SPECIAL ACADEMIC OPPORTUNITIES

For the most up-to-date catalog information:
www.montana.edu/wwwcat

University Studies Program
The University Studies Program fulfills a variety of interests and needs at MSU. Most typically, freshmen choose University Studies when they are uncertain about a major field of study or want to explore a variety of curricula before making a final choice. Approximately one-third of entering freshmen choose University Studies as their initial curriculum.

Based on the student's interests, goals, and academic background, a University Studies academic adviser assists the student in the preparation of an individualized program to explore various areas and at the same time fulfill course requirements or electives in any curriculum. Required University Core courses are particularly well-suited for University Studies students.

University Studies students have the opportunity to enroll in a freshman seminar, which is an academic Core course designed to assist undeclared freshmen in making a successful transition to college. The University Studies First Year Seminar focuses on helping students reach their academic and intellectual potential through a concentration on critical thinking, verbal and written communication, and the major/career planning process.

Undergraduate students may take up to 60 semester credits (through the sophomore year) in University Studies before declaring a major, although they are encouraged to select a suitable degree plan well before the 60-credit limit.

The program also serves students who plan to pursue specialized degrees at other institutions but wish to take basic courses at MSU for one or two years before transferring.

Transfer students may enter University Studies to fulfill requirements and explore MSU degree programs before declaring a major.

University Honors Program
University life serves many ends, but the primary purpose of higher education is to prepare students to think for themselves. Undergraduate education in particular has the goal of helping students become, in time, their own best teachers. At Montana State University, the University Honors Program addresses this goal by providing academically motivated students with unique opportunities to undertake interdisciplinary course work and undergraduate research leading to a university honors degree. Such studies, in addition to disciplinary course work, provide extraordinary preparation for professional and technical careers, or graduate and advanced studies.

Honors Seminars constitute the heart of the program. Faculty and students together engage in critical discussion of issues and topics which cut across the diverse range of traditional departmental subjects. Teaching is primarily Socratic: emphasis is placed upon class discussion rather than lectures. Considerable attention is given to the development of analytic and critical skills and expression of them through speaking and writing. Entering students have the opportunity to undertake innovative interdisciplinary studies during their freshman year. Texts and Critics; Knowledge and Imagination, are seminars addressing fundamental issues in the humanities, social sciences, science, and the arts through critical reading and analysis of seminal books which serve as a foundation for advanced studies in major disciplinary fields. Instructed by faculty representing every college at the University, Texts and Critics earns University Seminar and Inquiry-Humanities core credits.

In addition, the Honors Program annually offers a variety of seminars for sophomores and upper class students. These upper-division seminars may also earn University Core credit in each of the major discipline categories. These seminars, typically taught by the most respected and stimulating faculty on campus, are interdisciplinary and focus on selected topical subjects.

Honors Sections of biology, chemistry, physics, math, music, English, and economics are offered through these departments as enriched versions of regular courses. Limited enrollment in seminars and sections permit intensive study and discussion. Honors sections satisfy University Core requirements.

Great Expeditions is an Honors course that includes a two-week guided class journey at home or abroad as a culmination of reading and discussing the journal of an expedition. After the journey is completed, students present a public symposium highlighting the results of their expedition.

Mentoring gifted children, a service-learning course, enables honors students to work with the gifted and talented students in public schools.

Additional opportunities for independent study are available through Honors contracts, which are taken primarily at the upper-division level. Contracts often prepare students to accept the special challenges and benefits of an Honors thesis. Upper class students may also qualify to undertake supervised tutorial study.

Participants in the University Honors Program benefit from the individualized instruction and class discussion that are characteristics of the program. Honors students have been remarkably successful in achieving other scholarship awards for further study, both in the United States and abroad. Special attention is given to preparation for professional and graduate schools. Extracurricular, outdoor, and social activities are an important feature of the daily life of the program.

Enrollment in University Honors Program courses is generally restricted to students officially enrolled in the Honors Program. Admission to the program is determined by its Director according to guidelines approved by the University Honors Program.
Advisory Committee. Generally, admission is limited to students who give evidence of standing in the upper ten percent of their entering class and who have high ACT or SAT scores or to students already enrolled in the University who have demonstrated high academic achievement and personal initiative. Graduation in Honors requires the accumulation of the specific number of Honors credits as determined by the category of Honors degree that is being pursued. All such credits may be acquired through successful completion of core curriculum Honors courses; a minimum 3.5 overall grade-point average; and one-year or its equivalent of one foreign language. To graduate with highest distinction, a thesis and a minimum cumulative 3.7 GPA is required. Students with energy, self-reliance, and imagination are encouraged to discuss their interests with the Director. To maintain good standing in the program, Honors students must demonstrate significant and continuing progress toward their specific degree in addition to satisfying the particular standards of Honors course work or research. For details about admission and graduation requirements, contact the University Honors Program Office in Quad D by calling 406-994-4110, sending e-mail to honors@montana.edu or checking the Honors web site at www.montana.edu/honors.

Directed Interdisciplinary Studies

For undergraduates interested in pursuing an area of scholarly/creative inquiry that falls outside the established departmental structure of Montana State University, a bachelor’s degree program in Directed Interdisciplinary Studies has been approved by the Regents of the Montana University System. Directed Interdisciplinary Studies (DIS) is not a "double-degree" nor a "major-minor" degree program. Interdisciplinary study is defined as the integration of more than one intellectual or methodological perspective on a problem (or set of related problems) identified by the student and approved by the Faculty Advisory Committee (FAC) consisting of three or more faculty members representing at least three different categories and two different disciplines. DIS majors are required to meet with their FAC as a whole each semester and to file a progress report each semester.

Appropriate projects will be those which represent an interdisciplinary focus and a culmination of the approved course of study. A DIS major will represent an intellectually coherent sequence of course work, seminars, and supervised reading/research projects culminating in a substantial written and/or creative senior year thesis.

Applicants must have a university grade point average of 3.00 and a letter of reference from the adviser chosen from the Faculty Advisory Committee attesting to the applicant’s self-motivation. No B.A. or B.S. DIS degrees will be awarded that includes less than 45 semester credit hours of DIS course work, nor less than 36 semester system credit hours at the upper-division course level at Montana State University. A minimum of 120 semester credit hours is required for graduation. Courses in the DIS major with grades of D or F will not be counted toward the major. Applicants may be required to take more than 45 credit hours if determined by the DIS Oversight Board in conjunction with the student’s Faculty Advisory Committee. Students will not be eligible for the DIS degree unless they have also satisfied the Montana State University Core Curriculum requirements.

The senior year thesis project must represent at least 9 semester credit hours at the upper-division course level. A final oral presentation of the thesis will be presented before the FAC and members of the DIS Oversight Board. Upon satisfaction of the requirements established for each DIS student by the DIS Oversight Board and approval of the student's college, DIS students will be recommended to the President of Montana State University and the Board of Regents for the B.A. or B.S. in Directed Interdisciplinary Studies (with citation of thesis and GPA honors as determined by established Montana State University regulations).

For details about admissions and an application, contact the University Honors Program Office in Quad D, call 406-994-4110, or send e-mail to honors@montana.edu.

Division of Health Sciences

Montana State University has a strong commitment to and focus on health professions education. To promote, support and expand the institutional capacity to meet health related needs of the people of Montana, the Division of Health Sciences (DHS) was created and many of the health related activities on campus are united under the DHS. Notably the Division houses the Pre-Professional Health Careers Advisory Office which offers guidance to students interested in pursuing careers in Medicine, Dentistry, and other health related fields. The DHS is the home of the Montana WWAMI Medical Education Program, a cooperative partnership with the University of Washington School of Medicine that admits 20 Montana residents into the program leading to the degree of Doctor of Medicine. Montana WWAMI students spend their first year of medical school on the MSU campus. The DHS encompasses several important outreach organizations, including the Montana Area Health Education Center (AHEC) and the Montana Office of Rural Health (MORH). The AHEC and the MORH work with Montana communities in many capacities, including programs to interest K-12 students in health care professions, programs that address wellness issues in rural communities and programs that focus on communities needs regarding health issues. The Montana Family Practice Residency program, the "cousin" to the WWAMI medical program that provides training for new physicians in primary care, is affiliated with the DHS. The DHS extends into the biomedical research arena by fostering integration of biomedical research activities at MSU, where there are strong programs in biotechnology, neurobiology, immunology, cell biology, molecular biology, microbiology, proteomics and genomics. Many of these programs support undergraduate research and introduce students to biomedical research. Partnerships are key to achieving the goals of the DHS and extend to most of the colleges on campus including Letters and Science, Nursing, Education, Health and Human Development, Engineering and Agriculture.
Pre-Professional Health Careers Advising

The DHS is committed to the undergraduate community interested in the health sciences by providing this service to help students best achieve their ultimate career goals. The role of the office of Pre-Professional Health Careers Advising (PPHCA) is extensive and serves students from across the campus as well as alumni considering career changes. There are many academic departments that support pre-health career majors including the biomedical option in Cell Biology and Neuroscience and majors in Engineering, Microbiology, Chemistry and Biochemistry, and Veterinary Molecular Biology to name but a few of the more common choices.

Beginning at freshman summer orientation, students interested in learning more about the health professions may attend a special session describing the opportunities at MSU. Prospective students are also encouraged to meet with the chief Health Professions Advisor. In the freshman year students may take a one-credit class focused on the variety of health professions. During the sophomore year an introduction to dentistry course is offered as well as opportunities for continued counseling through the PPHCA office.

During the spring of junior year, as students begin to prepare for the formal application process to a health professions school, detailed application workshops are offered. Additionally, a commercial medical college admissions test (MCAT) review course is offered on campus. Also during this critical time, the pre-professional health advisory committee (PPAC) conducts interviews with students planning to apply to pre-health programs and advise on appropriate schools to which students should apply. Evaluations are prepared by the committee and used as part of the student’s application materials. During the senior year, students’ applications are processed and monitored by the Chief Health Professions Advisor and/or the office staff. Importantly, students are counseled throughout the decision making process.

Supplementing the formal activities of the PPHCA, the only Montana chapter of Alpha Epsilon Delta (AED), the national pre-health honors society, hosts a series of presentations by a variety of health professionals to introduce students to practical aspects of health careers. Students are also encouraged to join the electronic mailing list provided by the PPHCA and AED students have an opportunity to interact with first year medical students enrolled in the WWAMI program to get insights from the student’s perspective. The success rate of MSU students applying to medical and dental schools is substantially higher than the national average.

WWAMI Medical Program

Montana State University is one of six universities participating in a program to decentralize medical education in five states: Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI). The WWAMI Program is supported by the State of Montana and guarantees that 20 qualified students can be admitted to the University of Washington School of Medicine each year. The WWAMI Program does not involve pre-medical (undergraduate) education.

Sponsored by the University of Washington School of Medicine at Seattle and leading to an M.D. degree from that institution, the program is designed to make medical education available to citizens of the Northwest and to educate medical students in a way that will encourage them to practice primary care medicine in areas that lack a sufficient number of physicians.

Montana students receive the first year of their medical education at Montana State University. The curriculum is similar to and compatible with the University of Washington School of Medicine curriculum which emphasizes an integration of the basic and clinical sciences.

Course subject matter at Montana State University includes human gross anatomy, histology, human physiology, medical biochemistry, introduction to clinical medicine, pathology, immunology, infectious diseases, behavioral systems and the nervous system. A clinical preceptorship program has been developed, which involves the students with local physicians for several hours each week and for four weeks during

Following this first year of study at Montana State University, students join the portion of the class that began their studies in Seattle at the University of Washington as well as students from the other WWAMI regions (Wyoming, Alaska and Idaho).

At the conclusion of the first two years, students enter the phase of their education which is predominantly clinical in nature. During this phase, students receive a portion of their training at the University of Washington School of Medicine and a portion of their clinical education from physicians in the communities where the physicians live and practice (community phase). These latter “Community Clinical Units” are established for a given educational need (e.g., pediatrics, family medicine). Seven Community Clinical Units have been established in Montana. These are located in Billings (Internal Medicine and Obstetrics), Great Falls (Pediatrics), Missoula (Internal Medicine and Obstetrics), Havre (Family Medicine), and Whitefish (Family Medicine).

To be eligible for the Montana State University WWAMI Program, the prospective medical student must be a legal resident of Montana for one year prior to application and must satisfy the admission requirements of the University of Washington School of Medicine. It is not necessary for a student to complete his or her premedical (undergraduate) education at Montana State University in order to be eligible for the WWAMI Program. Students admitted to the program are selected by the Admissions Committee at the University of Washington School of Medicine and are regarded as members of the freshman medical class there, although they register as resident students at Montana State University for the first year of the program.

For further information see the WWAMI web site at http://www.montana.edu/wwami/, contact the Montana WWAMI Director at MSU by calling 406-994-4411, or send e-mail to wwami@montana.edu.
Montana Area Health Education Center

The Montana Area Health Education Center (Montana AHEC) at Montana State University-Bozeman is one of six regional AHEC centers affiliated with the University of Washington School of Medicine.

The mission of the AHEC Program is to improve the supply and distribution of primary care professionals, through community/academic educational partnerships and to increase access to quality health care.

This mission is accomplished through the following goals of the Montana AHEC:

- form productive linkages between healthcare units to the benefit of underserved frontier and rural communities;
- foster and encourage collaborative community-based health programs;
- increase the number of minority and underserved youth entering health education programs;
- serve as a resource, clearinghouse, and disseminator of health information;
- promote improved health and disease prevention through educational interventions;
- respond to emerging community-based needs regarding health issues;
- provide technical assistance on healthcare-related issues to underserved communities;
- contribute to achieving the goals of Healthy People 2010 and thereby improving the health status of frontier and rural constituents; and
- help implement collaborative community-based, multidisciplinary education and training for health professionals and health professions students.

The Montana AHEC has many programs which serve Montana's health professionals, including student preceptorships, educational programs for health professionals and students, health professional recruitment activities, local community health care development assistance, rural health research, and telemedicine projects.

For further information see the AHEC web site at http://ahec.montana.edu, contact the AHEC office at MSU by calling 406-994-6001, or send e-mail to sak@montana.edu

Montana Office of Rural Health

The Montana Office of Rural Health (MORH) was established in 1987 with the overall mission to increase access to quality health care and improve daily functioning for rural and underserved Montanans through health promotion, disease prevention and reduction of the impact of illness, disease and disability. Montana is truly a rural-frontier state with 53 of its 56 counties designated either rural or frontier by federal definitions and with over 80% of its communities having populations of less than 2,500 people.

The MORH seeks to accomplish its mission through the following four major goals and activities:

- to collect and disseminate rural health information statewide;
- to improve recruitment and retention of health professionals into rural and underserved areas;
- to provide technical assistance in securing additional funding for rural health; and
- to coordinate rural health interests and activities across the state.

In essence, the MORH works to improve the health and well-being of all rural and underserved Montanans through advocacy, networking, collaboration, partnerships, education, outreach, research, and service.

For further information see the MORH web site at http://ruralhealth.montana.edu, contact the MORH office at MSU by calling 406-994-5553, or send e-mail to djjones@montana.edu

American Indian Research Opportunities (AIRO)

AIRO, a consortium of Montana's seven Tribal Colleges and MSU-Bozeman established in 1987, is dedicated to increasing the numbers of American Indians entering higher education and career fields where they are significantly underrepresented. AIRO is the umbrella organization for several specialized programs including the Initiative for Minority Student Development (IMSD), the Bridges to the Baccalaureate Program (BRIDGES), and the Montana (High School) Apprenticeship Program (MAP). All programs are funded wholly or in part by the federal government and foundations through such agencies as the National Institutes of Health (NIH), the National Science Foundation (NSF), and the Howard Hughes Medical Institute. The major goal of AIRO is to provide opportunities for American Indian students in science, mathematics, engineering, and technology (SMET) career fields. Through AIRO, American Indian students have the opportunity to excel and to serve as role models for other minority students. Descriptions of the programs administered under the consortium of AIRO are as follows:

The IMSD Program focuses on undergraduate students. The program's major goals are 1) to increase American Indian students' academic competency in the biomedical fields, 2) to provide laboratory experiences in biomedical research for American Indian college-level students interested in biomedical/allied health careers, 3) to expose American Indian students to a broad spectrum of career opportunities in biomedical/allied health fields, 4) to strengthen facilities and research resources at the Tribal Colleges, and 5) to increase the number of American Indians in biomedical/allied health fields.

The BRIDGES program collaborates with Little Big Horn College, Fort Belknap College, and Fort Peck Community College to increase the number of students successfully transferring from the two-year tribal colleges to MSU and pursuing academic studies in the biomedical and other health-related sciences. BRIDGES activities include 1) conducting research seminars at the tribal colleges by MSU faculty and others in biomedical and behavioral sciences; 2) hosting spring workshops and campus visits to introduce tribal college students to the four-year campuses; 3) providing funds to cover the cost of tuition and fees for MSU course work to tribal college students during the summer months to improve students' academic competitiveness and confidence; 4) providing students with research experiences in biomedical and related laboratories at MSU; 5) developing mentoring relationships between the student participant and an MSU faculty member in a related discipline; and 6) providing tribal college faculty with opportunities for professional develop-
ment, including support for travel to biomedical and related professional conferences, research supplies, and/or opportunities for collaborative research with MSU faculty; and 7) providing on-campus support after students bridge from one campus to the other, continuing to motivate and guide these students through their completion of a B.S. degree.

MAP is a summer enrichment program on the MSU-Bozeman campus for Native American high school students who are interested in science and math and want to work in a research lab and live on a college campus. Over eighty-five percent of the students who have attended MAP in the past twenty-three years have gone on to college, many in science, math, or engineering. The program also provides opportunities for middle and high school math and science teachers who work with Native American students. The teachers spend eight-to-ten weeks on campus working in research labs and interacting with the MAP students.

For more information contact AIRO, 312 Roberts Hall, 406/994-5567, or send e-mail to slyoung@montana.edu.

Native American Studies

About the Department

The Native American Studies was established to provide and advance quality education for and about American Indians of Montana, the region, and the nation. In fulfilling this mission, the Department is committed to meet the changing needs of Montana's Indian tribes and all Montana citizens through excellence in teaching, research, and service.

Native American Studies has assumed a uniquely broad responsibility to serve a number of constituencies. In doing so, it is committed to a balance in its four major roles: teaching, research, public service, and student services. In its academic program, the Department provides concentrated study through a Master of Arts and a minor in Native American Studies, as well as opportunities for students to gain a multicultural perspective in meeting the University's Core curriculum requirement. The program is flexible enough to meet individualized needs of students and tribes by affording opportunities for independent study, internships, and special topics courses.

Research and Creative Activity

The Department takes pride in the scholarship of its faculty. In 2000 the Department established its endowed Chair in Native American Studies. The scholarship and service offered by the holders of the Chair will enhance the Department's efforts to provide first class scholarship on behalf of Native peoples and the university. Over the year faculty members have consistently published in professional journals, delivered papers at national and international meetings, and, by invitation, chaired and participated in panels at national professional association conferences.

Consistent with its service commitment to Montana's tribal communities, much of the faculty's research and creative activity responds to the educational, cultural, and economic development needs of Native Americans.

In addition to scholarly research, faculty members have devoted much time and energy to developing new programs and finding external funding sources for those programs. During the past decade, the Department has received more than $5 million in federal, state, and private grants for programs which include graduate fellowships, tribal college development projects, international student exchanges, pre-college engineering and business programs, and national and international cultural development programs.

Service

The Department firmly maintains that Montana State University must be responsive to Indian communities in addressing tribally-identified educational, cultural, and economic development needs. Accordingly, the Department has directed much of its public service activity to Montana's Indian communities. In doing so, faculty members have established close working relationships with tribal and intertribal groups as well as with national Indian offices and organizations.

Upon request, faculty members have also provided technical assistance in the areas of adult, vocational, and community college development, needs assessments, proposal writing, and program evaluations.

Utilizing the resources of the University to assist in the development of Montana's seven tribally-controlled community colleges has been a major goal of the Department. For example, the Department has administered projects to provide graduate-level training to tribal college faculty, to provide in-service training and technical assistance, and to conduct significant research in areas of importance to the tribal colleges.
In addition, faculty members have presented continuing education workshops on Montana reservations, evaluated reservation cultural and education programs, and provided other public service. Faculty members have also, by invitation, read proposals for the U.S. Office of Education, the National Endowment for the Humanities, the National Institute of Education, and the National Science Foundation.

**American Indian Student Programs and Services**

In addition to the traditional functions of an academic department, the Native American Studies places a high priority on providing student support programs and services, reflecting a strong commitment to Indian student retention and success. The student who decides to attend MSU will find a University-wide commitment manifested by a varied and extensive support system which is unequaled in the Great Plains region.

**Extended University**

Extended University administers and coordinates on-and off-campus instruction in the form of distance-delivered and face-to-face courses, programs, institutes, and conferences that supplement the formal academic curriculum at MSU. Extended University services are organized into three main categories:

- **Distance Degree and Certificate Programs:** Looking for an online or distance learning course at MSU? Currently MSU offers several graduate degrees and select undergraduate courses online and via video conferencing. Non-traditional programs are offered in partnership with Extended University and MSU academic departments.

- **Office of Continuing Education:** Continuing education courses extend the educational resources of the University to the citizens of Montana and beyond. Credit and non-credit courses are offered at various locations across the state. Increasingly, instruction is provided through the use of distance learning technologies, such as video conferencing and web-based online courses. Fees for continuing education courses vary and are established on a cost-recovery basis.

- **Burns Technology Center:** The BTC supports a variety of instructional technology classrooms and tools at Montana State University. The BTC provides training and support services for faculty, students, and private organizations on a contract basis. In addition, the BTC participates in pilot and demonstration programs that explore and enhance information and communication technologies to benefit education and society.

Organizations, professional groups, and interested individuals are invited to contact Extended University for additional information concerning credit and non-credit courses and instructional technology programs. Go to http://eu.montana.edu.

**National Student Exchange**

The National Student Exchange, a consortium of 180 state-supported colleges and universities, offers students the opportunity to attend another participating institution for a semester or full academic year. By bringing together students from different parts of the country, the exchange encourages participants to broaden themselves academically, socially, and culturally.

To qualify for participation in the NSE program, a student must:
1. Be a full-time student,
2. Have a minimum cumulative grade point average of 2.5, and
3. Be a student in good standing.

Students with Montana residency (in state) are able to enroll at their host institution with the same financial benefits enjoyed by in-state students. Nonresident students (out-of-state) may attend schools that allow them to continue to pay their tuition at Montana State University.

Colleges and universities participating in the National Student Exchange program include:

- Alabama A&M University
- Alabama State University
- Arkansas State University
- Ball State University (Indiana)
- Binghamton University (New York)
- Boise State University (Idaho)
- Bowie State University (Maryland)
- Bowling Green State University (Ohio)
- Bridgewater State College (Massachusetts)
- California Polytechnic State University
- San Luis Obispo
- California State Polytechnic University-Pomona
- California State University-Bakersfield
- California State University-Chico
- California State University-Fresno
- California State University-Hayward
- California State University-Los Angeles
- California State University-Monterey Bay
- California State University-Northridge
- California State University-San Bernardino
- California University of Pennsylvania
- Central Washington University
- Cleveland State University (Ohio)
- College of Charleston (South Carolina)
- East Central University (Oklahoma)
- East Stroudsburg University (Pennsylvania)
- East Tennessee State University
- Eastern Connecticut State University
- Eastern New Mexico University
- Eastern Oregon University
- Fairmont State College (West Virginia)
- Ferris State University (Michigan)
- Fort Hays State University (Kansas)
- George Mason University (Virginia)
- Grambling State University (Louisiana)
- Howard University (District of Columbia)
- Humboldt State University (California)
- Hunter College of CUNY (New York)
- Idaho State University
- Illinois State University
- Indiana University of Pennsylvania
- Indiana University-Purdue University at Fort Wayne
- Inter American University of Puerto Rico, San Juan
- Iowa State University
- Johnson State College (Vermont)
- Kean State College (New Jersey)
- Kent State University (Ohio)
- Kent State University (New Mexico)
- Kutztown University of Pennsylvania
- Louisiana State University and A&M College
- Marshall University (West Virginia)
- Mesa State College (Colorado)
- Michigan Technological University
- Minnesota State University, Mankato
- Minnesota State University, Moorhead
- Mississippi State University
- Morehead State University (Kentucky)
- Murray State University (Kentucky)
- NC State University (North Carolina)
- New College of Florida
- New Mexico Institute of Mining and Technology
- New Mexico State University
- North Carolina Central University
- Northeastern Illinois University
- Northern Arizona University
- Northern State University (South Dakota)
- Oklahoma State University
- Oregon State University
- Plattsburg State University of New York
- Portland State University
- Plymouth State University
- Ramapo College of New Jersey
- Rhode Island College
- Rutgers College, Rutgers University (New Jersey)
- San Jose State University (California)
- Sonoma State University (California)
- South Carolina State University
- South Dakota State University
- Southern Oregon University
- Southern University (Louisiana)
- Southern Utah University
- Southwest Missouri State University
- St. Mary's College of Maryland
- Stony Brook University (New York)
- SUNY College-Buffalo (New York)
- SUNY College-Potsdam (New York)
- Tennessee State University
- Texas State University-San Marcos
- The College of New Jersey
- Towson University (Maryland)
- Tuskegee University (Alabama)
For more information about the National Student Exchange, contact University Studies, 418 Reid Hall, 406-994-3532, or e-mail universitystudies@umontana.edu.

International Programs

Office of International Programs

Responding to fundamental trends which pull the United States and Montana into the global marketplace and put us into daily contact with other nations, Montana State University seeks to bring international education to the core of the academic and cultural life of the campus. The Office of International Programs (OIP), located in Culbertson Hall (Fourth Floor), offers a full range of international programs and services to MSU students, faculty, and staff.

OIP provides quality educational opportunities abroad for MSU students at 220 universities in 50 countries. OIP also offers services and programs which make MSU accessible to capable students from around the world and ensure they have worthwhile academic experiences.

At the faculty level, OIP assists faculty to pursue their fields at the global level. OIP provides information and assistance to members of the faculty wishing to engage in international research, participate in a faculty exchange program, or develop international dimensions to their courses. In addition, OIP assists departments and offices in obtaining visas and making other arrangements necessary to host visiting scholars from abroad.

OIP is also responsible for developing and maintaining international institutional relationships between MSU and selected universities throughout the world. At present, MSU maintains active relationships with over 40 universities throughout the world, and more sister institution relationships are under development.

OIP reports to the Office of the Provost and works closely with the MSU International Programs Committee in conducting its programs.

Global Studies Minor

Montana State University-Bozeman offers a Global Studies Minor (GSM) administered through the Office of International Programs. The minor is intended to provide students with the fundamental international and intercultural skills they need to succeed in the "borderless careers" they will enter in virtually any career path they choose. The concept of the minor is to draw curricular resources together into a defined program that can provide a strong foundation in international studies, foreign languages, and intercultural communication for MSU graduates.

To fulfill the minor, students must complete three requirements. First, students must complete three GSM-supported courses and 14 hours of approved electives. Second, students must complete at least the first semester of the second year in a modern language or demonstrate equivalent proficiency. Third, students must fulfill an education abroad requirement by earning at least six credit hours on an approved study abroad program. This requirement can also be fulfilled through approved academic internships, service learning, or faculty supervised research abroad.

Study Abroad

MSU encourages students to study abroad, both to build the international skills which are increasingly needed in all professions, and for the intrinsic educational value of studying outside one's home country.

In addition to hundreds of study abroad options for individual students, numerous special programs are developed by MSU faculty members which allow groups of MSU students to travel and study abroad. Students earn full credit while participating in MSU-sponsored study abroad programs, and in most cases can maintain regular progress toward their MSU degree while studying abroad. Some MSU-approved study abroad experiences also satisfy the University Core Curriculum Multicultural/Global or Diversity requirement. These decisions will be made on a case-by-case basis.
Feas for most study abroad programs are based on MSU tuition rates, enabling students to study abroad for little additional cost than remaining on the Bozeman campus. In addition, students eligible for financial assistance may apply their aid package to meet study abroad costs.

OIP’s International Opportunities Resource Center, located on the fourth floor of Culbertson Hall, offers students professional study abroad advising services and extensive reference materials on MSU-sponsored and non-MSU-sponsored study abroad programs.

**International Institutional Partners**

MSU maintains sister-institutional relationships with many specially selected universities around the world. With these institutions, MSU offers student and faculty exchanges, conducts collaborative research activities, and provides other cooperative programs. Current sister institution abroad are listed below. Additional international partnerships are under development to meet the growing need for international educational opportunities for MSU students and faculty.

**Australia**
- Flinders University, Adelaide
- Macquarie University, Sydney
- University of Southern Queensland, Toowoomba
- University of Western Australia, Perth
- University of Wollongong, Wollongong
- University of Western Sydney, Sydney

**Costa Rica**
- Universidad Veritas, San Jose

**England**
- Kingston University, London
- Lancaster University, Lancaster
- Thames Valley University, London
- University of Exeter, Exeter
- University of Sheffield, Sheffield

**France**
- Euromed Marseille Ecole de Management, Marseille
- Universite Paul Valery (Montpellier III), Montpellier

**Germany**
- Eberhard-Karls-Universitat, Tubingen
- Martin Luthe Universitat, Halle
- Technische Universitat, Berlin
- University of Applied Sciences Fachhochule, Ravensburg, Weingarten
- University of Mannheim, Mannheim

**Ireland**
- National University of Ireland - Galway, Galway

**Japan**
- Kansai Gaidai University, Osaka
- Kumamoto University, Kumamoto
- Kumamoto Gakuen University, Kumamoto
- Perfertential University of Kumamoto, Kumamoto

**Mexico**
- Universidad Autonoma de Baja California

**Morocco**
- Al-Akhawayn University, Ifrane

**Netherlands**
- University of Amsterdam, Amsterdam

**New Zealand**
- University of Canterbury, Christchurch
- University of Waikato University, Hamilton

**Northern Ireland**
- University of Ulster, Ulster

**Norway**
- University of Oslo, Oslo
- University of Bergen, Bergen

**Republic of Korea**
- Yonsei University, Seoul

**South Africa**
- University of Stellenbosch, Stellenbosch

**Spain**
- Letra Hispanica, Salamanca
- Polithechnical University of Valencia, Valencia

**Sweden**
- Jonkoping International University, Jonkoping
- Turkey
- Yeditepe University, Istanbul

**International Students**

MSU encourages qualified students from other nations to enroll in its programs on a degree-seeking, non-degree, or exchange basis. International students enrich the MSU campus, exposing MSU students to the diverse cultures and traditions of other nations. In order to enable international students to succeed at MSU and to have a positive experience on the campus, the Office of International Programs offers a program of quality international student advising on cultural adjustment, immigration regulations, and academic and personal matters; programs to integrate international students into the campus and the Bozeman community; and instruction in English as a Second Language through the A.C.E. Language Institute.

**A.C.E. Language Institute**

The Language Institute is sponsored by the American Cultural Exchange (A.C.E.) of Seattle, Washington. This on-campus program provides an English language academic preparation program for students whose native language is not English. Five-week sessions are offered throughout the year and are taught by highly trained instructors. The program offers six levels of English instruction designed to meet students' needs at their particular language level. Students who complete the appropriate level and receive a full recommendation from the Language Institute can apply to Montana State University without taking the TOEFL exam.

Language Institute student services include: airport pick-up, homestay placement, academic advising, and help with college and university applications and visa information. The university setting offers Language Institute students the opportunity to meet Americans and to participate in campus activities.

The Institute also offers courses in English as a Second Language for students enrolled in the university, as well as International Teaching Assistant (ITA) training and the TOEFL and SPEAK exams. Students should contact the Language Institute for specific course listings.

For more information, contact:
A.C.E. Language Institute
Montana State University
1106 S. 6th Ave.
Bozeman, MT 59717 USA
Phone: 406-585-9832
Fax: 406-585-9838
E-Mail to: msuace@cultural.org

**The Spectrum Lab**

The Spectrum Lab charter comprises three missions: 1) develop multi-spectral optical concepts into prototype systems that provide computational, communication, sensor, or measurement capabilities that exceed state-of-the-art capabilities; 2) provide an educational environment for graduate and undergraduate students that prepares them directly for the goal-oriented, time-critical, team project emphasis of corporate research; and 3) establish corporate partnerships to transition emerging applications to commercial products, boosting economic growth and infrastructure in Montana. To accomplish these goals, multidisciplinary teams from diverse technical areas assemble to pursue specific development projects. Optical and electronic laboratory facilities support research efforts complemented by departmental programs, drawing on the combined expertise of Spectrum Lab personnel and affiliated faculty. A 32-processor SGI Origin 2000 supercomputer, shared with the Center for Computational Biology, provides superb scientific modeling capability.

Several projects are ongoing. An all-optical correlator project will process signals continuously at 10 Gbit/sec. One application consists of identify-
ing patterns in multiple-probe data from neural bundles to establish their adaptive cooperative function. More generally, this correlator can contribute to iterative computation, used in adaptive imaging. Cache memory for a next generation (petaflops-scale) supercomputer will be built using all-optical technology. Application of this concept extends to buffer memory for data routing in communication networks. Supplementing this capability, all-optical switching are being devised with intended application in storage area networks - large distributed data banks, regionally interconnected. Frequency references for spectroscopic measurement and clocks have been demonstrated in compact implementations, and their application in precision-timing measurement instruments is under development.

The common thread throughout these projects is the exploitation of the spectral attributes of optical fields to provide either immense bandwidth in information processing or exquisite precision in oscillator stability. A spectroscopic discipline called spectral hole burning (or optical coherent transients) sustains much of the technology development. Other core techniques include ultra-short optical pulse shaping for data multiplexing, and the development of optical micro-resonators for wavelength discrimination and switching devices.

The Spectrum Lab staff consists of research scientists and engineers as well as postdoctoral fellows. It currently recognizes faculty affiliates in Physics, Electrical and Computer Engineering, and Chemistry and Biochemistry. Collaborations with Computer Science and Mathematical Sciences are anticipated. The Spectrum Lab has close connections with other MSU centers: the Optical Technology Center (OpTeC), the Center for Computational Biology (CCB), and the Center for Biofilms Engineering (CBE).

Both graduate and undergraduate students are supported to participate in Spectrum Lab projects. Research that contributes to these projects, pursued under the supervision of either Spectrum Lab research professor staff or affiliated departmental faculty, can partially satisfy educational requirements or serve as the independent work toward advanced degrees.

For more information, go to http://www.spectrum.montana.edu/ or call (406) 994-6889.

**Montana Space Grant Consortium**

The Montana Space Grant Consortium (MSGC) was established in 1991 as a component of NASA’s National Space Grant College and Fellowship Program. The Montana program is one of the national network of 52 Consortia, working to strengthen aerospace research and education in the United States.

Montana State University is the Lead Institution of MSGC, which has fourteen additional academic affiliates across Montana, as well as other educational and industrial members.

MSGC offers a variety of programs to support students and faculty wanting to pursue activities consistent with NASA’s interests.

**Fellowships, Scholarships and Student Research**

Each year MSGC offers graduate fellowships and undergraduate scholarships to students pursuing NASA-related studies. Applications are available early in the spring semester and due April 1st of each year.

In addition to fellowships and scholarships, the Montana Space Grant Consortium offers support for undergraduate research at MSU-Bozeman throughout the year through the Undergraduate Scholars Program (USP). Stipends and fee waivers are available through this program and may be requested by submitting a research proposal to the USP office.

**Program Opportunities for Students**

The Montana Space Grant Consortium supports a number of programs at MSU-Bozeman which provide opportunities for students from all majors to participate in NASA-related work. The BOREALIS high altitude ballooning program flies student-designed and built scientific experiments to altitudes over 100,000 feet above Montana, to the edge of space. MSGC, together with MSU’s Space Science and Engineering Laboratory, offers undergraduate and graduate students the chance to design, build, fly, and operate real spacecraft, including MEROPE, the first satellite built in Montana, and MIMIC, a national student-led mission to Mars. MSGC’s Space Public Outreach Team offers MSU undergraduates the opportunity to become involved in outreach efforts of major NASA Space Science missions. MSGC also coordinates opportunities for students at NASA Academy and other internship programs at NASA Centers around the country. Seven MSGC student teams, selected in national competition, have flown with their experiments on NASA’s “Vomit Comet” astronaut training aircraft, at the Johnson Space Center in Houston, Texas.

**Campus Wide Programs**

MSGC funds a variety of faculty-proposed research and education enhancement programs across the MSU campus and throughout the state of Montana. These efforts allow students to work with faculty on cutting edge research and also provide opportunities for faculty to develop projects which share aeronautical and space sciences and engineering with diverse audiences. Funding for innovative, NASA-related programs is awarded annually through a competitive proposal process.

For more information, please visit spacegrant.montana.edu or contact the Montana Space Grant office at msgc@montana.edu or 994-4223.

**The Space Science and Engineering Laboratory**

MSU’s Space Science and Engineering Laboratory (SSEL) is a center of expertise with faculty, staff, and facilities for space research and space technologies. The charter of the laboratory is to bring together students and faculty in the science and engineering disciplines to conduct space flight experiments within an interdisciplinary research and student training environment. As described below the program has involved building the capability at MSU to conceive, design, build, and operate sounding rocket payloads and small satellites. A fundamental tenet of the organization is to pursue state-of-the-art research while focusing strongly
on student involvement, education and training in experimental space science. Upon graduation, participants in this program can enter the workforce with direct experience in space technologies.

Our hardware projects are space science motivated while simultaneously directed at major involvement by students at the undergraduate and graduate levels. Students undertake major responsibilities for design, engineering, development, test and flight operation, thereby gaining the essential beyond-the-classroom experience of working in an interdisciplinary team environment. SSEL students develop necessary workforce skills through hands-on experience gained by building complex systems requiring formal documentation, configuration management, and adherence to schedule and budget. The students encounter and solve systems engineering challenges beyond those usually presented through the standard engineering and science curriculum. This deep involvement provides the extra experience that prepares these students to embark immediately on highly productive positions upon entering the workforce.

A major thrust of our program is the development of low cost nano- and picosatellites in the 1-25 kg mass range as potential elements of satellite clusters. Currently, SSEL, together with the Montana Space Grant Consortium, has two such satellites under construction, and a third being planned. The three missions represent a wide range in scope and sophistication. MEROPES, The Montana Earth Orbiting Pico Explorer is a cube about four inches on a side and weighs just over two pounds, and is among the smallest active satellites ever built. The satellite will carry a miniature instrument to measure energetic particle radiation in the near earth environment and is nearing completion, in readiness for its third quarter 2004 launch from Kazakhstan. Maia is somewhat larger, weighing about 30 pounds and measuring about 18 inches in diameter and, as of November, 2003, is undergoing design and prototyping by the student team at MSU. Maia will compete against satellites being built by 12 other universities for a launch on NASA’s Space Shuttle in 2006. Our third mission, MIMIC (Magnetic field Investigation of Mars by Interacting Consortia) is a planned mission under development by students from colleges in Montana, Arizona, Colorado and Alabama that would be placed into orbit around the planet Mars to characterize the magnetic fields near Mars.

Sounding rocket payloads also offer exciting opportunities for students to gain space hardware experience. Our initial sounding rocket investigation, the NASA OSS Multi-Order Solar EUV Spectrograph (MOSES) Project, led by Charles Kankelborg, Assistant Professor of Physics, is already well into later stages of development. Dr. Kankelborg and his students are designing, building and testing most of the payload systems, and also have primary responsibility for establishing interfaces with parts and subsystems contributed by NASA, Mullard Space Science Laboratory (UK) and Lockheed-Martin. We want to build our capabilities to support follow-on solar physics sounding rocket investigations and to develop sounding rocket investigations of high-latitude electrodynamic processes associated with the aurora.

The laboratory seeds ongoing advanced development projects: proposal-based competitive ‘design-build-fly-analyze-report’ one or two-semester mini research projects carried out by three-to-five person undergraduate teams. Examples of such projects include miniature altitude profilers for atmospheric sounding, autonomous magnetic attitude control and sensing systems, inter-spacecraft communication systems, and multi-spectral remote sensing. Again the primary objectives are for students to experience the system development process that begins with concept and ends with an achieved goal and a project report.

SSEL works with the Montana Space Grant Consortium’s Balloon Outreach, Education and Landscape Imaging System (BOREALIS), a high-altitude ballooning program that takes student designed and built science payloads to the edge of space. BOREALIS provides stimulating opportunities for undergraduate students to undertake research experiments in the upper atmosphere. MSU students have launched 19 balloons between 2001 and 2003. Our group has led training workshops for other college and universities across the country, and several new ballooning programs have emulated the BOREALIS model. BOREALIS uses latex weather balloons to carry payloads of up to 12 pounds as high as 111,000 feet with flight durations of up to four hours. With complete local control over the flight scheduling and launch logistics, this program is ideal for providing the complete design-build-fly-analyze-report experience students need to understand the space research process.

An important part of SSEL’s program is the development of a satellite tracking and control station on campus. To provide the complete end-to-end spaceflight experience, our student-built satellites will be controlled by student operators. A low cost system using commercial ham radio equipment, capable of establishing links with low-Earth orbiting satellites is being set up using directional antennas mounted on the roof of a campus building.

Students interested in becoming involved in the programs of the Space Science and Engineering Laboratory should contact the Director, Dr. David Klumpar; email address: klumpar@ssel.montana.edu For more information, go to http://www.ssel.montana.edu/

Summer Session

Summer Session at MSU offers a variety of exciting classroom and outdoor opportunities. We plan Summer Session for those who want to get a jump start on college, continue making progress on undergraduate degree programs, work on a graduate degree, or even take classes while still in high school. A variety of new courses to fill core curriculum requirements and courses designed especially for summer are offered for a diverse audience. In addition, supplemental continuing education courses and summer programs are available to take advantage of Bozeman’s unique learning environment.

Bozeman is renowned for its summer activities-surrounded by mountains, the unspoiled area is filled with hiking and biking trails, lakes and rivers, and world famous fishing spots. With all that the area has to offer, plus the stimulating atmosphere at MSU, it’s the ideal location to spend your summer!
Service Learning at Montana State University

Service Learning courses provide Montana State University students with the opportunity to link academic study with community involvement. Students use information from these courses to address real needs of local and global communities. Student learning and service to the community are essential elements of these educational experiences. Through critical reflection, students integrate the knowledge and skills they are learning in class with applications in the real world.

Service learning courses enhance academic learning by helping students develop work-related skills, enhance their sense of civic responsibility, clarify their academic goals/aspirations, and increase awareness of moral and ethical issues while providing valuable assistance to non-profit community organizations. For many students, service learning enlivens the course and further engages them in meaningful understanding of academic content.

Courses which utilize the service learning instructional method are designated as a Service Learning Course in each semester's Schedule of Classes.