

# RESEARCH

Research is a primary function of the University of Idaho, closely related to teaching for both students and faculty members, especially at the graduate level. Hence, most classroom teaching faculty members are also actively engaged in research.

## Office of Research and Economic Development

The mission of the Office of Research and Economic Development is to provide academic and administrative leadership to:

1. foster, support, and inspire scholarly activity;
2. oversee ethical, managerial, and regulatory compliance of scholarly activities; and
3. ensure dissemination and application of scholarly activities.

At the University of Idaho, scholarly and creative activity aspires to generate knowledge that strengthens the scientific, economic, cultural, social, and legal foundations of an open, diverse, and democratic society. Our goal is to achieve excellence in scholarship and creative activity through an institutional culture that values and promotes strong academic areas and interdisciplinary collaboration among them.

The Office of Research and Economic Development focuses on promoting university-wide research and providing assistance in writing multidisciplinary proposals and obtaining research funds. This is accomplished by organizing and promoting research activities, providing information on grant opportunities from relevant groups to individuals and departments, and processing and recording all grant and contract proposals through the Office of Sponsored Programs to ensure that policies and procedures are recognized and followed. The Office strives to increase UI's research competitiveness by offering assistance to faculty, staff, and students.

The Research Council—the faculty's standing committee involved with the development and oversight of research policy—works closely with the vice president for research and economic development to resolve differences in interpretation and implementation of these policies. Additionally, the council acts as the peer review board in the university's internal competitive grant programs.

## Research Units

Research activities are many and varied, and they are unique for each department and college. Certain administrative units provide an additional research function and emphasis that are, in many cases, related to the research program of the departments. Examples of these units are included below.

### Aquaculture Research Institute

The Aquaculture Research Institute (ARI) in the University Research Office conducts, facilitates, supports, directs, and coordinates aquaculture and related fisheries research activities at the University of Idaho's Hagerman Fish Culture Experiment Station and throughout the state. Through the institute, UI scientists from various disciplines conduct research in both commercial and conservation aquaculture sciences and technologies such as fish culture and production efficiency, fish breeding and genetics, fish nutrition and physiology, fish diseases and pathology, fish waste management and water quality assessment, aquaculture marketing and economics, and recovery efforts for

threatened and endangered fish species. The ARI does not offer degrees. Rather, the ARI assists academic departments in the training of graduate-level students by providing resources and opportunities for research.

### Center for ETHICS<sup>1</sup>

The Center for ETHICS<sup>1</sup> in the Department of Movement Sciences and College of Education believes in "teaching the tradition of competitive integrity to inspire leaders of character." The goal of the center is to improve moral development and character education through intervention, consultation, and leadership in advancing moral education.

<sup>1</sup>

Ethical Theory and Honor in Competition and Sport

### Center for Ecohydraulics Research

The Center for Ecohydraulics Research (CER) is an internationally recognized and board-appointed organization dedicated to the study of critical water resource issues. Located in the Idaho Water Center in Boise, CER conducts research and graduate education and provides expertise related to preserving, restoring, and holistically managing river systems in a sustainable manner. CER conducts interdisciplinary research, both fundamental and applied, on water-related issues with findings disseminated to policy makers, academic peer groups, management agencies, students, relevant business communities, and the public through journal articles, reports, workshops, tours, and presentations.

### Center for Educational Research and Public Service

The Center for Educational Research and Public Service was established to conduct and support research and outreach; to facilitate research by College of Education, Health and Human Sciences faculty members and graduate students; and to be of assistance to local school districts and other educational institutions.

### Center for Forest Nursery and Seedling Research

The Center for Forest Nursery and Seedling Research develops and demonstrates cost- and environmentally-effective processes for propagation, growth, and subsequent survival of forest seedlings. Processes are tested and demonstrated in a production scale nursery operation, with subsequent transfer of technology to the forest nursery industry of the region.

### Center for Research on Invasive Species and Small Populations

The Center for Research on Invasive Species and Small Populations (CRISSP) combines advanced techniques in molecular biology with traditional approaches to biological and ecological management in order to maintain and enhance the integrity of our nation's native plant and animal populations. The goal of the center is to address challenges and inform policy on invasive species and small or threatened populations. This is accomplished by taking an integrated approach that coordinates resources and expertise for scientific research on these problems. The center's mission also incorporates public education and outreach on invasive species and conservation biology issues. The center contains state-of-the-art instrumentation for molecular biology and a dedicated computer laboratory to facilitate data acquisition and analysis. Stipends for graduate study and undergraduate internships are available through the center to students with an interest in invasive species and/or conservation biology issues.

## Center for Secure and Dependable Systems

The Center for Secure and Dependable Systems (CSDS) operates in the College of Engineering. This board-approved center concentrates on computer-related security education and research. In 1999, the National Security Agency designated UI as one of the initial seven Centers of Excellence in Information Assurance Education, partly in recognition of CSDS's efforts in promoting information security education and research. This status has been regularly re-approved. The CSDS faculty conducts research in the areas of design and analysis of secure systems, including software vulnerability analysis, system defense, intrusion detection, critical infrastructure protection, secure protocols, network security, and computer forensics.

## Electron Microscopy Center

This campus-wide facility includes scanning and transmission electron microscopes, energy-dispersive x-ray microanalysis, and x-ray diffraction and is available for use in teaching, research, and service. Located in McClure Hall, the facility is available to students and faculty members. Information concerning use of the Electron Microscopy Center is available from the facility or through the University Research Office.

## Forest, Wildlife and Range Experiment Station

The Forest, Wildlife and Range Experiment Station is the research arm of the College of Natural Resources. Its staff includes all members of the college faculty, full-time research associates and technicians, and graduate students. The station staff conducts biophysical and social science research on a wide variety of natural resource management problems in the areas of forestry, forest products, rangelands, wildfire, wildland recreation, wildlife, and fisheries. Because many of the graduate students enrolled in the college are on assistantships associated with station projects, the programs of the Experiment Station are closely connected with the college's graduate education mission.

## Hagerman Fish Culture Experiment Station

The Hagerman Fish Culture Experiment Station is located in the heart of Idaho's aquaculture industry in the Magic Valley, and its focus is on rainbow trout. Most of Idaho's large commercial aquaculture operations are located nearby, and the close proximity of the research facility provides opportunities for industry partnerships in aquaculture research.

The Hagerman Station is a field laboratory of the Aquaculture Research Institute. UI scientists from various disciplines conduct research at the station in both commercial and conservation aquaculture sciences and technologies. The Hagerman Station has exceptional water resources supporting its wet laboratories and outdoor fish culture systems and leading edge analytical resources supporting functional genomics in association with nutrition, immune function, growth, reproduction, and marker-based breeding programs for rainbow trout. The Hagerman Station also hosts USDA Agriculture Research Service and Columbia River Inter-Tribal Fish Commission scientists who contribute to UI research, educational, and extension programs. Scientists at the station are deeply involved in recovery efforts for Idaho's endangered fish species and in assessment of threatened stocks and species. These efforts are often done in partnership with state and federal agencies and tribal entities.

Idaho's aquaculture extension faculty at the Hagerman Station work with other UI faculty and staff throughout the state to conduct a variety of outreach activities designed to educate the public and support and promote aquaculture and fisheries management/conservation.

## Idaho Agricultural Experiment Station

The Idaho Agricultural Experiment Station is the research arm of the College of Agricultural and Life Sciences. Applied and fundamental research programs provide a technological base to assist the agricultural industries and rural development in the state and region. Graduate education at the M.S. and Ph.D. levels is an integral part of most research projects. Research Centers located in Aberdeen, Caldwell, Kimberly, Moscow, Parma, Sandpoint, Salmon/Carmen, Teton, and Twin Falls provide opportunities to conduct locally-relevant applied and basic research. Off-campus research centers represent a significant component of the college's and university's research capacity in terms of personnel, facilities, and experimental land resources. Over 40 of the college's research faculty and over 100 research support staff are stationed at these centers. Facilities have an experiment land resource exceeding 14,000 acres. Cooperative research programs involving a number of USDA Agricultural Research Service scientists and Federal laboratory facilities exist in Aberdeen, Dubois, Kimberly, and Moscow.

## Idaho Cooperative Fish and Wildlife Research Unit

This cooperative program involving UI's College of Natural Resources, the U.S. Geological Survey, the U.S. Fish and Wildlife Service, and the Wildlife Management Institute in Washington, D.C. conducts research to find answers to a broad spectrum of questions relating to the management and viability of fish and wildlife resources. Issues addressed are of local, national, and international interest. Graduate students are trained at both the master's and doctoral levels. The unit provides in-service training for new and established conservation agency employees and provides technical and management assistance and information to public, federal, and state organizations.

## Idaho Forest, Wildlife and Range Policy Analysis Group

The Policy Analysis Group is a research program of the Idaho Forest, Wildlife and Range Experiment Station in the College of Natural Resources. The Policy Analysis Group was created by the Idaho legislature to provide timely and objective analyses of natural resource issues of importance to the citizens of Idaho. Graduate students and staff are involved in specific short-term research to support policy analysis projects to assist the public and federal and state organizations.

## Idaho Geological Survey

The Idaho Geological Survey (IGS) is a non-regulatory state agency that leads in the collection, interpretation, and dissemination of geologic and mineral data for Idaho. Formerly known as the Idaho Bureau of Mines and Geology, the agency has served the state since 1919. As a research unit of the University of Idaho, the IGS has offices on the Moscow and Boise campuses.

The Survey's mission is to provide the state with timely and relevant geologic information. The IGS fulfills this mission through applied geologic research and strong collaborations with federal and state agencies, academia, and the private sector. The IGS's research focuses on geologic mapping, geologic hazards, hydrogeology, geothermal energy, oil and gas, and metallic and industrial minerals. The Survey's Digital Mapping Laboratory produces new digital geologic maps, datasets, and publications, which are available to the public on the IGS website ([idahogeology.org](http://idahogeology.org) (<https://idahogeology.org/>)). The IGS is also engaged in the archiving and dissemination of historic mining records, community service, and earth science education.

## Idaho NASA EPSCoR

The National Aeronautics and Space Administration's Established Program to Stimulate Competitive Research (NASA EPSCoR) for Idaho is based at the University of Idaho (U of I). Idaho NASA EPSCoR enhances the state's workforce in the science and technology fields by providing competitive awards for hands-on research experiences to students and faculty. The funding enables program development, coordination with NASA labs, and other efforts. More broadly, it improves Idaho's national research competitiveness and engages faculty and industry in research that benefits NASA and the state.

## Idaho Space Grant Consortium

The National Space Grant College and Fellowship Program was founded in 1989. A network of 52 consortia expand opportunities for Americans to understand and participate in National Aeronautics and Space Administration (NASA) scientific endeavors by enhancing education, research, and public outreach efforts. The Idaho Space Grant Consortium (ISGC) has 24 affiliates who assist in our mission to provide opportunities for Idaho students who become the next generation of researchers, industry leaders, and entrepreneurs.

## Idaho Water Resources Research Institute

The Idaho Water Resources Research Institute in the University Research Office was established at UI by the regents on October 24, 1963.

This national institute program is administered by the United States Geological Survey of the U.S. Department of the Interior to stimulate, sponsor, coordinate, and supplement research, education, and outreach programs in the field of water resources. The institute serves the state by developing and coordinating water research programs intended to assure the state, region, and nation adequate supplies of high-quality water.

The area of water resources planning, development, and management is a composite of many disciplines. Consequently, the Idaho Water Resources Research Institute believes that professional needs in these areas are best achieved by individuals with strong basic education in a traditional academic department enhanced by programs of study in water resources problems and professional practice. The university has developed procedures that encourage existing schools and departments to strengthen their programs in light of the special needs for water resources. The Idaho Water Resources Research Institute has coordinated masters and doctoral programs in several disciplines and specializations through various participating divisional programs.

The objectives of the institute include the following:

1. promote water resources research and coordinate the efforts of the various university divisions and departments involved in water resources research;
2. strengthen and coordinate water-related undergraduate and graduate programs and course offerings so that the university can supply well-trained professionals and leaders;
3. develop, gather, and disseminate research findings within the state universities and to various federal, state, local, and civic organizations interested in water resources; and
4. promote water education for both the youth and adult community within Idaho.

## Inland Empire Tree Improvement Cooperative

The Inland Empire Tree Improvement Cooperative in the College of Natural Resources includes the major commercial timber holding companies and public agencies in the Inland Northwest. The

cooperative's main function is genetic improvement of dominant forest tree species in the Inland Northwest. Substantial research opportunities are available in the delineation of genetic patterns and prediction of genetic gains in tree species. Results have the potential for immediate application in operation programs.

## Institute for Interdisciplinary Data Sciences (IIDS)

The Institute for Interdisciplinary Data Sciences (IIDS) is a research institute within the Office of Research and Economic Development (ORED) at the University of Idaho. The mission of IIDS is to empower researchers to fully harness the potential of the data revolution by provisioning and administering critical University research infrastructure related to genomics, bioinformatics, research computing, and data science. IIDS houses three service units including Research Computing and Data Services (RCDS), the Genomics and Bioinformatics Resources Core (GBRC), and the Initiative for Bioinformatics and Evolutionary Studies (IBEST) and is a vibrant home for interdisciplinary research for student, postdoc, and faculty participants. IIDS participants can access expertise and infrastructure, support for proposal development and grants management, and training and professional development activities.

## Intermountain Forest Tree Nutrition Cooperative

The Intermountain Forest Tree Nutrition Cooperative in the College of Natural Resources includes the major state, federal, and private forest management organizations throughout the Inland Northwest. The cooperative's main function is the support of research dealing with the nutritional management of forests. Results of such research have the potential for application in forest management programs.

## James A. and Louise McClure Center for Public Policy Research

Inspired by Senator McClure's legacy of statesmanship, bipartisan cooperation, and evidence-based decision making, the McClure Center addresses policy issues of importance at the local, state, regional, national, and global levels. The McClure Center champions a culture of collaboration, makes the case for evidence, and heightens public discourse around informed policy making. Its reach beyond the University and the capital city is critical. The McClure Center values its role in educating students and connecting their scholarship to public policy in innovative ways, offering research opportunities in addition to student internships that emphasize applied learning.

The University of Idaho James A. and Louise McClure Center for Public Policy Research is Idaho's most trusted and preeminent public policy research center. The McClure Center is excited to offer research, policy, convening, and other services for businesses, non-profit organizations, governments, universities, colleges, and others inside and outside Idaho.

## Laboratory Animal Research Facility

A centrally located facility for housing and maintaining small animals for use in teaching and research is available to faculty members and students. Information concerning space availability, use, and services provided is available through the facility itself.

## Laboratory of Anthropology

The Alfred W. Bowers Laboratory of Anthropology serves as a research unit within the Department of Sociology and Anthropology in the College of Letters, Arts and Social Sciences. The three primary objectives are research, cultural resource management, and public outreach and education. Research facilities include the Pacific Northwest

Anthropological Archives, the Asian American Comparative Collection, and the Crabtree Lithic Technology Collection. As the Archaeological Survey of Idaho Northern Repository, the Laboratory of Anthropology houses site forms and archaeological collections for the ten northern counties of Idaho. Public education projects include interactive presentations at area schools.

### **Martin Institute**

The Martin Institute is an interdisciplinary teaching, outreach, and research center at the University of Idaho that considers the causes of war, the conditions for peace, and the international system. The Institute's strategic plan centers on providing transformational educational experiences for UI undergraduates, both within "traditional" global studies fields and across the curriculum, through administration of the undergraduate major in international studies and partnerships with the Honors Program. Funded research support on projects related to the Institute's mission is awarded annually to teams of undergraduate students and faculty selected to participate in the Martin Scholar program and to students in the Martin Academy. The Institute also publishes *The Journal of the Martin Institute | International Studies* annually, which focuses on excellent undergraduate research related to international problem solving.

### **National Institute for Advanced Transportation Technology**

The mission of the National Institute for Advanced Transportation Technology (NIATT) is to develop engineering solutions (knowledge and technology) to transportation problems for the state of Idaho, the Pacific Northwest, and the United States, and to prepare our students to be leaders in the design, deployment, and operation of our nation's complex transportation systems. NIATT is a center of excellence established by the US Department of Transportation to advance technology and expertise in the many disciplines comprising transportation through education, research, and technology transfer.

NIATT operations covers three major research area:

- The Clean Vehicle Technology research group focuses on research to protect the natural and built environment by improving the quality and economic viability of alternative fuels, reducing the environmental impacts of motorized vehicles, and improving the fuel economy and safety of motorized vehicles (including passenger cars, transit vehicles, and recreational vehicles).
- The Traffic Operations and Control research team conducts research concerning traffic safety, traffic detection, control, surveillance, simulation, and optimization, and connected vehicle and autonomous vehicle operations with the goal of reducing energy consumption, reducing congestion, and improving safety.
- Erosion control, bridge construction, and pavement design, as well as planning methods, design practices, and software development, fall under the scope of researchers in the Transportation Infrastructure group.

NIATT's diverse multidisciplinary research activities involves researchers across several departments and colleges. NIATT provides opportunities for graduate and undergraduate students to participate in research supported by the USDOT's University Transportation Centers program, the Idaho Transportation Department, the Federal Highway Administration, and others.

### **Northwest Irrigation and Soils Research Center**

The Northwest Irrigation and Soils Research Center in Kimberly, Idaho has been developed as a cooperative facility between UI and the US Department of Agriculture. USDA scientists specialize in research to improve soil and water management practices to reduce the environmental footprint of irrigated agriculture in an arid environment while sustaining irrigated crop production. In addition, techniques are being developed for environmentally sound management practices for integrated dairy-irrigated crop production systems. Collaborative research projects between the USDA and UI specialists provide graduate students the opportunity to work closely with experts in both agencies and to utilize expanded facilities. USDA scientists hold affiliate faculty rank and may assist in directing student research projects and serve on graduate committees.

### **Rangeland Center**

The Rangeland Center in the College of Natural Resources strives to create insight and foster understanding for the stewardship of public and private rangelands. The Rangeland Center is comprised of researchers and outreach specialists with expertise in disciplines that affect rangeland management and conservation including grazing, rangeland ecology, entomology, soil science, economics, rural sociology, fish and wildlife resources, invasive plants, forage production, animal science, wildland fire, restoration, and the use of spatial technologies to understand rangelands.

### **Reveley Geospatial Learning Center**

The Reveley Geospatial Learning Center in the College of Natural Resources was formed to encourage, facilitate, and coordinate remote sensing and geographic information system (GIS) research at UI on an interdisciplinary basis. The unit maintains state-of-the-art computing hardware, software, and field equipment for project support. Research funding comes from a variety of sources including NASA, USFS, and commercial forest industries, among others. Most research projects utilize graduate students in both data acquisition and interpretation.

### **Rocky Mountain Cooperative Ecosystem Studies Unit**

The Rocky Mountain Cooperative Ecosystem Studies Unit in the College of Natural Resources is a university-federal agency partnership involving the University of Idaho, University of Montana, Montana State University, Salish Kootenai College, Utah State University, Washington State University, and federal land management agencies. The mission of this unit is to improve the scientific base for managing ecosystems in the rapidly changing social, cultural, and environmental landscape of the Rocky Mountain Region. The unit provides research, technical assistance, and training programs for federal partners and provides support for faculty and graduate student ecosystem studies programs.

### **Statistics Consulting Center**

The Statistics Consulting Center in the College of Science provides assistance in the design of experiments and sample surveys, advice on statistical analyses, and expertise on recent developments in statistical research. Proper statistical design and analysis play a key role in producing quality research within the university. The optimal time to seek statistical consulting is during the earliest stages of the research project, and certainly before any data collection stage. Faculty members and graduate students from any discipline are welcome. The center is located on the first floor of the IRIC Building and operates a free walk-in clinic. Faculty are also available by appointment.