

# ENVIRONMENTAL SCIENCE MS

## More Information

### Advising Requirement

Advising is mandatory for this program. Consult your department advisor or program coordinator for information.

The Master of Science in Environmental Science is designed for students who wish to transition from an undergraduate degree to the workforce in professional science, or for students who desire additional research experience to advance their careers or to prepare for additional postgraduate studies. The program consists of 30 units of advanced lecture coursework and directed individual study leading to the writing of a thesis, followed by its oral defense. Several tracks of study are available including both thesis-based and project-based curricula (through the professional science masters option). The curriculum is composed of several core courses within a discipline followed by courses selected by the student's individual needs or interest. Our faculty conducts active research in applied ecology, environmental chemistry, ecohydrology, and atmospheric science. The department maintains high expectations and standards for professional conduct and productivity which prepare students to meet their specific goals.

**The professional science option.** This is a unique program where students work on a culminating project typically through their employer or an agency/industry partner. All students take management and administration courses in addition to science courses related to their project. Several advising tracks are available including natural resources and sustainable development and technology.

## Requirements for the MS in Environmental Science

Completion of all requirements as established by the graduate advisory committee, and Graduate Studies, to include:

1. Completion of an approved program consisting of 30 units of 400/500/600-level courses as follows:
  - a. A core of 14-15 units in required courses to include EARTH 600, EARTH 601, EARTH 602, and EARTH 660 or MATH 615. Substitutions for required courses must be taken at California State University, Chico and must be approved by the Graduate Coordinator.
  - b. Nine to 15 units of coursework selected from areas such as mathematics, plant science, chemistry, geosciences, geography, political science, engineering, or biological sciences. Selection must be approved by the graduate advisory committee and the Graduate Coordinator. Substitutions for required courses must be taken at Chico State and must be approved by the Graduate Coordinator.
  - c. One to six units of BIOL 699T or EARTH 699T. At least one unit of Master's Thesis (699) is required.
  - d. At least 18 of the units required for the degree in 600-level courses.
  - e. At the discretion of the academic program, a maximum of 30 percent of the units counted toward the degree requirements may be special session credit earned in non-matriculated status combined with all transfer coursework. This applies to special session credit earned through Open University, or in

courses offered for academic credit through Professional & Continuing Education. Correspondence courses and UC Extension coursework are not acceptable for transfer.

- f. Not more than 15 units taken before admission to classified status.
  - g. At least nine units completed after advancement to candidacy.
  - h. Not more than 10 units of Independent Study (697) and Master's Thesis (699T); at least one, but not more than six, units of Master's Thesis (699T).
2. Completion and final approval of a thesis as specified by the student's graduate advisory committee.
  3. Satisfactory completion of a comprehensive final examination (written and/or oral) in the field of study.
  4. Approval by the graduate advisory committee and the Graduate Council on behalf of the faculty of the University.

## Course Requirements for the MS in Environmental Science

Course	Title	Units
ERTH 600	Graduate Seminar I	1
ERTH 601	Graduate Seminar II	1
ERTH 602	Graduate Seminar III	1
ERTH 660	Numerical Analysis	3
or MATH 615	Data Analysis for Graduate Research	
Select five to six units from the following:		5-6
ERTH 630	Geotectonic Development of California	
ERTH 640	Hydrogeochemistry	
ERTH 650	Environmental Monitoring	
ERTH 652	Science and Environmental Regulations	
Select one of the following:		3
ERTH 619	Advanced Topics in Atmospheric Science	
ERTH 621	Advanced Topics in Hydrology	
ERTH 625	Advanced Topics in Environmental Science	
Select one to six units from the following:		1-6
BIOL 699T	Master's Thesis	
ERTH 699T	Master's Thesis	
Select 9-15 units from courses approved by the graduate advisory committee <sup>1</sup>		9-15

<sup>1</sup> Select sufficient units to ensure 30 in the program

## Requirements for the Professional Science Master's Option: 36 units

Completion of all requirements as established by the graduate advisory committee and Graduate Studies to include the following.

Completion of an approved program consisting of 36 units of 400/500/600-level coursework as follows:

1. The following core of 24 units. Substitutions for required courses must be approved by the PSM Graduate Coordinator.
  - a. At least 60 percent of the units required for the degree must be in 600-level courses.
  - b. Twelve units selected from one of the following advising patterns

- c. Not more than a total of 10 units of Independent Study (597/697) and Master's Project (699P); at least two, but no more than six, units of Master's Project (699P).
2. Completion and final approval of a professional internship and project as specified by the student's graduate advisory committee.
3. Approval by the graduate advisory committee and the Graduate Council on behalf of the faculty of the University.

Course	Title	Units
<b>Foundation</b>		
ERTH 600	Graduate Seminar I	1
ERTH 601	Graduate Seminar II	1
ERTH 650	Environmental Monitoring	2
ERTH 654	Environmental Risk Assessment	3
ERTH 656	Environmental Sciences Capstone	3
ERTH 699P	Master's Project <sup>1</sup>	1-6
MGMT 444	Managing Project Teams	3
Select two of the following with advising approval:		6
BSIS 610	Business Analytics	
MGMT 635	Seminar in Management	
MKTG 673	Seminar in Strategic Marketing	
OSCM 607	Operations Planning and Execution	
POLS 660A	Public Management	
POLS 660B	Public Personnel Administration	
POLS 660C	Public Budgeting and Finance	
POLS 669	Public and Non-Profit Program Evaluation	
Select one of the following:		3
ERTH 660	Numerical Analysis	
MATH 615	Data Analysis for Graduate Research	
<b>Advising Patterns</b>		
Select 12 units from one of the following advising patterns:		12
<i>Environmental Biotechnology Advising Pattern:</i>		
BIOL 609	Advanced Cellular/Molecular Biology	
BIOL 610	Topics in Cell/Molecular Biology	
BIOL 611	Advanced Physiology/Cell Biology	
BIOL 612	Topics in Physiological/Developmental Biology	
ERTH 625	Advanced Topics in Environmental Science	
<i>Natural Resource Management Advising Pattern:</i>		
BIOL 613	Population Ecology	
BIOL 668	Community and Ecosystem Ecology	
ERTH 536	Applied Ecology	
ERTH 537	Ecohydrology	
ERTH 616	Natural Water Systems	
ERTH 625	Advanced Topics in Environmental Science	
GEOG 445	Pyrogeography	
<i>Sustainable Development and Technology Advising Pattern:</i>		
BIOL 610	Topics in Cell/Molecular Biology	
CIVL 431	Water and Wastewater Engineering	
CIVL 571	Natural Systems for Wastewater Treatment	
CIVL 575	Solid and Hazardous Waste Management	
ERTH 625	Advanced Topics in Environmental Science	
ERTH 640	Hydrogeochemistry	
ERTH 670	Environmental and Engineering Geology	

MECA 482	Control System Design
MECA 486	Motion and Machine Automation
MECH 432	Energy Systems
<b>Total Units</b>	<b>36</b>

<sup>1</sup> ERTH 699P must be taken for at least two units.

## Graduate Grading Requirements

All courses in the major (with the exceptions of Independent Study - 697, Comprehensive Examination - 696, Master's Project - 699P, and Master's Thesis - 699T) must be taken for a letter grade, except those courses specified by the department as ABC/No Credit (400/500-level courses), AB/No Credit (600-level courses), or Credit/No Credit grading only. A maximum of 10 units combined of ABC/No Credit, AB/No Credit, and Credit/No Credit grades may be used on the approved program (including 697, 696, 699P, 699T and courses outside the major). While grading standards are determined by individual programs and instructors, it is also the policy of the University that unsatisfactory grades may be given when work fails to reflect achievement of the high standards, including high writing standards, expected of students pursuing graduate study.

Students must maintain a minimum 3.0 grade point average in each of the following three categories: all coursework taken at any accredited institution subsequent to admission to the master's program; all coursework taken at Chico State subsequent to admission to the program; and all courses on the approved master's degree program.

Continuous enrollment is required. At the discretion of the academic program, a maximum of 30 percent of the units counted toward the degree requirements may be special session credit earned in non-matriculated status combined with all transfer coursework. This applies to special session credit earned through Open University, or in courses offered for academic credit through Professional & Continuing Education.

## Graduate Time Limit

All requirements for the degree are to be completed within five years of the end of the semester of enrollment in the oldest course applied toward the degree. See Master's Degree Requirements (<https://catalog.csuchico.edu/graduate-requirements/masters-degree-requirements/>) for complete details on general degree requirements.

The MS degree and PSM option in environmental science are available for advanced study in biological, chemical, geoscience, physical, or engineering aspects of environmental science. Prospective students should discuss their interests and goals with the appropriate program Graduate Coordinator.

## Graduate Requirement in Writing Proficiency

All students must demonstrate competency in writing skills as a requirement for graduation. Environmental Science students will normally demonstrate their writing proficiency through successful completion of ERTH 600, ERTH 601, and ERTH 602, or an approved substitute.

## Prerequisites for Admission to Conditionally Classified Status

1. Satisfactory grade point average as specified in Graduate and Postbaccalaureate Admission Requirements (<https://>

[catalog.csuchico.edu/graduate-requirements/graduate-postbaccalaureate-admission-requirements/](http://catalog.csuchico.edu/graduate-requirements/graduate-postbaccalaureate-admission-requirements/)).

2. Approval by the department and Graduate Studies.
3. An acceptable baccalaureate in one of the natural sciences, engineering, mathematics, or allied field from a regionally accredited institution, or an equivalent approved by Graduate Studies.  
The prospective student must have sufficient background to undertake a graduate program in Environmental Science: one year of mathematics (either one semester of statistics and one semester of calculus or one year of calculus), two semesters of college physics, two semesters of chemistry, and a semester of ecology. Applicants without a sufficient background may be conditionally admitted, pending the correction of deficiencies as specified by the department.
4. A one-page "Statement of Purpose" that addresses the following questions:
  - a. The area of study in which you wish to specialize and why.
  - b. The faculty members with whom you would like to conduct research.
  - c. Your career goals and plans for the future.
  - d. Your special preparation in and fitness for your proposed area of study.
  - e. Explanations of any problems or inconsistencies in your records or scores.
5. Submission of two letters of recommendation from individuals who have had a working or academic relationship with you. Letters should address your person characteristics, performance, experience, strengths, weaknesses, capabilities, and professional promise.
6. Applicants for the PSM option will be interviewed before selection. Admittance in the program requires a pre-defined project that is approved by the PSM coordinator. Students from varied academic backgrounds are encouraged to apply. It is strongly recommended that applicants have at least one year of professional experience in some discipline of science. Dedicated non-scientists will be required to complete adequate remedial coursework, as specified by the department, before admittance into the program.
7. Acceptance by a faculty mentor in the program who will serve as the thesis or project advisor.

## Advancement to Classified Status

In addition to any requirements listed above:

1. Formation of a graduate committee, consisting of at least two members and including at least one tenured or tenure-track member of the Department of Earth and Environmental Sciences.
2. Submission of an approved Master's Degree program plan, developed in consultation with the graduate advisory committee.
3. Correction of all deficiencies in background as specified by the department at the time of admission.

## Advancement to Candidacy

In addition to any requirements listed above:

1. Completion of at least nine units of the approved Master's Degree program plan at the University and completion of any specific coursework as specified by the graduate advisory committee.
2. Submission of a thesis proposal or project/internship proposal approved by the graduate advisory committee.