Adaptation to Change in Water Resources: Science to Inform Decision-Making Across Disciplines, Cultures, and Scales

2016 Chilean Immersion Course, photo courtesy of Dr. Robert King
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*Please note: This Handbook is subject to change and will undergo periodic review and will be updated as the Water Resources IGERT program evolves. Significant changes would be accompanied by communication to all participants. If you have questions, comments, corrections or changes to be made, or if you find any bad links in this document, please email Mary Schierman (marys@uidaho.edu).*
"Adaptation to change in water resources: science to inform decision-making across disciplines, cultures and scales."

IGERT Program Mission

The Integrative Graduate Education and Research Traineeship (IGERT) program of the National Science Foundation (NSF) has been developed to meet the challenges of educating U.S. Ph.D. scientists, engineers, and educators with the interdisciplinary backgrounds, deep knowledge in chosen disciplines, and technical, professional, and personal skills to become leaders and creative agents for change. The program is intended to catalyze a cultural change in graduate education, for students, faculty, and institutions, by establishing innovative new models for graduate education and training in a fertile environment for collaborative research that transcends traditional disciplinary boundaries. It is also intended to facilitate diversity in student participation and preparation, and to contribute to a world-class, broadly inclusive, and globally engaged science and engineering workforce.

UI Water Resources IGERT Vision and Goals

Climate change and human population dynamics now alter water resource systems throughout the world. Their combined effects are unlike any the human race has experienced in recent history. These two complex stressors are so interrelated, and their effects so wide-ranging, that we cannot consider them, or address the related problems in disciplinary isolation.

In the face of such evidence, the critical importance of climate-related adaptation is recognized by researchers worldwide and at many levels of the US government. Adaptation planning is beginning to take hold in some areas; however, academic research and education have lagged behind the increasingly urgent calls for greater rigor, new innovative methods, and strategies for adaptation, and as a result, a critical remaining need is to understand what changes need to be made and how to make them. Human societies have largely responded to demographic and environmental changes by reactive adaptation, an approach that is no longer sufficient to cope with the rate, magnitude, and complexity of escalating water resource challenges. Proactive adaptation is specifically needed to ensure the sustainability of water resources and associated ecosystem goods and services. The University of Idaho IGERT “Adaptation to change in water resources” spans disciplines and spatiotemporal scales to improve understanding of human impacts and adaptation capacity, integrated within the social contexts in which adaptation must take place.

The challenge for the water resources community that this IGERT directly addresses is the ability to effectively integrate knowledge across disciplines, and to extend knowledge beyond the academic setting to policy makers and stakeholders, a process known as “research integration.”

Our vision is to accomplish both of the following:

1. prepare students in graduate programs to be effective at research integration, and,
2. prepare graduates to enter the workforce trained in attendant skills such as professionalism and work ethic, oral and written communication, collaboration and teamwork, and critical thinking and problem-solving.

Thus, the overarching goal of the IGERT is to address system-wide gaps currently existing for both aspects of this vision. IGERT will train future scientists to address complex interactions and feedbacks in physical, ecological, and social systems resulting from the combined impacts of climate change and human population dynamics, and to develop collaborative skills to develop adaptation strategies.
General Information

Program Organization and Management
Timothy Link administers the IGERT Program and maintains overall responsibility throughout the project. For overall management and collective decision-making, a Steering Committee includes the PIs on the grant (Tim Link, PI; Brian Kennedy, co-PI; Manoj Shrestha, co-PI; Barbara Cosens, co-PI), Dr. Robert Heinse, and one Trainee on a 1-year rotation, nominated by other Trainees. See Our People.

Participants
Participants include members from seven colleges and 14 departments/programs at the University of Idaho, and four institutions in Chile and Canada. We are open to and continue to seek active engagement of other UI faculty members and partners with interest and expertise in interdisciplinary water related scholarship. See UI Faculty Participants.

Trainees and Associates
Students receiving stipends from the IGERT project are considered IGERT Trainees. Students who are not currently receiving NSF IGERT stipends, but are participating in the classes and activities including IGERT surveys and other trainee evaluation requirements are considered IGERT Associates.

Acknowledgment
All IGERT related publications and presentations involving research conducted while a Ph.D. student (during and after your IGERT support years) should be acknowledged as such. “This research was supported by NSF award #1249400.”
Online Presence
Each trainee should submit a biographical statement and photo for the UI Water Resources IGERT and the IGERT.org websites. These bios can be useful for collaborators as well as prospective students, potential employers and donors.

Materials, Equipment and Services
The following is a list of policies and procedures for ordering materials, equipment and services related to the research. These are laid down by the university and the department as it pertains to graduate students. University equipment or material (including such things as tablets and paper clips) is for project use only as authorized by the project leader. University property should not be used for personal use.

Copying, Printing, and Library Use: Many references are available on-line. See the library web site for a Journal List (http://www.lib.uidaho.edu/). U.S. Government documents, magazines and journals in the library holding cannot be checked out. Students are responsible for observing copyright rules: (http://www.lib.uidaho.edu/copyright/index.html). Copies made for the project reference files will remain part of the project and cannot be removed after graduation. Please, avoid over copying! Students are advised to keep detailed record of sources of articles and books so they can be tracked at a later time.

Copy machines and printers in the Department are to be used for project copying only. Students must pay for private copying for personal or class use. Copying/printing for personal use should be done at one of the university copy centers or one of the copy shops in town. Any misuse of the copiers/printers will result in withdrawal of copying/printing privileges. All copying is under the supervision of the departmental administrative assistants so always check with them for current policies.

Graduate students may check books out of the library for an entire semester. These books should be returned in a timely manner when they are no longer actively used. This also applies to books and references borrowed from fellow students and faculty members. Books or reference material cannot be taken from an office or lab without asking permission.

Computer Usage: All students have access to computer resources. When using a computer, students are responsible to adhere to the computer use policy for the University of Idaho (http://www.uidaho.edu/apm/30/12).

Research Records and Notebooks: During the course of the thesis/dissertation research, a voluminous amount of data will be collected along with many notes, reminders, procedures, etc. It is very important to keep these data in an organized fashion so all records are available when writing the thesis/dissertation chapters. Research records must be zealously protected from any harm. Consider purchasing a notebook that can be dedicated solely to your research. Also, be sure to back-up your files and keep copies of all important information.
Professional Conduct and Ethics

As graduate students and professional scholars-in-training, you are expected to exercise high standards of ethical and professional behavior toward your peers and your professors. Science as a whole can only make progress if individual scientists are truthful and trustworthy. As academic professionals and members of the larger community of scientists, graduate students should practice intellectual honesty at all times. You should exercise scholarly discipline and good critical skills, while engaging in civil, collegial discussion of scientific and professional matters. Ideally, scientific professionals should strive to be objective and fair in their criticism and discussion of colleagues’ work. Graduate students must never engage in, permit or otherwise support professional misconduct, including plagiarism, falsification of information, or deception of any kind. Each of us is obligated to report professional misconduct to a supervisor or Program Director as appropriate.

Academic Honesty and Research Ethics

As stated above, graduate students are expected to uphold high standards of intellectual and academic honesty at all times, and to enforce university and departmental standards for academic honesty. The University Faculty and Staff Handbook states that “cheating on classroom or outside assignments, examinations or tests is a violation of [the academic honesty] code. Plagiarism, falsification of academic records, and the acquisition or use of test materials without faculty authorization are considered forms of academic dishonesty...” Should you encounter academic dishonesty, you should immediately bring it to the attention of your teaching supervisor. Other instances should be discussed with your Advisor or the Program Director. There is an expectation that graduate students spend an appropriate amount of time researching and producing new papers for class research projects. If previous papers are to be expanded, you must have permission from the course instructor. A paper written for one course and turned in for a subsequent course will be considered a breach of academic honesty.

Harassment

Graduate students are expected to treat other students, peers, professors, and other colleagues in the university workplace respectfully at all times. By the same token, you are also entitled to respectful behavior on the part of your coworkers. “Harassment” in the workplace includes all forms of communication with the intention to intimidate, harmfully coerce, or belittle and is not limited to a sexual context. Harassment in a broader sense can take the form of teasing, insults and other hostile or harsh speech, crude gestures, or otherwise acting toward another person in an extremely objectionable or humiliating manner, even when that behavior lacks sexual motivation. Legally prohibited harassment includes not only sexual harassment but also harassment based on race, color, national origin, religion, age, disability, sexual orientation or status as a veteran.

The University of Idaho Faculty and Staff Handbook Policy 3220 defines sexual harassment as “unwelcome sexual advances, requests for sexual behaviors, or other verbal or physical conduct of a sexual nature.” Such conduct is deemed especially deplorable when it occurs in a relationship where there is a significant power differential, such as harassment of a student by an instructor, “…creating an intimidating, hostile, or offensive learning environment,” or interfering with a student’s education. Under no circumstances should a graduate student engage in behavior that might be construed as harassment, sexual or otherwise. If you feel you have been harassed or are aware of a possible violation of the University’s harassment policy, you are strongly encouraged to contact the University’s Office of Diversity and Human Rights, the Women’s Center, your Advisor, supervisor, or the Program Director.

Policy on Graduate Student Complaints

If a graduate student has a serious complaint regarding how they have been treated in class or research projects, this should be brought to the Program Director or the student graduate committee advisor. Complaints may include, but are not limited to, conflicts that involve a colleague, teaching supervisor, employer, or Advisor. The student should attempt to resolve the problem by informal discussion with those involved in the grievance before a formal grievance is brought to the Program Director. The Program Director will work with the student to bring the situation to a reasonable conclusion. If necessary the student may visit the College of Graduate Studies for additional assistance.

1 This section is adapted from the UI Rangeland and Ecology Department Graduate Student Handbook
**IGERT Funding**

*Years 1 & 2*

Each Trainee will be supported for two 12-month periods from NSF funds. **It is the responsibility of the IGERT trainee and his/her advisor(s) to identify funding or support for the years beyond the two-year IGERT funding period.** IGERT trainees are advised to consult early on in their studies with the graduate program director to discuss departmental sources and levels of support available to them at the end of NSF-IGERT funding period.

*Please note that it is expected that as a requirement in the accepting NSF traineeship, trainees commit to remain actively involved beyond two-year NSF funding and complete their Ph.D. in Water Resources at the University of Idaho. This includes responding to data requests from NSF.*

**Stipends:** A stipend of $30,000 per year per trainee is allocated. First year funding is provided upon admission to the program and paid monthly starting in June; second year funding will be dependent on academic performance. If other funding is available, IGERT funding can be delayed for future years.

**Tuition & Insurance** Tuition and insurance are covered during the two-year NSF-funded IGERT. If additional fees are being assessed for a course, please check with the IGERT program director prior to registering for the course.

**Travel:**
- **Domestic Travel**
  - Internship
    - Travel expenses (not to exceed $500)
    - Cost of living expenses (not to exceed $500)
  - Local or regional conference relevant to Columbia River Basin issues
- **International Travel**
  - 2-week Immersion Course in Chile
  - Conference and/or Field Excursion in Canada
- **Other/non-IGERT funded travel**
  Please discuss arrangements for other/non-IGERT funded travel to conferences and meetings with your major advisor. Graduate students can apply for travel funding through the Graduate and Professional Student Association (GPSA). For more information, visit the GPSA website: [http://www.uiweb.uidaho.edu/gpsa/](http://www.uiweb.uidaho.edu/gpsa/).

**After NSF-Sponsored Stipend**

It is the responsibility of the IGERT trainee and his/her advisor(s) to identify funding for the trainee when not supported by IGERT. It should be noted that stipends for other forms of funding are typically below the IGERT stipend rate, so the trainee should plan accordingly. Trainees are advised to consult early with their advisors to discuss departmental sources of support and other funding opportunities.

**IGERT Research Innovation Program (IRIP)** (Competitive Innovation Incentive Fund): Trainees can write a proposal that is responsive to the RFP to secure funding for their project. The UI Office of Research and Economic Development will provide institutional support for this aspect of the project by having the Proposal Development Specialist assist the IGERT Team with development of the RFP and provide Trainees with proposal writing guidance. Thus, the Incentive Fund program also serves as a training component.
Program Requirements Unique to IGERT

Orientation Workshop: First-year IGERT Trainees are required to attend an Orientation Workshop held in June prior to beginning the Internship. The orientation provides an opportunity for Trainees to meet IGERT participating faculty and other IGERT Trainees, participate in local field trips, firm up internships, etc.

Early Internship with Stakeholders: First-year Trainees will complete a summer internship with a Federal, State or Canadian agency, or a Tribe or Non-Governmental Organization (NGO). Internships will directly ground Trainees’ dissertation topics in real world issues and cultures, and facilitate early development of students’ stakeholder networks.

Post internship meeting: A post-internship meeting will take place during the Fall Semester.

Ethics & Conflict Resolution Workshops: Trainees will take training modules offered at UI on Ethics and the Responsible Conduct of Research and receive modules related to ethics in WR 506. The workshops include items such as role-playing, self-evaluation, and mentoring focused around a simplified water resources scenario involving ethical issues.

Engagement with Columbia River Basin Stakeholders and Issues: Trainees will engage in Columbia River symposia when available. Evaluation of opportunities will be done on an annual basis.

International Water Resources Course: A 2-week course focused on interdisciplinary water resource issues in the Bio Bio basin will be offered in Chile prior to the start of the Spring semester.

Collaborative Approaches to Systems Analysis (CASA): All IGERT Trainees will be part of the CASA throughout their graduate program as the process is sequential. The CASA begins with WR 506 in the Fall semester, followed by faculty-facilitated sessions in the Spring semester to develop interdisciplinary research ideas. Other CASA activities based on student interests may involve, but are not limited to workshops, seminars, and journal clubs to develop literacy in interdisciplinary research approaches such as Integration and Implementation Science (I2S) and the Science of Team Science.

Data Management Plan and Archiving: All IGERT trainees are required to complete an NSF-style data management prior to approval of their research proposals. IGERT trainees must demonstrate that data have been archived in accordance with the plan prior to final approval of their dissertation.

Interdisciplinary Proposal and Dissertation Chapter: All IGERT Trainees will participate in the preparation of one or more interdisciplinary dissertation chapters co-authored by 2 or more IGERT students. The proposal for the interdisciplinary projects may be submitted separately from each trainee’s disciplinary research proposal. This is to enable trainees to proceed with their disciplinary research while interdisciplinary teams develop their research plans.
About Water Resources

Water Resources is an interdisciplinary graduate program. The term "Water Resources" is used here in the broadest sense: the study of how water moves through and interacts with natural systems, its chemical and biological components, and the physical, social, economic and legal aspects of human interaction with the water cycle.

Over 50 faculty in 14 departments in 7 colleges are currently involved in the program. The program trains students to address complex water resources issues by building disciplinary depth in concert with interdisciplinary breadth to understand focused problems and communicate across disciplines. We strive to educate scientists and engineers to be more politically aware and policymakers to be more scientifically knowledgeable. To accomplish both objectives, the program is designed to have three overlapping degree option areas in both the M.S. and Ph.D. programs:

Water Resources Engineering & Science
Water Resources Science & Management
Water Resources Law, Management & Policy

Additionally, a concurrent JD/PhD degree option is available with any of the three option areas. Cross recognition of courses allows a JD/PhD in 6 years. The Water Resources degree is granted through the College of Graduate Studies (CoGS).

Overview of Program Degree Requirements

Students in the Water Resources NSF IGERT Ph.D. Program must meet the general requirements set forth by the College of Graduate Studies (see Part Four) for the Ph.D. degree with the following exception. The degree of Ph.D. in Water Resources requires a minimum of 39 credits of course work beyond the bachelor's degree and completion of a dissertation for a total of 78 credits (note for transfers: A Ph.D. student must complete at least 39 of the 78 required credits at the University of Idaho while matriculated in the College of Graduate Studies). Students in the Water Resources concurrent J.D. track must meet the general requirements set forth by the College of Graduate Studies and Water Resources Program for the Ph.D. degree and the College of Law for the J.D. The following sections summarize specific requirements for the three option areas as well as for the joint Ph.D./J.D.
Curriculum Requirements

Water Resources Engineering & Science Option Area

Entry Requirements
Coursework in the following is required for admission to the Water Resources Engineering & Science Option Area. Provisional admission for M.S. students may be granted to those who have completed the majority of this coursework, provided the remaining coursework is completed as deficiency requirements.

Calculus (minimum of 9 credits)
Differential Equations (3 credits)
Statistics for Scientists/Engineers (3 credits)
Chemistry (minimum of 4 credits)
Physics (minimum of 4 credits)
Engineering Fluid Mechanics (minimum of 3 credits)

Common Courses
The following courses are required in all of the Water Resources Option Areas.

WR 501 Water Resources Seminar (1 cr.)
WR 506 Interdisciplinary Methods in Water Resources (3 cr.)
WR 507 Integrated Water Resources Projects (3 cr.)

and

one elective course outside of the option area: A 500 (or 900 in LAW) level elective in either Science & Management or Law, Management & Policy Option Areas (3 cr.)

Core Courses
Ph.D. students are required to take 9 credits from the following:

BAE 552 Environmental Water Quality (3 cr.)
BAE 558 Fluid Mechanics of Porous Media (3 cr.)
SOILS 515 & SOILS 516 Environmental Biophysics (2 cr.) & Lab (1 cr.) (COOP course at WSU)
CE 421/BAE 451 Engineering Hydrology (3 cr.)
CE 526 Aquatic Habitat Modeling (3 cr.)

or

CE 535 Fluvial Geomorphology and River Mechanics (3 cr.)
HYDR 509 Quantitative Hydrogeology (3 cr.)
HYDR 576 Fundamentals of Modeling Hydrogeologic Systems (3 cr.)

Core Courses Prerequisites:
BAE 558 Fluid Mechanics of Porous Media: Math 275, Math 310, Groundwater or Soils or Fluid Mechanics
CE 421 Engineering Hydrology: BAE 355/CE325 (Fundamentals of Hydrologic Engineering)
CE 431 Design of Water and Wastewater Systems I: CE 322, CE 330, ENGR 335
CE 527 Computational Hydrology: BAE 355/CE325 (Fundamentals of Hydrologic Engineering); knowledge of a computer programming language
HYDR 509 Quantitative Hydrogeology: Math 275, Statistics 251 or 301
Electives for Engineering & Science Option Area[1]
As noted above, one elective must be in either the Science & Management or Law, Management & Policy Option Areas for PhD students. A core course may be considered an elective course once the core requirements are satisfied. Electives not listed below will be considered on a case-by-case basis.

BAE 552 Environmental Water Quality (3 cr.)
BSYSE 558 Groundwater Flow and Contaminant Transport (4 cr.) (at WSU)
CE 428 Open Channel Hydraulics (3 cr.)
CE 431 Design of Water and Wastewater Systems I (3 cr.)
CE 520 Fluid Dynamics (3 cr.)
CE 521 Sedimentation Engineering (3 cr.)
CE 523 Water Resources Systems (3 cr.)
CE 526 Aquatic Habitat Modeling (3 cr.)
CE 532 Design of Water and Wastewater Systems II (3 cr.)
CE 535 Fluvial Geomorphology and River Mechanics (3 cr.)
FOR 515 Physical Hydrology (3 cr.)
GEOL 410 Techniques of Groundwater Study (3 cr.)
GEOG 524 GIS & Remote Sensing Applications in Hydrology (3 cr.)
HYDR 509 Quantitative Hydrogeology (3 cr.)
HYDR 512 Environmental Hydrogeology (3 cr.)
HYDR 514 Groundwater-Surface Water Interaction (3 cr.)
HYDR 568 Aquifer Test Design and Analysis (3 cr.)
MATH 539 Theory of Ordinary Differential Equations (3 cr.)
MATH 540 Partial Differential Equations (3 cr.)
PHYS J428/J528 Numerical Methods (3 cr.)
SOILS 415 Soil and Environmental Physics (3 cr.)
STAT 507 Experimental Design (3 cr.)

Water Resources Science & Management Option Area

Entry Requirements
Coursework in the following is required for admission to the Water Resources Science & Management Option Area.

Calculus (6 credits)
Statistics (3 credits)
Chemistry or Physics or Biology/Ecology (6 credits total)

Common Courses
The following courses are required of Ph.D. students in all of the Water Resources Option Areas.

WR 501 Water Resources Seminar (1 cr.)
WR 506 Interdisciplinary Methods in Water Resources (3 cr.)
WR 507 Integrated Water Resources Projects (3 cr.)
and
one elective course outside of the option area: A 500 (or 900 in LAW) level elective in either Engineering & Science or Law, Management & Policy Option Areas (3 cr.)

Core Courses
Ph.D. students are required to take 9 credits from the following (*denotes online course option):

Statistics
STAT 431 Statistical Analysis (3 cr.) or higher stats class
or
ENVS 541 Sampling and Analysis of Environmental Contaminants (3 cr.)

Physical Hydrology
FOR 515 Physical Hydrology (3 cr.)
or
BAE 450 Environmental Hydrology (3 cr.)*

Subsurface Hydrology
HYDR 509 Quantitative Hydrogeology (3 cr.)
or
SOIL 515 Soil and Environmental Physics (3 cr.)

Aquatic Ecology
FISH 530 Stream Ecology (3 cr.)
or
FISH 503 Advanced Limnology Workshop (3 cr.)

Water Quality/Chemistry
BAE 552 Environmental Water Quality (3 cr.)

Fluvial Geomorphology and Aquatic Habitat
CE535 Fluvial Geomorphology and River Mechanics (3 cr.)
or
CE 526 Aquatic Habitat Modeling (3 cr.)
Electives for Science & Management Option Area

As noted, one elective must be in either the Engineering & Science or Law, Management & Policy Option Area. A core course may be considered an elective course once the core requirements are satisfied. Electives not listed below will be considered on a case-by-case basis.

CE 523  Water Resources Systems (3 cr.)
CE 533  Water Quality Management (3 cr.)
ENVS 509  Principles of Environmental Toxicology (3 cr.)
ENVS 546  Drinking Water and Human Health (3 cr.)
GEOG 401  Climatology (3 cr.)
GEOG 410  Applied Meteorology and Climatology
GEOG 524  Hydrologic Applications of GIS & Remote (3 cr.)
GEOL 410  Techniques of Groundwater Study (3 cr.)
FISH 415  Limnology (3 cr.)
FISH 430  Riparian Ecology (3 cr.)
FISH 515  Large River Fisheries (2 cr.)
FISH 540  *Wetland Restoration (3 cr.)
FOR 462  Watershed Science and Management (3 cr.)
FOR 516  Current Literature in the Hydrologic Effects of Forest Management (1 cr.)
HYDR J512  Environmental Hydrogeology (3 cr.)
HYDR 514  Groundwater-Surface Water Interaction (3 cr.)
HYDR 568  Aquifer Test Design and Analysis (3 cr.)
HYDR 576  Fundamentals of Modeling Hydrogeologic Systems (3 cr.)
SOIL 422  Environmental Soil Chemistry (3 cr.)
SOIL 537  Soil Biochemistry (3 cr.)
STAT 507  Experimental Design (3 cr.)
STAT 514  Nonparametric Statistics (3 cr.)
STAT 519  Multivariate Analysis (3 cr.)

Electives with prerequisites beyond those for Science & Management
BAE 458  Open Channel Hydraulics (3 cr.)
BAE 552  Environmental Water Quality (3 cr.)
BAE 550  Natural Channel Flow (3 cr.)
BAE 558  Fluid Dynamics of Porous Media (3 cr.)
CE 421/BAE451  Engineering Hydrology (3 cr.)
CE 521  Sedimentation Engineering (3 cr.)
CE 520  Fluid Dynamics (3 cr.)
CE 528  Stochastic Hydrology (3 cr.)
ENGR 428  Numerical Methods (3 cr.)

Course descriptions: [http://water.uidaho.edu](http://water.uidaho.edu) or [http://www.uidaho.edu/registrar/classes/catalogs](http://www.uidaho.edu/registrar/classes/catalogs).
Water Resources Law, Management & Policy Option Area

Entry Requirements
A background in government, public policy, or management is required for admission to the Law, Management, and Policy Option Area. Students without an undergraduate degree in Political Science, Public Policy, Government, Constitutional Law, Civil Procedure, or related field may be granted provisional admission, but will be required to complete coursework (in addition to standard program and option area requirements) that demonstrates a minimum level of competency. This should include:

American Government (6 credits at the 400 level)
Public Policy (6 credits at the 400 level) or
Both requirements above may be met by taking equivalent law courses including:
  Constitutional Law and Civil Procedure (12 credits at the 900 level, as approved by major advisor)
  Subject to approval of the Water Resources Program curriculum committee, other relevant completed courses (or professional experience) may be substituted to meet these requirements.

Common Courses
The following courses are required of both M.S. and Ph.D. students in all of the Water Resources Option Areas.

WR 501 Water Resources Seminar (1 cr.)
WR 506 Interdisciplinary Methods in Water Resources (3 cr.)
WR 507 Integrated Water Resources Projects (3 cr.)

and

one elective course outside of the option area: A 500 level elective in either Engineering & Science or Science & Management Water Resources Option Areas (3 cr.)

Core Courses
All students in the Water Resources Law, Management & Policy Option Area are required to complete: Research or Analytical Methods (3 cr. determined in consultation with committee)

The student and committee will select the appropriate mix of Law, Management and Policy courses from the following list. Law students are encouraged to take non-Law courses. Non-law students are encouraged to take courses from at least two disciplines. Ph.D. students are required to take 9 credits from the following:

AGEC 577 Law, Ethics and the Environment (3 cr.)
CSS 573 Planning & Decision Making for Watershed Management (3 cr.)
LAW 942 Water Law I (1 cr.)
LAW 946 Water and Energy Policy Seminar (2 cr.)
LAW 947 Environmental Law (3 cr.)
LAW 951 Environmental Policy (3 cr.)
POLS 554 Public Organization Theory (3 cr.)
POLS 562 Natural Resource Policy (3 cr.)
POLS 572 Local Government Politics & Administration (3 cr.)
Electives for Law, Management & Policy Option Area

As noted, one elective must be in either the Engineering & Science or Science & Management option area. A core course may be considered an elective course once the core requirements are satisfied. Electives not listed below will be considered on a case-by-case basis.

AGEC 451 Applied Environmental and Natural Resource Economics (3 cr.)
AGEC 531 Economic Analysis of Environmental Policies (3 cr.)
AGEC 532 Natural Resource Economics and Policy (3 cr.)
CSS 510 Applications of Communication Theory in Natural Resources (3 cr.)
CSS 572 Human Dimensions in Restoration Ecology (3 cr.)
CSS 580 Practicum in Restoration Ecology (2 cr.)
ENVS 546 Drinking Water and Human Health (3 cr.)
ENVS 579 Introduction to Environmental Regulation (3 cr.)
FOR 462 Watershed Science and Management (3 cr.)
FOR 585 Natural Resource Policy Analysis (2 cr.)
HIST 524 American Environmental History (3 cr.)
LAW 906 Natural Resources Law Seminar (3 cr.)
LAW 907 Administrative Law (3 cr.)
LAW 934 Land Use Law and Planning
LAW 937 Wildlife Law and Policy (3 cr.)
LAW 938 International Environmental and Water Law (3 cr.)
LAW 939 Law, Science, and the Environment (2 cr.)
LAW 948 Natural Resources Law and Policy (3 cr.)
LAW 949 Native American Law (3 cr.)
LAW 969 Water Law II (2 cr.)
LAW 979 Native American Natural Resources Law (3 cr.)
PHIL 552 Environmental Philosophy (3 cr.)

[1] Course descriptions: [http://water.uidaho.edu](http://water.uidaho.edu) or [http://www.uidaho.edu/registrar/classes/catalogs](http://www.uidaho.edu/registrar/classes/catalogs).
Water Resources Concurrent J.D./Ph.D. Degree

Entry Requirements
Completion of requirements for admission to both the College of Law and the specific Water Resources option area is required. Students are required to apply separately to the College of Law and the College of Graduate Studies, Water Resources Program. Acceptance to both colleges does not have to occur simultaneously. A law student can apply for summer or fall admission to the Water Resources Program in the College of Graduate Studies during the first year of law school. Then, during the second year of law school, a student can begin graduate school. A Steering Committee consisting of the Director of the Water Resources Program, the Associate Dean for Administration and Students of the College of Law, one non-law member of the Water Resources faculty and one member of the Law faculty will make admission decisions to the concurrent degree program.

Common/Core Courses
All students seeking to earn the Water Resources concurrent J.D. degree are required to complete coursework as specified for the particular Water Resources Option Area for the Ph.D. as well as coursework required by the Law School for a J.D.

Electives
The student and faculty committee will select courses appropriate to satisfy the requirements of the College of Graduate Studies and College of Law.

Concurrent Degree Details:
Students in the Water Resources concurrent J.D. track must meet all graduation requirements set forth by the College of Graduate Studies for the Ph.D. degree and the College of Law for the J.D. Each student shall have a “graduate committee.” The student’s graduate committee must meet the requirements of the College of Graduate Studies and must have at least one member from the faculty of the College of Law.

A total of 21 credits may be double counted for a J.D./Ph.D. concurrent degree under the following guidelines:

No more than 12 credits of Ph.D. graduate school credit are allowed toward the J.D. degree. The courses must be approved by the student’s advisor in the College of Law with the following guidelines: 1) courses approved for credit toward a J.D. must be complementary to an emphasis in water law; 2) must enhance the candidate’s ability to serve clients and the legal profession in the area of water law; and, 3) must not be the substantive equivalent to a course offered in the College of Law and available to the student.

No more than 9 credits toward the Ph.D. degree from the following list:

LAW 906 Natural Resources Law Seminar (3 cr)
LAW 907 Administrative Law (3 cr)
LAW 934 Land Use Law and Planning (3 cr)
LAW 937 Wildlife Law & Policy (3 cr)
LAW 938 International Environmental and Water Law (3 cr)
LAW 939 Law, Science and the Environment (2 cr)
LAW 942 Water Law I (1 cr)
Satisfactory completion of both degrees is required to qualify for the exchange credit, as the degrees are granted concurrently. The first year of study for concurrent Ph.D. students must be exclusively in the College of Law. Ph.D. students are required to write a dissertation. If the student fails to complete the Ph.D. in Water Resources, only 6 credits from the Water Resources Program are allowed toward the J.D. degree. If a student fails to complete the J.D. degree, the student must satisfy all requirements for the particular option area in the Water Resources Program to receive the Ph.D. degree.

Once in the Program:
Students should develop a study plan consulting with both their Law and Graduate advisors by the end of the second semester of graduate school.

Eighteen credits may be double counted toward both degrees [12 from the PhD can count toward the JD, 9 from the JD can count toward the PhD; this may be reversed for a PhD in the Law, Policy and Management Option Area].

Students should be advised to take the full 4-5 years for both degrees. This is necessary if they want to double count the 18 credits. In addition, completion of the JD in 3 years followed by the bar exam reduces the level of integration with the graduate degree and the likelihood of timely completion of the graduate degree.

Students should be advised to take Water Law I and II in their 2L year and Water Resources 506 in the fall of their 3rd year.

Law Emphasis Areas
Students completing a JD/PhD in water resources should have no difficulty also completing the requirements for a Natural Resources and Environmental Law Emphasis and are encouraged to do this.
Procedures for Key Academic Milestones

The steps and suggested timing of milestones to completion of the PhD degree are described below. Procedures for key academic milestones are detailed below, and any questions should be addressed to the IGERT PI Team.

Committee Membership: Per University of Idaho and Water Resources Program requirements, the committee must be comprised of at least 4 faculty members representing at least 2 disciplines. There are no specific IGERT requirements for committee membership, although it is strongly recommended that the committee include at least one current or past member of the IGERT Steering Committee as a mechanism to provide a desirable level of consistency and communication among IGERT participants.

Study Plan: The study plan must fulfill the requirements of the trainee’s Water Resources Program option area (see above). The specific courses included on the study plan are to be negotiated between trainees and their committee. There are no additional IGERT requirements for the study plan and approval of the plan will be by the trainee’s committee.

Disciplinary Research Proposal: Trainees are required to prepare a research proposal prior to starting their disciplinary research component. The trainee’s committee will approve the disciplinary proposal. The proposal must include an NSF-style data management plan approved by the IGERT data manager.

Interdisciplinary Research Proposal: Trainees are required to prepare a research proposal prior to starting their interdisciplinary team-based research component. The trainee’s committee is responsible for interdisciplinary proposal approval. However, as part of the CASA IGERT activities, trainees will participate in a process of facilitated brainstorming of interdisciplinary components and the development of integrating questions. The process of converting integrating questions into research questions for development of a proposal must be done in collaboration with at least 2 faculty members, and if no advisors are IGERT PIs, at least one IGERT PI. The purpose of IGERT PI involvement is to coordinate connections among interdisciplinary research components across the IGERT program. The proposal must include an NSF-style data management plan approved by the IGERT data manager.

Qualifying Examination: A qualifying exam is recommended by some programs in the University in order to inform the development of a student’s study plan. It is not a requirement of either the IGERT or Water Resources Programs. The committee and advisor may require a qualifying exam to serve as a constructive mechanism to identify curricular needs for incorporation into the study plan.

Preliminary Examination: The preliminary examination is required by CoGS for the committee to assess the ability of the student to complete an acceptable dissertation. The preliminary exam is usually conducted after trainees have completed all coursework. The committee, in consultation with the trainee, determines the format of the exam. Exams typically consist of both a written and an oral component, usually held within several weeks of each other. There are no specific IGERT or CoGS requirements for the format of the preliminary exam. Exam components may include, but are not limited to the following options:

Written Component
I. Question Based: Each committee member submits one or more in-depth questions within the scope of the trainee’s academic background. Specific questions may be open or closed-book at the discretion of the committee member submitting the question. Questions are approved by
the trainee’s advisor, and the examinee has a specified amount of time to prepare written responses.

II. Proposal Based: The trainee prepares a research proposal on a topic that is different from, but may complement their dissertation topic. In addition to the project description, trainees may be asked to provide any combination of supporting materials including a budget, budget justification, data management plan, mentoring plan, CVs, and/or other relevant materials. Proposal-based examinations can help trainees learn how to prepare high-quality grant proposals, secure additional funding, and increase competitiveness for future employment.

Oral Component
The committee, in consultation with the student likewise determines the format of the oral exam. Oral exams may consist of questions related to the written component, research area, academic background, and other material of the committee’s choosing.

Trainees are advanced to PhD candidacy after successfully passing the preliminary exam.

Final Examination
The final examination is comprised of a public seminar in which the trainee must present their dissertation research followed by a private examination period with the trainee’s committee.

Data Archiving
Data collected during the trainee’s program must be archived as described in their data management plan. A brief written summary of how the data are archived and may be accessed must be provided to the IGERT data manager prior to approval of the dissertation by the Water Resources Program Director.

Student/Advisor/Committee Relationships, Expectations & Suggested Protocols*

The student, not the Advisor, is responsible for meeting all deadlines and academic requirements and for initiating a process of regular communication with Advisor and committee. The student is responsible for his/her own program. This includes:

- Initiating regular communication and frequent meetings with Advisor.
- Beginning work with Advisor on research topic immediately. To complete all requirements in a timely manner requires focus and diligence.
- Setting a timetable with short- and long-term goals, and refer to it regularly.
- A meeting of the committee as early as possible to ensure that the research includes thinking from the physical, biological, and social science areas.
- Working with Advisor to create and present the disciplinary research proposal.
- Identifying and working with one or more IGERT student teams to prepare and present interdisciplinary research proposal(s). The initial stages of identification may occur within the
CASA, but should include involvement of 2 or more faculty advisors, including at least 1 IGERT PI in the development of interdisciplinary research questions.

- Completing the Interdisciplinary Thesis/Dissertation Approval Form after proposal presentation.

- Considering meeting with your committee each semester to keep them up-to-date on your activities. At the least, communicate with them regularly.

- Professional development activities such as attending conferences, presenting conference papers, presenting at departmental graduate student seminars, and writing papers for publication.

- Informing your committee of professional development activities that you are participating in.

- Writing sections of your thesis/dissertation as soon as possible. Delaying writing is a common problem for graduate students. The longer you wait, the harder it gets.

- Preparing drafts (proposal, thesis, etc.) in consultation with Advisor prior to sending it to committee members. Drafts should be grammatically correct and free of typographical and spelling errors.


* Adapted from Graduate Orientation, “Surviving (and Enjoying!) Graduate School” by Margrit von Braun.
Interdisciplinary Research Requirements

“Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice.” From *Facilitating Interdisciplinary Research*, National Academy of Sciences (NAS), 2004.

To ensure that each dissertation is interdisciplinary, the Water Resources Program requires the following:

1. **Committee Requirements**
   Each Committee shall be composed of members from more than one discipline. For the Ph.D., a minimum of four members is required. All committee members must approve a) the student’s study plan, b) the interdisciplinary component(s) of the dissertation proposal by signing the Interdisciplinary Thesis/Dissertation Proposal Approval Form, and c) the interdisciplinary component(s) of the dissertation at the time of the final defense by signing the Interdisciplinary Thesis/Dissertation Approval Form.

2. **Dissertation Requirements**
   Each dissertation shall reflect integration beyond a single discipline. Integration can be achieved throughout the dissertation, or through a separate interdisciplinary chapter (possibly co-authored) that specifically integrates methods and/or information from at least two distinct disciplines to advance the argument(s) in the dissertation. All chapters shall be integrated into a coherent whole. Each student shall evaluate the interdisciplinarity of their dissertation, at the proposal stage by completing the Interdisciplinary Thesis/Dissertation Proposal Approval form, and prior to the final defense by completing the Interdisciplinary Thesis/Dissertation Approval Form.

**Strategies for Interdisciplinary Research**

Suggested ways to ensure interdisciplinary work

- From the beginning of your project, think about how the research includes aspects and implications of more than a single discipline.
- Your research question and objectives should be created so that achieving the objectives requires work in at least two, preferably three, of the three areas.
- Consider and discuss with your Advisor and committee how your research is different as a Water Resources student than in a student’s research in a single discipline.
- Think about devoting a chapter in the dissertation to explaining the interdisciplinary nature of the research or discussing the broader implications of the work.
- Engage in a process of planning and thought regarding how you would go about collecting and using data from at least one of the other areas. For example, why and how would social science and/or physical science data enrich a biological science research project? What would you collect, given sufficient time and money, and how would you use it?
- Imagine that an agency is so impressed by your research that they decide to fund you to include the broader aspects of the problem including the other two areas. What would you do, how would you do it, and how would you use it?
- At the defense, your Advisor and committee may ask at least one of the following questions (or another integrating question):
  - How has this research used ideas or approaches from at least two disciplines?
  - Could this work have been done in the same way in a single discipline?
What are the broader implications of your work as they apply outside of your option area?

If you went on to continue work on this project, how would you continue to gather data and integrate additional information from the different disciplines into your research?

As you apply the results of your work in the field, how would you integrate information from the three option areas?

If you had to explain the implications of your research to a person with a completely different background (a manager, politician, or member of the public), what would you say?

What is important about your research in solving water resources problems?

Further Readings in Interdisciplinarity


( http://www.is.wayne.edu/mnissani/PAGEPUG/SMOOTHIE.htm).


# Steps to the Degree

Expected date of completion______________

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<thead>
<tr>
<th>Activity</th>
<th>Suggested Completion</th>
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<tbody>
<tr>
<td>Appoint Advisor</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; semester</td>
</tr>
<tr>
<td>Appoint Committee</td>
<td>Beginning of 2&lt;sup&gt;nd&lt;/sup&gt; semester</td>
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<tr>
<td>File Committee Form</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; semester</td>
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<td>Appointment of Advisor and/or Committee</td>
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<tr>
<td>Prepare Study Plan</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; semester</td>
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<tr>
<td>File Study Plan via Vandal Web</td>
<td>End of 2&lt;sup&gt;nd&lt;/sup&gt; semester</td>
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<tr>
<td>Qualifying Exam (if needed)</td>
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<tr>
<td>Research proposal to Committee</td>
<td>End of 3&lt;sup&gt;rd&lt;/sup&gt; semester</td>
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<tr>
<td>Present research proposal</td>
<td>End of 3&lt;sup&gt;rd&lt;/sup&gt; semester</td>
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<tr>
<td>Complete Interdisciplinary Thesis/Dissertation Proposal Approval Form (File with Water Resources Office only)</td>
<td>End of 3&lt;sup&gt;rd&lt;/sup&gt; semester</td>
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<td>See page 23.</td>
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<tr>
<td>Preliminary Examination</td>
<td>End of 4&lt;sup&gt;th&lt;/sup&gt; semester</td>
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<tr>
<td>File Candidacy form</td>
<td>End of 4&lt;sup&gt;th&lt;/sup&gt; semester</td>
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<tr>
<td>Report of Prelim Exam &amp; Advancement to Candidacy</td>
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<tr>
<td>Research (initiated in 1&lt;sup&gt;st&lt;/sup&gt; semester)</td>
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<td>Analyze data/summarize results</td>
<td>End of 4&lt;sup&gt;th&lt;/sup&gt; semester</td>
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<td>Work with Advisor &amp; Committee on draft material</td>
<td>End of 4&lt;sup&gt;th&lt;/sup&gt; semester</td>
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<tr>
<td>File application for degree via Vandal Web</td>
<td>End of 5&lt;sup&gt;th&lt;/sup&gt; semester</td>
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<tr>
<td>Dissertation review by committee</td>
<td>6&lt;sup&gt;th&lt;/sup&gt; semester</td>
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<tr>
<td>Prepare final draft</td>
<td>6&lt;sup&gt;th&lt;/sup&gt; semester</td>
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<tr>
<td>Grad school check of dissertation format</td>
<td>6&lt;sup&gt;th&lt;/sup&gt; semester</td>
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File authorization for final defense
Request to Proceed with Final Defense
http://www.uidaho.edu/cogs/forms

End of 6th semester

Pick up defense forms from Grad school
Authorization to Submit Thesis or Dissertation
http://www.uidaho.edu/cogs/forms

End of 6th semester

Complete Interdisciplinary Thesis/Dissertation Approval Form
(File with Water Resources Office only)
See page 24.

End of 6th semester

Final defense

End of 6th semester

Prepare final copy of dissertation, complete forms,
& turn into the Grad school

Checklist for Final Submission of Document
http://www.uidaho.edu/cogs/forms

UMI Doctoral Dissertation Agreement
http://www.uidaho.edu/cogs/forms

Survey of Earned Doctorates
http://www.uidaho.edu/cogs/forms

End of 6th semester
Interdisciplinary Thesis/Dissertation Proposal Approval Form

This form applies to the interdisciplinary components of the thesis/dissertation only.

Required Elements:

_____ The thesis/dissertation committee is composed of members from more than one Discipline

_____ All committee members approve of the interdisciplinary component(s) of the thesis/dissertation proposal, and these components are, at this stage, consistent with the interdisciplinary thesis/dissertation requirements.

Student: __________________________________________

Advisor: __________________________________________

Committee Member: ________________________________

Committee Member: ________________________________

Committee Member: ________________________________

Committee Member: ________________________________
Interdisciplinary Thesis/Dissertation Approval Form

This form applies to the interdisciplinary components of the thesis/dissertation only.

Required Elements:

_____ The thesis/dissertation includes an interdisciplinary chapter (possibly coauthored) that specifically describes how methods and/or information from at least two distinct disciplines have been integrated in the argument(s) advanced by the thesis/dissertation, and all chapters are integrated into a coherent whole.

_____ Self-evaluation of thesis/dissertation interdisciplinarity (below) submitted.¹

Evaluation (1 to 5 scale; attach student self-evaluation)²:

_____ Degree of Integration

Guiding Questions
• Are the integrated disciplines dissimilar?
• Does thesis/dissertation author draw from multiple disciplinary sources?
• Are the claims advanced associated with integrating questions?
• Does thesis/dissertation author use language that aids interdisciplinary insight?
• Does the project advance frontiers of knowledge in an area that could not be addressed within a single discipline?

_____ Creativity of Integration

Guiding Questions
• Does the integrative work involve collaboration in some form (e.g., co-authorship)?
• Does thesis/dissertation author apply a novel integrating approach?
• Does thesis/dissertation author demonstrate sensitivity to the specific characteristics of his/her problem in designing the integrating approach?

Student: __________________________________________

Advisor: __________________________________________

Committee Member: ______________________________

Committee Member: ______________________________

Committee Member: ______________________________

¹ The student submits self-evaluation to committee prior to defense.

² Committee members rank the degree of integration and creativity of integration at the conclusion of the defense exam, independent of the student’s self-evaluation.
Helpful Websites

Program Website
http://www.uidaho.edu/cals/departments-and-units/departments/water-resources/igert

The IGERT Resource Center provides comprehensive information about IGERT and each of its actively funded projects. The Resource Center provides an e-community for current IGERT students and faculty to share resources, research, presentations, challenges and best practices.
http://www.igert.org

Water Resources
https://www.uidaho.edu/cals/departments-and-units/departments/water-resources

College of Graduate Studies
http://www.uidaho.edu/cogs

Admission Requirements
http://www.uidaho.edu/admissions

Financial Aid
http://www.uidaho.edu/financialaid.aspx

Schedule of Classes
http://www.uiweb.uidaho.edu/schedule

Student Accounts/Cashier
http://www.uidaho.edu/controller/studentaccounts

Graduate and Professional Student Organization
http://www.uiweb.uidaho.edu/gpsa
Appendix A: IGERT Research Innovation Program (IRIP)

GENERAL INFORMATION

The IGERT program has designated funds for distribution via a competitive process, to provide modest support for graduate student research innovation and provide training in effective proposal writing. The primary purpose of the IGERT Research Innovation Program (IRIP) is to enable Trainees to transform their ideas and discoveries into solutions to societal challenges. This fund will enable Trainee teams to maximize the impact of their research by working with our partners in the private, public, and tribal sectors to conduct activities that will lead to the development of commercial applications and decision support tools. The program may also provide Trainees with supplemental resources to pursue professional development, research, or other travel opportunities to integrate their research into original and innovative projects. A secondary objective of the IRIP is to support research needs that students are unable to fund through other mechanisms, e.g.: faculty/advisor research grants, departmental funds, and/or professional society funding. Examples of eligible activities include, but are not limited to: Travel to build partnerships with public and private sector stakeholders; attend short courses, workshops, or conferences; conduct research in the field or at laboratories, libraries, archives, or museums; and develop or purchase software or equipment. Preference is given to participatory activities that maximize the performance or visibility of the IGERT program with private, public, or tribal entities, as well as the individual student’s potential for professional success and development. IGERT Research Innovation grants may not be sufficient to entirely cover research or travel expenses. Proposals that supplement and/or leverage other funding sources will be more competitive.

ELIGIBILITY AND AWARD TERMS

Eligibility: Current Water Resources IGERT students actively enrolled at the University of Idaho are eligible to apply for an IRIP award. Incoming Trainees are not eligible to apply for an IRIP grant. Trainees are eligible for one IRIP award per fiscal year (awarded between July 1 to June 30). Teams may include non-IGERT participants, but the lead on any team must be an IGERT Trainee.

Award terms: Travel funds may only be used for transportation, meals, accommodations, and registration fees. Trainee stipends are intended to cover normal cost of living expenses, therefore per diem funds may only be requested if meals are expected to exceed these amounts. Awards are capped at $2500 for individuals, or $5000 per team. The IRIP award committee may request successful applicants to reduce their budget request by a specified amount to maximize the impact of the program. At the conclusion of the funded activity, a brief report (maximum of 1 page, single spaced, 12 point font, with 1” margins) must be submitted detailing how the IRIP funds: 1) Advanced the goals of the IGERT, and 2) Advanced the Trainees’ academic program.

APPLICATION INSTRUCTIONS AND DEADLINES

Project proposals are limited to a maximum of 5 pages of text (single-spaced, 12 point font, with 1” margins). Suggested maximum page lengths are: Abstract (0.5 page), Overview, Significance, and Rationale (1.5 pages), Relevance to IGERT project (0.5 page), Methods & Approach and Expected Results
(1.5 pages), Budget and Budget Justification (1 page). Additional required materials not included in the page limits are: 1) A cover page with Title and List of Participants, 2) References cited, 3) Lead PI and any additional participant CVs, 4) A letter of support from the Trainee’s primary advisor that conveys his/her support as well as the relevance to the Trainee’s dissertation objectives, 5) If applicable, documentation from named project partners indicating that they have read and are supportive of the proposal.

Application deadlines are February 15, June 15, and October 15. Applications must be submitted electronically to Mary Schierman (marys@uidaho.edu) before 5:00 pm on the deadline date. Applications must be submitted as a single PDF or Word file. The application file must be named according to the following convention: IRIP_LastName_Month_Year. Where LastName is the PI(s) last name, and Month and Year are the month and year of submission, respectively. Proposals that do not adhere to the formatting and submission requirements will be returned without review.

CRITERIA FOR EVALUATION AND AWARD DETERMINATION PROCESS

Submission of an application does not guarantee funding. Award recipients will be selected via a competitive proposal process. Eligible applications not selected may be revised and resubmitted in future competitions. The committee will review applications and notify applicants of the outcome of their applications within three weeks of the award application deadlines. Evaluation criteria are:

1) Proposed projects address the overall goal of the IGERT project, which is to train future scientists to address complex interactions and feedbacks in physical, ecological, and social systems resulting from the combined impacts of climate change and human population dynamics, and to use collaborative skills to develop adaptation strategies.

2) Projects facilitate integration of student dissertation projects with private, public, and/or tribal sector partners to develop commercial applications and/or decision support tools.

3) Projects represent a justified activity that is not attainable with existing resources.

4) Proposer(s) is/are making adequate progress toward completion of their dissertation according to the recommended schedule in the IGERT Handbook.

5) The budget is appropriate and well justified.

6) Preference will be given to Trainees who have not received prior IRIP awards.

A selection committee will consist of at least 3 people and will rotate for each review period to avoid conflicts of interests. Membership of the IRIP committee will include at least one IGERT PI and at least one IGERT Trainee who does not intend to support or apply for an award in that calendar year.

AWARD and REIMBURSEMENT PROCEDURE

IRIP awards must fund real incurred expenses and are paid either as costs are incurred, as reimbursement upon the completion of the activity, or as additional financial aid. Awards can only be made for out-of-pocket expenses; no reimbursement will be made for the travel expenses purchased.
with bonus points (e.g., frequent flyer programs), vouchers, or any other form of in-kind payment. Reimbursement is conditional on original confirmable receipts of travel and participation (note that the original back page of an airline ticket, if traveling by air, may be required). In case of co-funding you need to present original receipts not covered by the additional funding source. The project report and receipts for reimbursement must be turned in within sixty (60) days after project completion.