Spring 2013*

The relationship of the main plant groups and the plant communities of California to climate, soils, vegetation, geological and recent history, and conservation. Laboratory will also include at least two Saturday field trips and focus on main plant groups and major plant families in California, and use of keys to identify introduced and especially native pteridophytes, conifers, and flowering plants of the state.

### 8 units (Plan I) or 12 Units (Plan II) of 200 level courses from the remaining two categories, including:

Your choice of two of the following range graduate courses:

### ESPM 268 Seminar in Range Ecology- 2 Units

*Terms offered: Spring 2019, Spring 2018, Fall 2017*

A seminar course dealing with selected topics in ecology of rangelands.

### ESPM 278 Range Assessment- 3 Units

*Terms offered: Spring 2011, Spring 2008, Spring 2007*

Rangeland vegetation sampling techniques with emphasis on comparing the relative efficiency of different techniques of vegetation measurement. Includes weekly lab exercises on artificial sampling boards and/or in the field. Juniors and seniors are encouraged.

**ESPM 279 Seminar on Pastoralism- 3 Units**

*Terms offered: Spring 2019, Spring 2016, Spring 2015*

A survey of pastoral animal management and production systems, as they influence and are influenced by the rangeland environment. Review of the evolution of animal management practices; contemporary management systems in California, the West, and worldwide; and production systems with both traditional and nontraditional goals. Examination of agroforestry and nomadic and transhumant grazing systems, sheep and cattle production, game ranching, and organic meat production will be included.

**ESPM 280 Seminar in Range Ecosystem Planning and Policy, Bartolome- 3 Units**

*Terms offered: Fall 2018, Fall 2016, Spring 2016*

A seminar course dealing with selected current topics in range ecosystem planning and policy.

**Your choice of one course in western land use policy or applied social science, such as:**

- ESPM 252: Seminar in Forest and Wildland Resource Policy, and Analysis (3)
- CRP C253: Environmental Law and Resource Management (3)
- CRP 252: Land Use Controls (3)
- LAEP 239: Public Land and Resource Planning and Administration (4)
- GEOG 203: Nature and Culture: Social Theory, Social Practice, and the Environment (4)
- ESPM 280: Seminar in Range Ecosystem Planning and Policy, Huntsinger (3)
- ESPM 258: Race, Science, and Natural Resource Policy (3)
- GEOG 250: Seminar in the Sociology of Forest and Wildland Resources (3)