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# Idaho State University

## Environmental Science and Management Interdisciplinary Master's Degree Program

*Providing comprehensive, multidisciplinary education to ensure qualified professionals in the field of environmental science and management*



**Program Bulletin  
2021-2022**



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*This document provides guidelines and information on the Environmental Science and Management (ENSM) Interdisciplinary Master's Degree Program at Idaho State University. These guidelines are more specific than, but not replace, the guidelines found in the ISU Graduate Catalog.*

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**Message from the Director**

Greetings from the Environmental Science and Management (ENSM) program at Idaho State University (ISU).

As you know, environmental issues require a multi-disciplinary perspective, as they are highly intricate. These issues take cooperative efforts of scientists, engineers, political scientists and economists to develop innovative ideas and solutions to the problems. In ISU's ENSM interdisciplinary MS program, students, together with their advisory committee, will choose appropriate courses available in each participating academic unit which will complement departmental courses in their chosen areas and strengthen their degree program.

The ENSM program is one of the Western Regional Graduate Programs (WRGP) created by the Western Interstate Commission for Higher Education (WICHE). That means the students from the WICHE region pay only Idaho resident tuition. To be considered for the WRGP resident tuition rate, apply directly to the Department of the Civil and Environmental Engineering at ISU, and identify yourself as WICHE WRGP applicant. Residents of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, N. Dakota, S. Dakota, Oregon, Utah, Washington, Wyoming, and the Commonwealth of the Northern Mariana Islands are eligible for consideration.

Idaho State University (ISU) is located in southeastern Idaho, at the intersection of Interstates 15 and 86, Pocatello (home of ISU). An easy access to the natural wonder of Yellowstone and Grand Teton National Parks gives ISU leverage in attracting excellent faculty members, staffs, and students to advance scholarly and creative endeavors through the creation of new knowledge and cutting-edge research. As you will discover in this Bulletin, ISU's ENSM program offers many environmental disciplines and exciting experiences.

Thank you for your interest in the ENSM program and support.

*Chikashi Sato*

Chikashi Sato

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## Table of Contents:

ISU Environmental Science & Management (ENSM) Council .....	4
Roles and Responsibilities of the Council .....	4
Membership Policy.....	4
Council Membership .....	4
General Program Information.....	5
Educational Resources .....	5
Financial Aids.....	6
Samuel Horne Bennion Environmental Science Scholarship.....	6
Admission Requirements.....	7
ISU Graduate Level Courses .....	7
ENSM Master’s Degree Program.....	7
Application Procedures .....	8
Unclassified: Non-degree seeking students.....	8
Classified: ENSM Master’s Degree Program.....	8
Graduate Credit Requirements .....	9
Transfer of Credits.....	9
Specific ENSM Program Information .....	10
Participating Academic Areas and Program Representatives .....	10
Curriculum Information.....	10
Advisory Committee .....	10
Program of Study.....	11
Thesis and Non-thesis options.....	11
Internship Opportunities .....	12
Academic Requirements.....	12
Sponsoring Agency / Company Requirements.....	12
Guidelines for Final Examinations.....	13
Thesis Option .....	13
Non-thesis Option.....	13
Program Coursework.....	14
Program Bridge Courses.....	14
Program Required Courses.....	14
Special Academic Area Requirements .....	15
Biological Sciences .....	15
Business.....	16
Chemistry .....	17
Civil & Environmental Engineering.....	18
Geosciences .....	19
Mathematics and Statistics .....	20
APPENDICES .....	21
Letter from the Director.....	A-1
Environmental Science and Management Flyer.....	A-2
“Program of Study for Master of Science” Form .....	A-3
“Master of Science (MS) Thesis/Special Project Plan” Form.....	A-4
Samuel Horne Bennion Environmental Science Scholarship Flyer .....	A-5
Bennion Environmental Science Scholarship Application Form .....	A-6

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# ISU Environmental Science & Management (ENSM) Council

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## Roles and Responsibilities of the Council

1. Set policy and oversee program
2. Set admission standards and performance standards
3. Serve as advisors to the students admitted to the program
4. Serve as a member of the Samuel Horne Bennion Environmental Science Scholarship Committee
5. Participate in the development of recruitment materials

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## Membership Policy

Membership consists of one representative from each of the following academic areas and the Program Director or his representative. Each academic area will identify its member through its own procedures. Members serve annually but may be re-appointed by the academic areas (or in the case of the at-large members, by the Program Director) on an ongoing basis.

1. Department of Biological Sciences
2. Department of Chemistry
3. Department of Civil and Environmental Engineering
4. Department of Geosciences
5. Department of Mathematics and Statistics
6. Department of Political Science
7. College of Business.

Members-at-large (appointed by the Program Director)

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## Council Membership

<u>Members</u>	<u>E-mail</u>	<u>Phone</u>
Chikashi Sato (Civil & Environmental Engineering)	satochik@isu.edu	282-4389
TBD (Biological Sciences)	---	---
Jeffrey Rosentreter (Chemistry)	rosejeff@isu.edu	282-4281
Benjamin Crosby (Geosciences)	<a href="mailto:bencrosby@isu.edu">bencrosby@isu.edu</a>	282-3565
Leonid Hanin (Mathematics and Statistics)	hanin@isu.edu	282-3293
Dawn Konicek (Business)	konidawn@isu.edu	282-4145
Donna Lybecker (Political Science)	lybedonn@isu.edu	282-3331
<u>At-large Members</u>		
John Dudgeon (Anthropology)	dudgeon@isu.edu	282-3862
James W. Stoutenborough (Political Science)	stoujame@isu.edu	282-2643
Bruce Savage (Civil & Environ. Eng.)	savabruc@isu.edu	282-3131

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## General Program Information

### *Mission Statement:*

*Our mission is to provide comprehensive, multidisciplinary education to ensure qualified professionals in the field of environmental science and management.*

The Environmental Science & Management (ENSM) Master's Degree Program provides students with numerous options combining relevant areas of expertise. Students concentrate study in at least two academic areas within the fields of environmental science, engineering, and management.

The program offers a wide range of choices with respect to classroom instruction, thesis research opportunities and faculty guidance. This program is intended for students who hold undergraduate degrees that include a strong foundation in the basic sciences.

The ISU campus is located in Pocatello, the "Gateway City" of Idaho. Classes are also taught in the Center for Higher Education in Idaho Falls, just 50 miles north of Pocatello. This beautiful area of southeastern Idaho enjoys a pleasant, dry climate, plenty of sun, and is just a few hours from Salt Lake City, Yellowstone and Grand Teton National Parks, and many of the best ski areas in the United States.

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## Educational Resources

Resources include many instructional and research facilities both in Pocatello and in Idaho Falls. The Center for Higher Education in Idaho Falls includes state of the art laboratories, computers, and classroom telecommunications facilities. Close interaction exists between the program faculty and scientists associated with the Idaho National Laboratory (INL). These associations provide exceptional research opportunities for qualified students.

The Eli M. Oboler Library on the ISU campus and the INL Technical Library in Idaho Falls provide outstanding reference materials including monographs, journals, government documents, and

extremely efficient indexing systems. There are also outstanding computer facilities available for student use at the Computer Service Center on the ISU campus and at the Center for Higher Education in Idaho Falls.

Information concerning financial aid, housing, and other ISU services may be obtained from the Graduate School catalog or by contacting the appropriate offices on campus:

ISU Financial Aid Office	282-2756
ISU Housing Office	282-2120
ISU Scholarship Office	282-3315



## Financial Aids

**WRGP:** ISU's ENSM program is one of the Western Regional Graduate Programs (WRGP) created by the Western Interstate Commission for Higher Education (WICHE). The students from the WICHE region pay only Idaho resident tuition.

To be considered for the WRGP resident tuition rate, apply directly to the Department of the Civil and Environmental Engineering at ISU, and identify yourself as WICHE WRGP applicant.

Residents of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, N. Dakota, S. Dakota, Oregon, Utah, Washington, Wyoming, and the Commonwealth of the Northern Mariana Islands are eligible for consideration.

### Non-resident Tuition Waiver:

Idaho State University awards Non-Resident Tuition Waivers (NRTW) to students whose residency is outside the state of Idaho. The NRTW recipients will only be required to pay Idaho Resident fees. These awards are primarily made on the basis of academic merit. Non-resident tuition waivers for graduate students are awarded through the Graduate School. Please see the link below.

[http://www.isu.edu/graduate/finsupp.shtml#non\\_resident\\_tuition\\_waivers](http://www.isu.edu/graduate/finsupp.shtml#non_resident_tuition_waivers)

For more information, please contact the Graduate School: <http://www.isu.edu/graduate/>.

## *Samuel Horne Bennion Environmental Science Scholarship*

This scholarship, honoring Samuel Horne Bennion, provides approximately \$3,500 (towards tuition and fees) for a graduate student in the Environmental Science and Management program at Idaho State University.

The Bennion scholarship committee will judge scholarship applications based on the requirements and criteria set by the committee (see the announcement flyer and application form in Appendix).

### Applications Deadline:

Application materials must reach the Department of Civil & Environmental Engineering at Idaho State University by April 15 of each year (subject to change).

### Mailing Address (email):

Dr. Chikashi Sato, Chair, Samuel Horne Bennion Scholarship Committee  
satochik@isu.edu

## Past Recipients of S.H. Bennion Environmental Science Scholarship

### Shimi P. Didla (2008-2009)

Emphasis: Environmental Engineering/Business

### Pritee Pradihan (2009-2010)

Emphasis: Biol. Sciences/ Environmental Engineering

### K.C. Bipul (2010-2011)

Emphasis: Environmental Engineering/Mathematics

### Sita Karki (2010-2011)

Emphasis: Environmental Engineering/Business

### John 'Pat' Calhoun (2011-2012)

Emphasis: Geosciences/Biological Sciences

### Tianyu Han (2012-2015)

Emphasis: Environmental Engineering/Chemistry

### Noris Evelin Paucar (2015-2016)

Emphasis: Environmental Engineering/Chemistry

### Rajendra Shrestha (2015-2016)

Emphasis: Biol. Sciences/Environmental Engineering

### Jeffrey Kuhmeier (2015-2016)

Emphasis: Chemistry /Environmental Engineering

### Jeffrey Kuhmeier (2016-2017)

Emphasis: Chemistry /Environmental Engineering

### Mohammed Alqurashi (2017-2018)

Emphasis: Chemistry /Environmental Engineering

### Eric Cohen (2018-2019)

Emphasis: Political Science/Geosciences

### Preston Hymas (2019-2020)

Emphasis: Chemistry/Environmental Engineering

### Subigya Shah (2020-2021)

Emphasis: Geosciences/Environmental Engineering

### Amme Redington (2021-2022)

Emphasis: Political Science/Biological Science



## Admission Requirements

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### ISU Graduate School

Idaho State University invites applications for admission to Graduate School from students holding baccalaureate degrees from any regionally accredited colleges or universities in the United States, or with equivalent preparation acquired in another country. Prospective students may apply as degree-seeking or nondegree-seeking. Non-degree-seeking students include those seeking certification, professional growth, or strengthened backgrounds for various professional and industrial occupations.

For more information, please see the Graduate Catalog which is available at the link below and refer the admission section.

<http://coursecat.isu.edu/graduate/>

Also visit the Graduate School's homepage at

<https://www.isu.edu/graduate/>

### ENSM Master's Degree Program

Students must obtain classified status admission from the Graduate School. Please see the Graduate Catalog which is available at the link below and refer the admission section.

<http://www.isu.edu/academic-info/crntgrad/graduate-catalog.pdf>

Students entering this program must have successfully completed (grades of C- or better) a minimum of 30 (semester) credit hours in some combination of engineering, physics, chemistry, geosciences, biological sciences, pharmaceutical sciences and mathematics. Specifically, students must have successfully completed ISU MATH 1160 (Brief Calculus) and ISU CHEM 1111/1112 (General Chemistry) including laboratory, or their equivalents. Students may be accepted conditionally based on their willingness to complete one or two missing courses as deficiencies, if all other admissions

requirements are satisfied. Conditional acceptance is the prerogative of individual departments/colleges.

Because of the interdisciplinary nature of the ENSM Program, students must obtain admission from two participating academic areas (departments or colleges). Admission requirements vary between academic areas, and there may be specific requirements beyond those of the Graduate School, which the student must fulfill to gain admission into a particular academic area.

For more information, please see the Graduate Catalog which is available at the link below and refer the section, "Master of Science in Environmental Science and Management."

<http://coursecat.isu.edu/graduate/>



# Application Procedures

## Unclassified: Non-degree seeking students

1. Fill out application form and pay fee
2. Supply evidence of holding a baccalaureate degree

## Classified: ENSM Master's Degree Program

1. Submit the completed Graduate School admission form (available from Graduate School Office or online at [www.isu.edu](http://www.isu.edu)), the required application fee, and official transcripts. Check the Interdisciplinary Studies, ENSM listing and check the two chosen academic areas, specifying which is to be the primary area.

2. Submit official GRE scores to the ISU Graduate School. If you have not taken the GRE, you may be admitted with performance requirement if your previous academic record is strong (undergraduate GPA 3.0 or better for all upper division course work). A student admitted on a conditional basis without GRE scores must take the GRE and submit scores no later than the end of the first semester of enrollment in ISU courses. ISU will use photocopies of GRE scores on a temporary basis until the receipt of official scores.

3. Submit one (1) official transcript of all previous work completed at other institutions. The ISU Graduate School must receive these documents before the admission process can be completed. Unofficial transcripts may be submitted on a temporary basis, but an official transcript is required for final admission.



4. International students must submit TOEFL scores. This requirement may be waived if "English as a Second Language" courses have been successfully completed or other evidence of English proficiency can be demonstrated.

5. The Graduate School will prepare the Interdisciplinary Studies "Approval for Admission to Graduate School" form, and send to the School of Engineering (Department of Civil & Environmental Engineering).

6. The Department of Civil & Environmental Engineering (the Director of the ENSM program) will identify the academic areas chosen by the student and prepare the "Approval for Admission to Graduate School" form for the secondary discipline (department or college). If possible, the primary emphasis area will supply the major advisor. However, the permanent major advisor may not be identified until the student has determined his/her project/thesis topic.

7. The "Approval for Admission" form with transcript copies will be advanced to the appropriate secondary department via School of Engineering (the ENSM Program Director for approval. Subsequent to the departmental approval, final approval for admission will be given by the Dean of Graduate Studies, unless the student's records do not meet the Graduate School admission criteria.

8. A separate file will be established for each Environmental Science and Management student in addition to the regular Graduate School file. The separate ENSM file will be housed in the program office (School of Engineering) for easy access by the ENSM Council (hereafter called the Council).

For more information, please see the link below and refer the Application Process:

<http://www.isu.edu/graduate/admissions.shtml#3>



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## Graduate Credit Requirements



A credit hour in graduate courses requires: (1) Fifty minutes of classroom instruction per week for 16 weeks or the equivalent or (2) two and one-half hours of laboratory work per week for 16 weeks or the

equivalent. Graduate students may not take more than 16 credits during any one semester without special permission of the Dean of Graduate School.

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## Transfer of Credits

Appropriate credits earned at the University of Idaho will be accepted as resident credit. Up to 9 credits earned at a university other than the University of Idaho may be transferred for the degree, if approved as part of the student's program of study. Up to 9 credits earned in one advanced degree program at ISU may be applied to one additional advanced degree.

To exceed the 9 credit limitation, the student must obtain approval of both academic areas, which will award the degree, and then petition the Graduate Council for final approval.



# Specific ENSM Program Information

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## Participating Academic Areas and Program Representatives

Engineering	Dr. Chikashi Sato	Stop 8060	(208) 282-4389
Biological Sciences	TBD	Stop 8007	---
Business	Dr. Dawn Konicek	Stop 8020	(208) 282-4145
Chemistry	Dr. Jeffrey Rosentreter	Stop 8023	(208) 282-4281
Geosciences	Benjamin Crosby	Stop 8072	(208) 282-3565
Mathematics & Statistics	Dr. Leonid Hanin	Stop 8085	(208) 282-3293
Political Science	Dr. Donna Lybecker	Stop 8073	(208) 282-3331

### At-large representative.

Anthropology	Dr. John Dudgeon	Stop 8005	(208) 282-3862
Political Science	Dr. James W. Stoutenborough	Stop 8073	(208) 282-2643
Engineering	Dr. Bruce Savage	Stop 8060	(208) 282-3131

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## Curriculum Information

Students combine courses in Environmental Science and Management with related courses in at least two relevant academic areas. At least 30 credits are required for the degree, of which at least 15 must be at the 600 level. At least 10 credits must be completed within each of the two academic areas, with the remainder of the course work representing the required and elective ENSM course work. There is a list of required courses, which every student receiving the master's degree must complete; additional courses are

chosen from an extensive list of program electives and related departmental offerings. Students with certain background deficiencies may be required to take one or more "bridge" courses, which do not count toward the degree credit requirement. Students who foresee professional opportunities overseas may wish to consider completing courses in an appropriate foreign language.

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## Advisory Committee

Students choose, and obtain admission from, two major academic areas from the above list. An advisory committee works closely with the student throughout the degree program. Within the framework of the basic degree requirements, the advisory committee will work with the student to create an individualized program of study. The advisory committee consists of

two ISU faculty advisors, one from each of the two chosen academic areas, and a Graduate Faculty Representative (GFR) appointed by the Dean of Graduate School. The faculty member in the primary academic area acts as the student's major advisor and provides direction to the student regarding all relevant aspects of the program.



## Program of Study

1. Each student admitted into the program will be assigned a temporary advisor from each academic area which admitted the student into the program.
2. The student, in conjunction with his or her temporary advisors, will develop a planned (initial) program of study following the ENSM program requirements. The temporary major advisor should represent the primary academic area chosen by the student.
3. The student's planned program of study will be submitted to the ENSM Program Director and advanced to the CEE Chair for approval. One copy of the approved program of study will be placed in the student's file in the School of Engineering. Also copies will be distributed to the student and each advisor.
4. Sometime during the second semester, a permanent major advisor and secondary advisor (s) will be identified and the student's ENSM program file will be updated accordingly. The Program Director will review the program of study and will approve the document once it meets program guidelines. The program of study will be advanced to the CEE Chair for departmental approval.

5. Revisions of programs of study may be made with the approval of the major advisor and the Program Director in writing as the student progresses through the program.

6. The final program of study must be submitted to the Graduate School prior to the semester in which the student intends to graduate. The program of study for receipt of the degree must be reviewed and approved by the major advisor, Chairs of the participating departments, Director of the ENSM Program, Chair of the CEE Department, Dean of the College of Science and Engineering, and Dean of the Graduate School.

### Thesis and Non-thesis Options

Thesis and non-thesis options are available for this degree, and there are specific program-wide and academic area-specific requirements related to each option. A maximum of 10 credits of research (typically, graduate problems and thesis) may be counted toward the degree; these credits may apply toward the 15 credits at 600 level requirement. Students should confer with advisory committee members to choose the most appropriate option.



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## Internship Opportunities

The purpose of an internship is to provide relevant hands-on experience by involving students in real projects being addressed by state and federal agencies and private companies. Several local and regional companies and governmental entities have interacted with ISU to offer internships appropriate for ENSM students.

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### Academic Requirements

1. The student is responsible for locating and arranging the details of an internship with the appropriate supervising faculty member and the sponsoring agency or company.
2. The student will register ISU's ENGR/CE 6652 Special Problems or equivalent course for internship.
3. One academic credit will be awarded for every 50 hours of supervised internship experience at the cooperating agency or company.
4. No more than 6 internship credits may be applied toward the MS degree.
5. Students who choose internship and thesis options must include at least 20 graduate credit hours of formal course work in their programs of study.

6. Supervising faculty must obtain a written evaluation by the supervisor in the sponsoring company or agency.

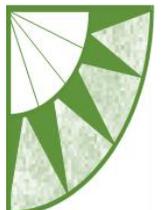
7. The student must provide a written, final report detailing the results of the internship to the supervising faculty.

8. The supervising faculty member will assign a grade of satisfactory/unsatisfactory (S/U) based on the evaluation and the final report described above.

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### Sponsoring Agency / Company Requirements

Each agency or company may have special requirements in addition to the academic requirements listed above; for example, completion of a special training course in handling hazardous wastes. Some agencies and companies may be willing to provide financial compensation for work performed by interns. Arrangements for compensation are solely the responsibility of the student and the sponsoring agency or company.



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## Guidelines for Oral Defense

Graduate School policy requires that every student in a master's degree program take and pass final examinations to receive the degree. Those students who write a thesis must meet stringent requirements for approval of the written document and then must pass an oral defense of the thesis. Students who seek a degree by the non-thesis option must prepare a project report and must pass an oral defense of the project report.

To have a common procedure for the final exams, the following guidelines are to be used by the student's committee in conducting the examinations:

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### Thesis Option

1. Drafts of the thesis, approved by the major advisor, are to be submitted to every committee member (including the Graduate Faculty Representative) for their suggestions for improvement.
2. When the thesis is essentially in final draft form, the student and/or major advisor may schedule the oral thesis defense. This exam may not be scheduled earlier than two weeks after the final copy of the thesis is placed in the hands of each committee member.
3. The Graduate School must be notified by the student's major advisor that the thesis presentation has been scheduled, no later than three days prior to the exam. This is done by submitting a completed form which certifies that (a) each committee member has been contacted, (b) each committee member has received the thesis at least two weeks prior to the scheduled exam, and (c) committee members have agreed on place, date and time for the defense. No exams shall be conducted without proper notification of the Graduate School.

4. The exam shall consist of two parts. The first part will be a presentation of the major features of the thesis followed by a question and answer period. This will be followed by an oral exam by the committee, which may cover general knowledge as well as specific areas related to the thesis. The entire exam shall last between 90 minutes and three hours. A majority vote of the examining committee is required to achieve a successful defense of the thesis.
5. The thesis should satisfy the committee members with respect to its content before the committee members sign the "thesis approval sheet" which is placed in the front of the thesis. If there is disagreement between committee members regarding satisfactory content, style, etc. of the thesis, then the major advisor shall make the final determination of what is acceptable. Documentation of a successfully completed thesis shall be promptly filed with the Graduate School.
6. The defense of the thesis may not be scheduled later than two weeks prior to the end of the term in which the student intends to graduate.

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### Non-thesis Option

The procedures for Thesis Option (described above) apply to Non-thesis Option, except that "project report" replaces "thesis."



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## Program Coursework

### Program Bridge Courses

The following courses are designed to address deficiencies in students' backgrounds. Credits received in these courses do not count toward completion of the MS degree requirements.

MATH 1160	Applied Calculus	3 cr
CHEM 1111	General Chemistry I	4 cr
CHEM 1111L	General Chemistry I Lab	1 cr
CHEM 1112	General Chemistry II	3 cr
CHEM 1112L	General Chemistry II Lab	1 cr




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### Program Required Courses

The following courses are required of every student receiving the M.S. degree in Environmental Science and Management:

ENVE 5510	Introduction to Environmental Engineering	3 cr
ENGR 6655*	Environmental Topics Seminar	1 cr
ENVE 6650**	Thesis	6 cr
or		
ENVE 6660**	Special Project	3 cr

\*\*Students will register for thesis or non-thesis "Special Project" credits in the home department of the thesis/non-thesis project advisor. Some departments' "Special Project" courses may have a different title and/or course number.

*\*Course must be completed two times (but no more than two times) in order to satisfy requirement.*  
A student may choose a seminar other than ENGR 6655 offered in his/her interdisciplinary discipline with approval of the advisory committee.



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# Special Academic Area Requirements

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## Biological Sciences

ENSM students selecting Biological Sciences as an academic area must meet specific departmental admission requirements. The following ISU courses or equivalent courses are prerequisite to admission: MATH 1160, CHEM 1111, 1112, PHYS 1111, BIOL 1101 and 1102 and one of the following: BIOS 3358, 4417, 2235, or 2209.

All students choosing Biological Sciences as an academic area and choosing the non-thesis option will be required to complete BIOS 5581/5582, Independent Problems, an independent study course, for two credits.

## Biological Sciences Electives

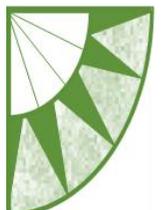
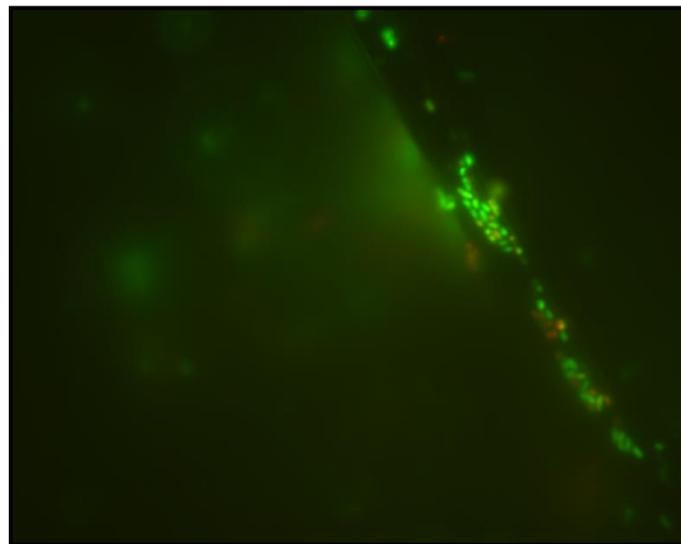
Students select courses with the approval of the advisor and advisory committee, for the purpose of focusing students in a particular direction.

For available courses, please see the Graduate Catalog which is available at the link below and refer the Biological Sciences.

<http://www.isu.edu/academic-info/crntgrad/graduate-catalog.pdf>

Also visit the Biological Science's homepage at:  
<http://isu.edu/bios/>

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## Business

The College of Business will participate in the ENSM program with students who have a science or engineering undergraduate or graduate degree. Students with neither a science nor engineering degree are encouraged to consider an MBA degree with 12 hours of ENSM courses as electives. It is expected that students will use business as the secondary area in the program and that a participating academic unit academic in either science or engineering will be the primary area.

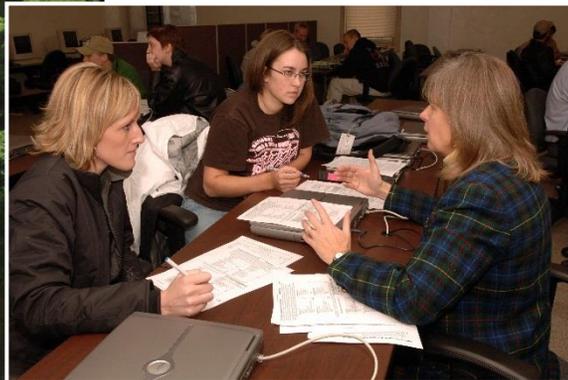
Students who choose to have the College of Business as one of the academic areas must meet the following specific requirements: The College of Business part of the degree program shall consist of, at most, 15 graduate hours in business. Students may be required to take additional undergraduate courses if they have not taken the appropriate prerequisites for classes selected in their program. Business courses may be selected from MBA I course work, MBA II course work, or 5000 level elective courses in the College of

Business as described in the Graduate Catalog. The specific business courses, selected as part of this degree program, must be approved by the College of Business MBA Program Director.

### Business Electives

The ENSM students can take MBA 6610-6615 courses, Core I and Core II courses, and all of the electives the College of Business offers:

For more information about Business courses (emphasis in CIS, management, and marketing), please visit the Website at [www.isu.edu/cob/mba.shtml](http://www.isu.edu/cob/mba.shtml).



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## Chemistry

The Department of Chemistry participates as an academic area in the ENSM Program.

### Required Courses

The following courses are required for students choosing chemistry as one of the academic emphasis areas:

CHEM 5535 Environmental Chemistry  
CHEM 5537 Environmental Chemistry Laboratory

### Chemistry Electives

The following is a list of chemistry elective courses which are recommended for ENSM students.

Students will select a core of courses from the following list. (Students may select one or more courses not on this list, with the approval of the advisory committee, for the purpose of focusing students in a particular direction not covered by this abbreviated list.)

CHEM 5507 Inorganic Chemistry II  
CHEM 5581-2 Independent Problems  
CHEM 5599 Experimental Topics  
CHEM 6601 Seminar  
CHEM 6609 Advanced Inorganic Chemistry  
CHEM 6621 Organic Reactions  
CHEM 6630 Advanced Analytical Chemistry  
CHEM 6640 Research Techniques  
CHEM 6655 Advanced Physical Chemistry  
CHEM 6671 Advanced Organic Chemistry



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## Environmental Engineering

The Department of Civil & Environmental Engineering participates as an academic area in the ENSM Program. Students may also choose to pursue an M.S. degree in Environmental Engineering. The latter option is also administered through the Department of Civil & Environmental Engineering.

Students with backgrounds deficient in basic concepts relevant to engineering will be required to take MATH 1160, CHEM 1111/1111L, CHEM 1112/1112L, and PHYS 211. Credits received in these courses do not count toward the MS degree requirement.

### Required Courses

The following courses are required for students choosing environmental engineering as one of the academic emphasis areas:

ENVE 5504 Environmental Risk Assessment  
 ENVE 5508 Water and Wastewater Quality  
 ENVE 5509 Water and Wastewater Quality  
 Laboratory

### Environmental Engineering Electives

Students will select a core of courses from the following list. (Students may select one or more courses not on this list, with the approval of the advisory committee, for the purpose of focusing students in a particular direction not covered by this abbreviated list.)

ENVE 5530 Air Pollution and Solid Waste  
 ENVE 6611 Treatment Systems for  
 Environmental  
 Remediation  
 ENVE 6615 Water Quality Modeling and  
 Control  
 ENVE 6616 Biological Treatment of  
 Wastewater  
 ENVE 6617 Environmental Systems  
 Engineering and Design  
 ENVE 6629 Physical and Chemical Treatment  
 of Water and Wastewater  
 ENVE 6630 Air Pollution and Control  
 CE 5599 Open Channel Flow  
 CE 5535 Hydraulics Design  
 CE 5554 Basic Engineering Geology  
 CE 5555 Geologic Data Methods  
 NSEN 6618 Radioactive Waste Management

NSEN 6619 Nuclear Waste Immobilization  
 HPHY 5512 Environmental Health Physics  
 HPHY 5519 Radiological Emergency Planning  
 HPHY 6605 Radiological Environmental  
 Monitoring and Surveillance



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## Geosciences

Environmental emphases are offered in groundwater geochemistry and hydrogeology, natural environmental hazards, surficial processes, applied geophysics and GIS. Admission to the ENSM program, with geosciences as the first area of emphasis, requires a BS or BA in Geosciences or permission of the Geosciences ENSM Program Representative and the Geosciences Graduate Advisor. Admission with Geoscience as the second area requires the equivalent of an introductory course in Geosciences (eg., GEOL 2200 or GEOL 2201), and approvals of the Geosciences ENSM Program Representative and the Geosciences Graduate Advisor.

Students are normally encouraged to pursue a thesis option. Primary-area students selecting the non-thesis option will be required to enroll in GEOL 6648 (Research Problems) for two credits.

## Geosciences Electives

The following is a list of geosciences elective courses which are recommended for ENSM students:

GEOL 5504	Advanced Geographic Information Systems
GEOL 5506	Environmental Geology
GEOL 5509	Remote Sensing
GEOL 5515	Quaternary Global Change
GEOL 5516	Global Environmental Change
GEOL 5520	Principles of Geochemistry
GEOL 5530	Principles of Hydrogeology
GEOL 5554	Basic Engineering Geology
GEOL 5583	Earthquake Engineering
GEOL 6602	Advanced Geomorphology
GEOL 6606	Geostatistical Spatial Data Analysis and Modeling
GEOL 6617	Environmental Geochemistry
GEOL 6625	Quantitative Geochemistry Laboratory
GEOL 6630	Advanced Hydrogeology

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**Mathematics and Statistics**

The Department of Mathematics and Statistics participates as an academic area in the ENSM Program.

**Required Courses**

The following courses are required for students choosing mathematics as one of the academic emphasis areas:

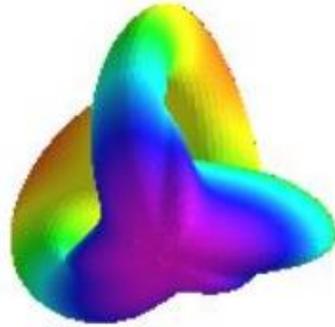
MATH 5521 Advanced Engineering Mathematics I  
MATH 5522 Advanced Engineering Mathematics II  
and

MATH 5565 Partial Differential Equations  
or  
MATH 6664 Methods of Applied Mathematics I  
MATH 6665 Methods of Applied Mathematics II

**Mathematics Electives**

Students select courses with the approval of the advisor and advisory committee, for the purpose of focusing students in a particular direction.

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# Appendices

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## Interdisciplinary Environmental Science and Management MS program at Idaho State University

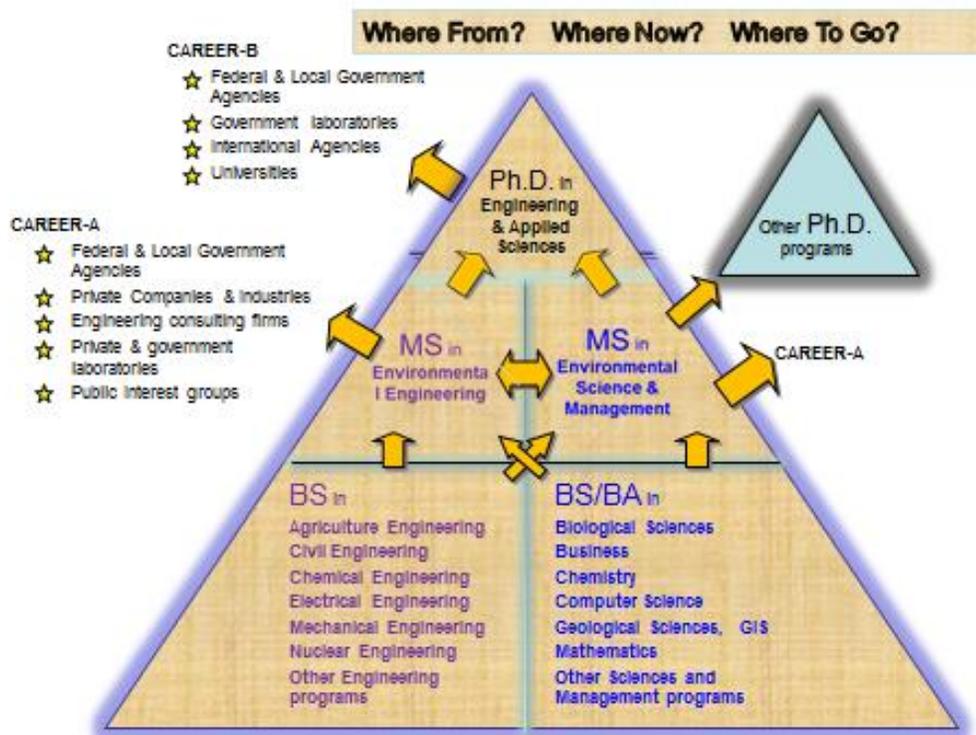
Dear Friends and Colleagues:

My name is Chikashi Sato, Director of the Environmental Science and Management Program at Idaho State University (ISU). I am writing to inform you about the MS program in Environmental Science and Management (ENSM) at ISU. The ISU Graduate Catalog (<http://www.isu.edu/academic-info/crntgrad/>) describes in detail our ENSM program.

As you know, current environmental issues are highly complex and require a multi-disciplinary approach. This approach is formulated by a realization that complex environmental problems cannot be solved by a single discipline and will take a combined effort of engineers, scientists, and economists to find new and innovative solutions to the present and future problems. In the interdisciplinary Environmental Science and Management (ENSM) MS program at ISU (see an illustration below), students, together with their advisory committee, will choose appropriate courses available in each participating academic unit which will complement departmental courses in their chosen areas and strengthen their degree program.



The interdisciplinary Environmental Science and Management MS program (formally the Hazardous Waste Management Program) was created in early 1990s and supported by the Idaho National Laboratory (formally Idaho National Engineering and Environmental Laboratory). During the same time period, the Environmental Engineering (ENVE) MS program was created in the College of Engineering (CoE), as an outgrowth of the ENSM program. In 2007, the ENVE program joined to the Civil Engineering Program to form the Department of Civil and Environmental Engineering (CEE). Since we believed that the ENSM program is best suited in the CEE Department, to be managed concurrently with the ENVE program which fosters multidisciplinary studies combining science and engineering, the ENSM program moved to the CoE in 2008 and subsequently to the College of Science and Engineering (CoSE) in 2011. Since 2008, the CEE department is assuming the responsibilities for managing the ENSM program. The current structure of the ENSM and ENVE programs is illustrated as follows.



In general, the students who have a non-engineering baccalaureate degree enter the ENSM program and those who have an engineering baccalaureate degree enter the ENVE program. For those students who wish to change their degree program from ENSM to ENVE, three bridge courses, Fluid Mechanics, Thermodynamics, and Basic Geotechnics, are required to satisfy the basic engineering requirements. After successful completion of the MS in ENSM or ENVE program, the students may pursue a Ph.D. in Engineering and Applied Sciences (with emphasis of either ENSM or ENVE).

Located in southeastern Idaho, at the intersection of Interstates 15 and 86, Pocatello (home of ISU) provides easy access to the natural wonder of Yellowstone and Grand Teton National Parks and metropolitan Salt Lake City. Every fall semester, Prof. Rosentreter takes the students in his Environmental Chemistry class to Yellowstone to perform exercises in water quality analyses. This is just one example of many exciting experiences we offer at ISU. If you have any questions and/or need more information about the ENSM and ENVE programs, please contact me at [satochik@isu.edu](mailto:satochik@isu.edu) or (208) 282-4389.

Sincerely yours,

*Chikashi Sato*

Chikashi Sato, Ph.D  
 Professor, Environmental Engineering  
 Director, Environmental Science and Management  
 Department of Civil and Environmental Engineering

## **Graduate Study In:** **Environmental Science and Management (ENSM)**



Choosing a university is an important decision and selecting a major in which to study is equally important. Love for the discipline and a passion to learn are important in selecting a career path. It is also important to know there are satisfying professional opportunities available for graduates. Hopefully, the following information will assist you as you plan your future.

### **MS Program in ENSM**

Idaho State University offers the students the opportunity to pursue an interdisciplinary Master of Science in Environmental Science and Management (ENSM). Department/academic disciplines participating in the program include: Biological Sciences, Business, Chemistry, Engineering, Geological Sciences, Mathematics, Pharmaceutical Sciences, Physics, and Political Science. The program is offered both at the Pocatello and the Idaho Falls campuses. The courses offered in Idaho Falls are primarily through the use of telecommunications /distance learning, which includes partial in-class instruction.

This program allows the student to combine courses in environmental engineering with related courses in an interdisciplinary area of emphasis. At least 30 credits are required for the degree, of which at least 15 must be at the 600 level. At least 10 credits must be completed within each of the two listed academic units, with the remainder of the course work representing the required and elective ENSM course work.

**Idaho State**  
UNIVERSITY

### **Thesis and Non-thesis Options**

Thesis and non-thesis options are available for the degree. There are specific program-wide and department-specific requirements for the thesis and non-thesis option. Students should confer closely with their advisory committee in deciding the most appropriate option.

### **Advisory Committee**

Within the framework of the degree requirements, an advisory committee will be formed to work with the student to create an individualized program of study. The advisory committee consists of two ISU faculty advisors, one from each of the two chosen academic units. The faculty member in the primary academic unit acts as the student's major advisor and provides direction to the student regarding all relevant aspects of the program.

### **Majors in our Program**

Students who wish to pursue a graduate degree in Environmental Science and Management may have a wide spectrum of backgrounds; e.g., Biology, Business, Chemistry, Computer Science, Education, Geology, Mathematics, Physics, or others.

### ***Samuel Horne Bennion Environmental Science Scholarship***

This scholarship, honoring Samuel Horne Bennion, provides financial aid (annually variable amount towards tuition and fees) to one or two students in the ENSM Program at ISU.

### **Job Outlook**

The program prepares student for careers in the environmental consulting firms, industries that need to treat and monitor their air or wastewater discharges, companies that treat and dispose of hazardous chemicals, government agencies that monitor and regulate waste dischargers, or private and government laboratories. Additionally, this program provides a suitable base for entrance into a Ph.D. program in Engineering and Applied Sciences at ISU.

#### **Contact:**

Dr. Chikashi Sato (Email: [satochik@isu.edu](mailto:satochik@isu.edu))  
Dept of Civil and Environmental Engineering  
921 S. 8<sup>th</sup> Avenue, Stop 8060  
Idaho State University, Pocatello ID, 83209-8060  
Phone: 208-282-4389; Fax: 208-282-4538



# Idaho State University

## Graduate Program of Study

**Degree:** Master of Science

**Major:** Environmental Science and Management

### STUDENT INFORMATION

**Name:** Click here to enter text.

**Major advisor:** Click here to enter text.

**Email:** Click here to enter text.

**Committee members:** Click here to enter text., Click here to enter text., Click here to enter text., Click here to enter text.

**Phone number:** Click here to enter text.

**Banner ID:** Click here to enter text.

**Expected Graduation Date:** Choose an item. Choose an item.

**GFR:** Click here to enter text.

**Date:** Click here to enter text.

**Catalog year:** Click here to enter text.

### DEGREE PROGRAM COURSES

Prefix/Num	Title	Credits	Semester	Year	Grade	Notes
<b>Seminar (2 Credits)</b>						
			Choose an item.		Choose an item.	
			Choose an item.		Choose an item.	
<b>Primary/Secondary emphasis coursework (minimum 10 Credits/each emphasis)</b>						
			Choose an item.		Choose an item.	
			Choose an item.		Choose an item.	
			Choose an item.		Choose an item.	
			Choose an item.		Choose an item.	
			Choose an item.		Choose an item.	
			Choose an item.		Choose an item.	
			Choose an item.		Choose an item.	
			Choose an item.		Choose an item.	
<b>Additional Coursework (if needed)</b>						
			Choose an item.		Choose an item.	
			Choose an item.		Choose an item.	
			Choose an item.		Choose an item.	
<b>Thesis (6 Credits) or Special Project (3 Credits + 1 Additional Elective Course)</b>						
			Choose an item.		Choose an item.	
			Choose an item.		Choose an item.	

**Thesis**  / **Non-Thesis**

**Notes:** (Substitutes/Waivers/Notes – Add additional pages as needed)

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Department Chair (If Applicable)

\_\_\_\_\_  
Advisor Signature

\_\_\_\_\_  
Dean (If Required by College)

\_\_\_\_\_  
Graduate Coordinator (If Applicable)

\_\_\_\_\_  
Dean of Graduate School

Total Credits
500 Level
600 Level
700 Level
Transfer

**GRADUATE SCHOOL REVIEW ONLY**

Transfer Credit Form  
Received

Classified Status

All Final Official Transcripts Received

# Engineering - Idaho State University

## M.S. Thesis / Special Project Plan

Form: MS-2  
Revised 11-2014

Student's Name: \_\_\_\_\_ Bengal ID: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_ Home Phone: \_\_\_\_\_  
 Email Address: \_\_\_\_\_ Cell/Other Phone: \_\_\_\_\_

**Attending:** Full Time \_\_\_\_\_ Part Time \_\_\_\_\_ Classified \_\_\_\_\_ Classified w/ Performance Requirements \_\_\_\_\_

M.S. Program:	(Underline or circle)	CE	ENVE	ESM	MCE	ME	NSEN
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\_\_\_\_\_ **Thesis:** \_\_\_\_\_ 6650 (6 credits) \_\_\_\_\_ **Non-Thesis:** \_\_\_\_\_ 6660 Special Project (3 credits)

**Thesis / Special Project Title:** \_\_\_\_\_

On \_\_\_\_\_, the following M.S. Thesis/Special Project committee has been formed to advise the student of his/her Thesis/Special Project Work.

**Thesis / Special Project Committee:**

Typed Name	Department/School	Signature	Date
_____ (Chair)	_____	_____	_____
_____ (Member)	_____	_____	_____
_____ (GFR) <small>Graduate Faculty Representative</small>	_____	_____	_____

**Comments and/or Conditions (use additional sheets if necessary):** \_\_\_\_\_

Approved:

\_\_\_\_\_ Date

**Instructions:** The M.S. Thesis/Special Project Committee will spell out clearly at the beginning, the goals, objectives, expectations, etc. of the thesis/project. The Committee will monitor the progress of the student's.

**Periodic Review by:**

_____ Date	_____ Date
_____ Date	_____ Date

**Original to Student's file**

**Cc: 1) Student 2) Three copies: Members of the M.S. Thesis/Special Project Committee**

# *Samuel Horne Bennion*

## *Environmental Science Scholarship*

This scholarship, honoring Samuel Horne Bennion, provides **\$3,600** towards tuition and fees for one graduate student in the Environmental Science and Management (ENSM) program at Idaho State University. A committee will judge applications based on the following requirements and criteria:

### ***Application Requirements and Criteria***

- Currently enrolled or will enroll as a full-time student in the **2021-2022** academic year in the Master of Science in ENSM program at Idaho State University.
- Completed application providing the following:
  - a) A summary of educational plans and career goals/objectives (maximum 500 words).
  - b) An essay on the environment (maximum 1000 words).
  - c) Official college/university transcripts of all university education. (ISU unofficial transcript is acceptable.)
  - d) A copy of letter of acceptance to the ENSM program at ISU.
  - e) Three letters of recommendation attesting to the applicant's quality (e.g., academic, personality, experience).
  - f) A completed application form - Documentation (a-e) must accompany the application. Item f) should be sent separately.

### ***Letter of Recommendation Submittal Instructions***

Each applicant is asked to submit three letters of recommendation as part of the application process. It is common practice for the person writing the letter to submit it, without the applicant ever seeing that letter. In an effort to help the scholarship committee match up the letters with the proper applicants in a timely manner, letters must be submitted in the following way:

- Sent via e-mail as a pdf file
- The name of the file as:  
ENSM\_Bennion\_ student's last name. (Example, ENSM\_Bennion\_Sato).
- Received by the deadline.
- Sent to: satochik@isu.edu

### ***Applications Deadline***

Application materials must reach Dr. Sato's email box by **April 15, 2021**.

### ***Please Email the application to:***

Attn: Dr. Chikashi Sato  
The Samuel Horne Bennion Scholarship Committee  
Environmental Science and Management Program  
Civil and Environmental Engineering Department

**Email: satochik@isu.edu**

**Idaho State**  
UNIVERSITY

***Environmental Science  
and Management  
(ENSM) Program***



**An environmental science student can receive **\$3,600** towards tuition/fees to pursue a master's degree in Environmental Science and Management. Apply Today!**

# Bennion Environmental Science Scholarship Application Form

**Deadline: April 15, 2021**

Idaho State University, School of Engineering, Department of Civil & Environmental Engineering, ENSM Program, 921 S. 8<sup>th</sup> Ave, Stop 8060, Pocatello, ID 83209-8060

Return completed form by email to: Dr. Chikashi Sato at [satochik@isu.edu](mailto:satochik@isu.edu).

## Personal Information

1. **Mr/Ms:** \_\_\_\_\_  
Last Name First Middle
2. **Address:** \_\_\_\_\_  
\_\_\_\_\_  
City State Zip
3. **Phone(s):** \_\_\_\_\_ 4. **Birthdate:** \_\_\_\_\_
5. **Bengal #:** \_\_\_\_\_
6. **Major or program of study:** \_\_\_\_\_
7. **Planned graduation date:** \_\_\_\_\_ 8. **Expected degree:** \_\_\_\_\_
9. **How many credits have you completed as of the date of this application:** \_\_\_\_\_  
\_\_\_\_\_
10. **Number of credits enrolled in for the current ISU semester:** \_\_\_\_\_

## Items that MUST accompany this application-Item e) recommendation letters can be sent separately:

- a) A summary of your educational plans and career goals/objectives (maximum 500 words)
- b) An essay on the environment (maximum: 1000 words)
- c) Official college/university transcripts of all university education (ISU unofficial transcript is acceptable.)
- d) A copy of letter of acceptance to the ENSM program at ISU
- e) Three (3) letters of recommendation attesting to the applicant's ability (e.g., academic, personality, experience)

**Certification:** I certify that all the information provided on this application is true/correct. I hereby give permission to the ISU Business office, Financial Aid and Scholarship Office, sponsoring agencies, my employer and my parents to give to the Scholarship Committee information pertinent to verify this completed scholarship application. I also authorize Idaho State University the right to release information, which is pertinent to this application, to others involved in providing funds related to my education. I further authorize Idaho State University to include my name when appropriate in the lists of winners to be publicized in the news media.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## Office use only!

GPA \_\_\_\_\_ Class Level \_\_\_\_\_ # of Credits (Fall) \_\_\_\_\_ # of Credits (Spring) \_\_\_\_\_  
Major \_\_\_\_\_ Completed # of Credits \_\_\_\_\_  
Membership/Requirements \_\_\_\_\_  
Stmts \_\_\_\_\_ Transcript \_\_\_\_\_ LOR \_\_\_\_\_ Other Scholarships \_\_\_\_\_