

Student ID: _____
Student Name: _____
Adviser Name: _____

Catalog: Semester Catalog 2016-2017
Program: Environmental Science, M.S.
Minimum Credits Required: _____

Environmental Science, M.S.

The Master of Science Degree in Environmental Science prepares students for environmental science research, doctoral study, community college teaching, and technical positions in universities, industry, or governmental agencies. The degree offers four options: Environmental Biology, Environmental Engineering Science, Environmental Hydrology, and Geospatial Sciences. The Environmental Biology Option emphasizes basic research into such areas as conservation, pollution, and global change. Environmental Engineering Science Option treats similar issues (i.e., air, soil, and water pollution and sustainability) from the perspective of engineering solutions. The Environmental Hydrology Option emphasizes fundamental problems of the hydrologic cycle, including water pollution issues, wetlands and watershed hydrology, and hydrologic modeling. The Geospatial Sciences option emphasizes both theoretical and analytical skills in Geographic Information Systems (GIS) and remote sensing data processing.

The Degree Offers Two Training Experiences

The Professional Experience is designed for students who want to conclude graduate studies with a master's degree and immediately seek employment in government agencies or industry.

The Research Experience is designed for students who want to continue on to a doctoral program for further preparation for work in academia, agencies or industry.

Admission to the Program

Applicants must possess a BA or BS degree from an accredited institution in biology, chemistry, civil engineering, environmental engineering, environmental science, geography, geology, or a related field. Applicants with a minimum GPA of 2.75 in the last 60 semester (90 quarter) units who are admitted by the Environmental Science Program are admitted to the degree program in Conditionally Classified standing. Promising applicants with GPAs in the last 60 semester (90 quarter) units between 2.5 and 2.74 may be admitted as Special Action students. Special Action students must achieve an overall grade point average of a B (3.0) for four qualifying courses (approved in advance by the student's graduate advisor). The qualifying courses should be completed by the end of the second quarter of graduate study. Students who do not have a BS degree or a BS degree in the option chosen may be required to take a set of pre-requisite courses (e.g. chemistry, physics, calculus, biology etc.) with an average GPA of 3.0 or above.

Application Procedures

In addition to submitting a University Admissions Application through CSU Mentor (<http://csumentor.org>), applicants must also apply separately to the Department. Application forms are available on the Department of Geosciences and Environment website (<http://www.calstatela.edu/academic/geos/graduates.php>). Completed application, personal statement, three recommendation letters, TOEFL or Equivalent (if needed—for International Students only), and unofficial transcripts must be submitted to the Department of Geosciences and Environment.

Applicants interested in doing the Research Experience must have contacted two potential faculty research mentors before submitting his/her application. This is a key first step in the application process. Please note that acceptance into the program for the research experience is contingent on confirmation of acceptance into a research laboratory.

All materials must be received by the Department of Geosciences and Environment on or before the deadline stipulated on the Graduate Studies Office website (<http://www.calstatela.edu/graduateadmissions>). Official transcripts must also be sent to the Graduate Studies Office, ADM 702, before the set deadline.

Requirements for the Degree (30 units)

A minimum of 30 units are required for the degree with at least 50% from 5000-level courses. A grade point average of 3.0 (grade of B) or better is required in all courses taken to satisfy the requirements for the degree. For Professional Experience students, at least two courses must be selected from the three foundation areas listed below. Courses used to satisfy the foundation requirement cannot be used to satisfy the option requirement (see below). A student may substitute equivalent courses as foundation courses upon approval from the Primary Advisor, the student's graduate committee, and the Program Director.

Foundation Areas: (6 units)

1. Spatial Information and Computer Actuated Databases:

Course Name	Credits:	Term Taken	Grade	Gen Ed
a. GEOG 4690 - Spatial Analysis and GIS Modeling	(3)			

2. Statistical Analyses and Experimental Design:

Course Name	Credits:	Term Taken	Grade	Gen Ed
a. BIOL 4080 - Experimental Design and Advanced Biostatistics	(3)			

b. MATH 4740 - Theory of Probability	(3)			
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3. Public Policy and Environmental Management:

Course Name	Credits:	Term Taken	Grade	Gen Ed
a. POLS 5850 - Seminar: Regulation, the Environment and California Public Policy	(3)			
b. SOC 4870 - Environmental Policy, Law, and Society	(3)			

Students must then choose one of four options:

- Environmental Biology
- Environmental Engineering Science
- Environmental Hydrology
- Geospatial Sciences

Option 1: Environmental Biology (15 units)

Provides preparation for a career within academics or agencies in specific research areas such as conservation, pollution, and global change. Professional Experience and Research Experience students must take a minimum of 16 units. Select courses from the list below. Other courses may be substituted with prior advisor approval.:

Required Course

Course Name	Credits:	Term Taken	Grade	Gen Ed
BIOL 5200 - Seminar: Professional Writing in the Life Sciences	(2)			

Elective Courses:

Course Name	Credits:	Term Taken	Grade	Gen Ed
BIOL 4150 - Population Genetics	(3)			
BIOL 4180 - Advanced Evolutionary Biology	(3)			
BIOL 4200 - Global Change	(3)			
BIOL 4320 - Fundamentals of Toxicology	(3)			
BIOL 4400 - Plant Systematics	(3)			
BIOL 4510 - Ornithology	(3)			
BIOL 4550 - Mammalogy	(3)			
BIOL 4570 - Marine Invertebrate Zoology	(4)			
BIOL 4620 - Plant Ecology	(3)			
BIOL 4700 - Conservation Biology	(3)			
BIOL 4720 - Marine Ecology	(3)			
BIOL 5400 - Seminar: Data Analysis for the Biological Sciences (3)	(3)			
BIOL 5420 - Seminar: Organismal Biology	(3)			
BIOL 5430 - Seminar: Ecology - Environmental Biology	(3)			
BIOL 5450 - Seminar: Genetics Evolution	(3)			

Option 2: Environmental Engineering Science (15 units)

Provides preparation for a career in engineering research or applications. Professional Experience and Research Experience students must take a minimum of 15 units, 8 of which must be in Civil Engineering. Select courses from the list below:

Required Course:

Course Name	Credits:	Term Taken	Grade	Gen Ed
CE 4790 - Groundwater Contamination and Remediation	(3)			

Elective Courses:

Course Name	Credits:	Term Taken	Grade	Gen Ed
CE 4840 - Environmental Engineering Design	(3)			
CE 5790 - Environmental Mass Transfer	(3)			
CE 5850 - Environmental Transport	(3)			
CHEM 4400 - Fundamentals of Physical Chemistry	(3)			
GEOG 5600 - Seminar: Methods and Techniques in Geography	(3)			
GEOL 4850 - Groundwater Management and Models	(3)			

GEOL 5610 - Vadose Zone Hydrogeology	(3)			
GEOL 5620 - Contaminant Hydrogeology	(3)			
GEOL 5630 - Water Quality Seminar	(3)			
BIOL 5200 - Seminar: Professional Writing in the Life Sciences	(2)			

Option 3: Environmental Hydrology (15 units)

Provides preparation for a career in hydrology and water quality. Students must take a minimum of 15 units. Select courses from the list below. Other courses may be substituted with prior advisor approval.

Required Courses:

Course Name	Credits:	Term Taken	Grade	Gen Ed
GEOL 4840 - Hydrogeology	(3)			

Select additional hydrology courses from the list below:

Course Name	Credits:	Term Taken	Grade	Gen Ed
GEOL 4870 - Watershed Analysis	(3)			
GEOL 4220 - Environmental Geochemistry	(3)			
GEOL 4222 - Forensic and Isotope Geochemistry	(3)			
GEOL 5200 - Environmental Isotope Geochemistry	(3)			
GEOL 5610 - Vadose Zone Hydrogeology	(3)			
GEOL 5620 - Contaminant Hydrogeology	(3)			
GEOL 5630 - Water Quality Seminar	(3)			
CE 4790 - Groundwater Contamination and Remediation	(3)			
CE 5790 - Environmental Mass Transfer	(3)			
CE 5820 - Statistical Hydrology	(3)			
CE 5850 - Environmental Transport	(3)			
GEOL 4850 - Groundwater Management and Models	(3)			
BIOL 5200 - Seminar: Professional Writing in the Life Sciences	(2)			

Option 4: Geospatial Sciences (15 units)

Provides preparation for doctoral study or professional career in Geographic Information Systems (GIS), which may be applicable to very diversified fields including urban planning, environmental consulting, remote sensing, cartography, applied research, geospatial applications, etc.

Select courses from the list below with prior advisor approval.

Course Name	Credits:	Term Taken	Grade	Gen Ed
GEOG 4660 - Remote Sensing	(3)			
GEOG 4680 - Digital Cartography	(3)			
GEOG 4820 - Multivariate Statistics in Geography	(3)			
GEOG 4630 - Geographic Information Systems (GIS) Applications in Urban Planning	(3)			
GEOG 4640 - Geographic Information Systems (GIS) Applications in Political Science	(3)			
GEOG 4650 - Geographic Information Systems (GIS) Applications in Environmental Studies	(3)			
GEOG 5600 - Seminar: Methods and Techniques in Geography	(3)			
GEOG 5100 - Seminar: Physical Geography	(3)			
CS 5220 - Advanced Topics in Web Programming	(3)			
BIOL 5200 - Seminar: Professional Writing in the Life Sciences	(2)			

Culminating Experiences: Thesis, Reports, Presentations, Exams (9 units)

Professional Experience students must complete the two courses listed below (9 units). For ENVS 5950, the student must complete a part- or full-time internship experience of at least one and a maximum of three semesters. Professional Experience students also are expected to present a seminar following completion of their internship.

Course Name	Credits:	Term Taken	Grade	Gen Ed
ENVS 5950 - Directed Field Work (4)	(1-5)			

Research Experience Students

Research Experience students must complete the one course listed below (4 units). As part of their culminating experience, students are expected to present a seminar upon the conclusion of their research.

Course Name	Credits:	Term Taken	Grade	Gen Ed
ENVS 5970 - Graduate Research (4)	(1-4)			

Both Research and Professional Experience students have to complete the following course:

Research Experience students will enroll in five (5) units of ENVS 5990 during which time they must prepare a Master's Thesis for submission to their Advisory Committee for approval. They must also pass an oral exam given by their Advisory Committee based upon their Master's thesis research.

Professional Experience students will enroll in five (5) units of ENVS 5990: Thesis or Project. Based on their internship experience, Professional students will be required to submit a written report. This report will be approved by their Advisory Committee, which consists of their primary advisor, graduate committee members, and internship advisor(s). They must also pass an oral exam given by their Advisory Committee. The content of the exam will be based on the student's course of study and topics relevant to the internship experience. Professional Experience students will complete nine (9) units as part of their culminating experience.

Course Name	Credits:	Term Taken	Grade	Gen Ed
ENVS 5990 - Thesis or Project (5)	(1-5)			

Notes: