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 ERTH 600, ERTH 601, ERTH 602, and ERTH 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 ERTH 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 admission 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

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

1 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.

### Advising Patterns

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERTH 600</td>
<td>Graduate Seminar I</td>
<td>1</td>
</tr>
<tr>
<td>ERTH 601</td>
<td>Graduate Seminar II</td>
<td>1</td>
</tr>
<tr>
<td>ERTH 650</td>
<td>Environmental Monitoring</td>
<td>2</td>
</tr>
<tr>
<td>ERTH 654</td>
<td>Environmental Risk Assessment</td>
<td>3</td>
</tr>
<tr>
<td>ERTH 656</td>
<td>Environmental Sciences Capstone</td>
<td>3</td>
</tr>
<tr>
<td>ERTH 699P</td>
<td>Master’s Project</td>
<td>1-6</td>
</tr>
<tr>
<td>MGMT 444</td>
<td>Managing Project Teams</td>
<td>3</td>
</tr>
</tbody>
</table>

Select two of the following with advising approval:

- 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:

- ERTH 660 Numerical Analysis
- MATH 615 Data Analysis for Graduate Research

### Advising Patterns

Select 12 units from one of the following advising patterns:

#### Environmental Biotechnology Advising Pattern:
- 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

#### Natural Resource Management Advising Pattern:
- 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

#### Sustainable Development and Technology Advising Pattern:
- 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

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>MECA 482</td>
<td>Control System Design</td>
</tr>
<tr>
<td>MECA 486</td>
<td>Motion and Machine Automation</td>
</tr>
<tr>
<td>MECH 432</td>
<td>Energy Systems</td>
</tr>
</tbody>
</table>

**Total Units:** 36

1. 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://
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.