Welcome to the Graduate Program in Land and Atmospheric Science at the University of Minnesota. The Department of Soil, Water, and Climate created this graduate program in 2009. It is a science-based interdisciplinary program focused on the fundamentals of Earth system processes related to land and atmosphere and their coupled interactions. Students have the option to develop a program based on one of the more traditional areas in atmospheric science or soil science or to design their own interdisciplinary course of study bridging the two disciplines.

Our program has nearly 40 faculty members and approximate 4:3 faculty to graduate student ratio. Environmental science topics constitute the majority of research conducted in the department, with a core focus on the emerging area of land-atmosphere interactions. The website for this program is http://www.laas.umn.edu/. The co-directors of the Graduate Study Program are David Mulla and Dylan Millet.

Program

The Land and Atmospheric Science Graduate Program has no formal tracks or emphasis areas, but instead allows students to design a curriculum that addresses their interests within the scope of the program.

Research

Research topics in Land and Atmospheric Science are diverse and highly interdisciplinary. Graduate students and faculty work together on both applied and basic science problems. Current research is focused on: biogeochemical cycles of carbon, nitrogen, and phosphorus; impacts of climate variation on natural and managed ecosystems; the sources, transport, and fate of pollutants in soil, air, and water; improving and protecting land, air, and water quality; developing sustainable agricultural practices to ensure high quality agricultural products; and modeling the complex interactions between the land and atmosphere.

Research in LAAS is funded through many sources including the National Science Foundation, Department of Energy, United States Department of Agriculture, National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, State Agencies, Commodity groups, endowments and other sources.
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The Department of Soil, Water, and Climate currently has a total of 31 faculty members - 28 are on the St. Paul Campus and one each is located at the branch Research and Outreach Centers at Crookston, Lamberton and Waseca. USDA-ARS scientists also hold adjunct professorships in Land and Atmospheric Science. They participate fully in all departmental activities, including guiding graduate students and serving on departmental committees, but do not teach formal courses. We participate in two of the undergraduate majors in the College of Agricultural, Food, and Environmental Sciences:

- Environmental Sciences, Policy and Management
- Agricultural Industries and Marketing

The Department occupies the entire Soil Science Building and a portion of Borlaug Hall and Crops Research Building. Faculty members in similar subdisciplinary areas are generally located together. Thus:

- Soil Morphology & Genesis: 5th floor of Borlaug Hall and 5th floor of Soil Science
- Environmental Biophysics: 5th floor of Borlaug Hall
- Atmopsheric Sciences: 4th floor of Soil Science
- Soil Chemistry & Fertility: 4th floor of Borlaug Hall and part of 2nd floor of Soil Science
- Extension Faculty: 4th floor of Borlaug Hall
- Administrative Offices: 439 Borlaug Hall
- Main Office: 439 Borlaug Hall
- Classrooms: 3rd floor of Borlaug Hall
- Teaching Labs: 4th floor of Borlaug Hall
- Climatology Faculty: 4th floor of Borlaug Hall
- Soil Microbiology: 2nd floor of Borlaug Hall
- Biochemistry: 1st floor of Borlaug Hall

Organization

The Department of Soil, Water, and Climate is one of thirteen departments in the College of Food, Agricultural and Natural Resource Sciences. The other departments are Animal Science; Applied Economics; Agricultural Education; Agronomy and Plant Genetics; Bioproducts and Biosystems Engineering; Entomology; Fisheries, Wildlife and Conservation Biology; Food Science and Nutrition; Forest Resources; Horticultural Science; Plant Biology; Plant Pathology; and Soil, Water, and Climate.

A list of key administrators in the University that especially relate to our department is given below.

- Eric Kaler: President
- Karen Hanson: Senior Vice President for Academic Affairs and Provost
- Henning Schroeder: Vice Provost and Dean of Graduate Education
- Brian Buhr: Dean College Food, Agricultural and Natural Resource Sciences (CFANS)
- Greg Cuomo: Associate Dean for Research and Graduate Programs, CFANS
- Michael E. White: Associate Dean for Academic Programs and Faculty Affairs, CFANS
- Bev Durgan: Dean University of Minnesota Extension Service
- Lisa Wiley: Graduate programs coordinator, CFANS
The Minnesota Agricultural Research and Outreach Center is considerably more than its name implies. The Center’s mission is to organize and support not only University of Minnesota scientists who conduct research on the production, processing, marketing, distribution, and quality of food and other agricultural products, but also those who study ways to improve forests and forest products, human nutrition, family and community life, recreation and tourism, and overall environmental quality in Minnesota.

Although the Center’s research projects range from the very basic to the highly applied, all are mission oriented. Above all else, the emphasis is on high-quality research that meets the long- and short-term needs of Minnesota and its people.

The Minnesota Agricultural Research and Outreach Center was established by the state legislature in 1883, two years before Congress allocated funds to set up agricultural Research and Outreach Centers at land grant universities in each of the states. As an integral component of the three-part function of the land grant university system - teaching, research, extension - the Agricultural Research and Outreach Center has contributed greatly to the development of state, national, and world agriculture, forestry and related industries. It has improved rural life, and is serving the United States and other countries through programs in food, fiber, and other areas basic to individual and family life.

Where is Center research conducted?

The Center is part of the University of Minnesota’s College of Agricultural, Food, and Environmental Sciences. Headquartered on the University’s St. Paul campus, it conducts much of its research through faculty in the Colleges of Food, Agricultural, and Natural Resource Sciences, Human Ecology, Veterinary Medicine, and Biological Sciences.

Independent and cooperative research at other locations throughout Minnesota contribute greatly to the success of the Center’s coordinated research programs. The branch Research and Outreach Centers at Crookston, Grand Rapids, Lamberton, Morris and Waseca provide facilities for research under local climatic and soil conditions. Branch centers are staffed with scientists from a variety of specialized fields, and each center has its own superintendent and advisory committee. Umore Park is actually an extension of the St. Paul campus and scientists from the St. Paul campus supervise the research conducted there. Other, smaller facilities play important roles in the Center’s research programs as well. Center scientists conduct research near Chaska at the Horticultural Research Center and the Landscape Arboretum, units of the Department of Horticultural Science and Landscape Architecture. The Sand Plain Experimental Farm, located near Becker, is the site of research on crop irrigation systems, greenhouses, and fish culture facilities that utilize waste heat from power generating plants. The primary facility for forestry research other than the St. Paul campus is the Cloquet Forestry Center, administered by the College of Food, Agricultural and Natural Resource Sciences.
FACILITIES & SERVICES

General Information and Office Staff
The Department of Soil, Water, and Climate main office is located in 439 Borlaug Hall. The Administrator’s office is 446 Borlaug, and the Accounting Office/dropbox is located in 442 Borlaug Hall. There are three departmental rooms: Borlaug 375, Borlaug 438 and Soils S415. These rooms are scheduled for meetings, classes, seminars, and any other gathering which seem appropriate. Conference rooms can be reserved via Google calendar or by contacting the main office.

Keys
Keys for entry to Department buildings, (Borlaug Hall, Soils Building, Greenhouse, and Crops Research) and to offices and research laboratories which students use can be obtained from the main office. There is a $5 deposit per key when keys are issued which will be refunded when keys are returned. You will need your University of Minnesota valid ID to be approved for access to the building. This activation can be done in the main office.

Security
Campus buildings are locked from 7:00 p.m. to 6:00 a.m. weeknights, Saturday afternoon, and all day Sunday. Many people have access to building facilities during working hours. Keep items of value out of sight, preferably locked in a desk or cabinet. We encourage you to keep your offices and labs locked when you are not around. Windows should be closed for the evening. If you have valuable articles taken from your work place, please report it immediately to the University police and the main office.

Computer Room
Computers, printers and graphic arts equipment are available for graduate student use. The computer equipment is stationed in Soils 521 under security arrangements. Guidelines and resources are posted in the computer room.

Mail & Packages
Graduate student mailboxes are located in 435 Borlaug Hall. Messages and mail are distributed to mailboxes daily. If you plan to be gone for an extended period of time, please let the main office know if you need any special handling for your mail. The campus post office is located in the St. Paul Student Center and a mailbox is located at the front steps of Borlaug with a 4PM pickup time.

Packages are normally delivered to the main office (unless too large) behind the main desk. Please complete the signout sheet for any package you are picking up. If you have large equipment coming on a pallet, please inform office staff of expected arrival and have a backup plan in place if needed.

Telephones
Telephones are set up according to what your advisor deems necessary. The University publishes an on-line student/staff directory which is useful in finding various departments, services and individuals. The directory is available at http://www1.umn.edu/systemwide/directories/. The main office can also provide you with a departmental phone list. Please let the main office know of any changes.

Job Postings
Information regarding available positions is posted on the bulletin board outside 439 Borlaug Hall and in the weekly e-newsletter, The Profile. The information includes various notices of post doctoral and faculty positions available at other institutions.

Bulletin Board
The main Departmental Bulletin Board is located outside the Department Office, 439 Borlaug Hall. There you will find information on departmental and intradepartmental seminars, conferences, social activities, also, information on scholarships, fellowships, special course information and other pertinent announcements.

Newsletters
A weekly newsletter, The Profile, distributed to your departmental email address is used for departmental announcements, seminars, meetings, job vacancies, social activities and to introduce new people in the Department. We encourage you to use the newsletter for any announcements you might have. Articles should be submitted to the receptionist by Friday each week. The College of Food, Agricultural and Natural Resource Sciences has a newsletter that can be found online at http://www.cfans.umn.edu/about/solutions. The University has a daily newspaper, which can also be found online at http://www.mndaily.com/.

Copy Machines
The Canon machine is located in Room 446 Borlaug Hall and requires a code. Graduate students needing to use the Canon machine for their research project must get an account number from their project leader. There is also a copy center in the St. Paul Student Center across from the bookstore.

Departmental Computer Network
Departmental computers are connected to the campus network. Each employee is assigned an e-mail account by the University.
Office Staff
The Department office staff serves as a source of information on University procedures and policies. The staff will help you with any questions or problems you may encounter. If you need to meet with the Department Head, (with or without an appointment) inquire with his secretary, located in the main office in 439 Borlaug Hall.

Payroll Staff
Student payroll, where hours worked are flexible, is handled by finance. All time is recorded in your portal under MyU. There are tutorials available to help you navigate the system. All Nonresident Aliens must report to the payroll staff to have their human resource information entered into the University’s system, and then go over to International Student and Scholar Services (ISSS), and then over to payroll. Most human resource functions are available at MyU including viewing your paycheck, updating your W-4, changing your W-2, as well as viewing your vacation/sick leave balance.

Travel
Travel authorization and expense report forms must be submitted for University travel. This is handled by the accounting office in 442 Borlaug Hall. Requests for advance travel funds must be processed at least three weeks prior to traveling. Any travel requests require approval by your project leader. Details on the University of Minnesota Travel Policy can be found on the web or you can ask the accounting staff. The travel website lists per diem rates, and mileage rates as well as other useful information when traveling on University business. The travel website is: http://travel.umn.edu/

Purchasing
The accounting staff will assist you in ordering of supplies, equipment and repairs as authorized by your research advisor. When ordering, you can use either a Purchasing Card (requires approval by supervisor before a card is issued to you) or a Purchase Order. When using the Purchasing Card, remember to give companies the University’s tax exempt ID number listed on the back of the card. Use the billing address that is listed on the informational sheet that comes with your purchasing card. Process justifications for all purchases made on your card in a timely manner at My Wallet in the Purchasing tab at MyU. When using a Purchase Order, complete the PO including quantity, catalog number, item description, name, address and phone number of vendor and costs. Purchases must be approved by your advisor. Purchase Order forms are on the department website. Orders from the University Storehouse and Fisher Scientific can be made online. You must have an account set up in advance, please see the Accounting Office for help in getting an account set-up. The purchasing website lists purchasing thresholds and steps to go through BEFORE purchasing an item. The website is: http://purchasing.umn.edu/

Reimbursements
Reimbursements are handled by the accounting office. Be sure to use the most current Employee Reimbursement Form that is on the website. The website is: http://www.swac.umn.edu/services-resources/departmental-resources

Human Resource Department Officer
The administrator serves as the Department Human Resource officer and provides information and sources to contact regarding any personnel or grievance matters. Her office is located in 446 Borlaug Hall. Contract and governing documents that cover the various positions at the University of Minnesota are located at: http://www1.umn.edu/ohr/policies/governing/index.html.

Employee Benefits Contact
The administrator serves as the Employee Benefits contact person. A benefit packet is distributed by the administrator to new employees in the department, and other forms are available on the Employee Benefits website: http://www1.umn.edu/ohr/benefits/

USDA-ARS Unit
Scientists with the U.S. Department of Agriculture - Agricultural Research Service (ARS) are adjunct members of the faculty and are housed within their subdisciplines in the department. The ARS faculty advises graduate students and serves on departmental committees.
ST. PAUL FACILITIES

Growth Chambers
We have 6 Conviron and 2 EGC controlled environment chambers located in 196 Borlaug Hall. They are equipped with fully programmable temperature, lighting, and humidity controls. A user fee of $2.30 per day is assessed to cover operating expenses. Be sure to determine if a greenhouse will work as well as a growth chamber before requesting this premium space. To get access to the chambers, see Thor Sellie p) 612-625-2712.

Greenhouses and Plant Growth Facilities
Greenhouse space is managed by the Resources Coordinating Team; visit this link http://greenhouses.cfans.umn.edu/, for information regarding fees, services and the online greenhouse request form. Contact Roger Meissner, 612-624-3631, meiss003@tc.umn.edu or Pam Warnke, 612-625-3153, alter002@tc.umn.edu, for specific questions regarding these facilities.

Research Analytical Laboratories & Soil Testing
The Department of Soil, Water, and Climate operates these facilities to serve the soil testing needs of the public and researchers, and to help support the research done at the University. The facility is directed by Brian Barber, 612-625-7701 and it performs chemical analyses on a fee per sample basis. See the laboratory service request sheets available in Crops Research 135 for the available tests and prices. Their website is: http://soiltest.cfans.umn.edu/

Soil and Plant Sample Handling, Cold Storage, General Storage, Autoclaves
Cold storage is available in 174A and 174B Borlaug Hall and 7 Crops Research. Label, date and inventory your items.

General storage is available in several locations. See advisor if you need storage space. Do not use greenhouse rooms, hallways, or other common areas for this purpose.

Autoclaves and instructions for their use are in 290 Borlaug. Access must be obtained by bringing your UCard to the main office.

Larger quantities of soil or plant material can be dried, stored, cleaned, ground or otherwise prepared for analysis in the Crop Service building. Containers have been provided for disposal of plant and soil material; do not dispose of them in the dumpster. Please see Thor Sellie for assistance (612-625-2712).

Equipment Maintenance & Fabrication
There is a wood shop available for use in the Seedhouse, while the equipment is older and limited it is in good working condition and available at no charge.

There is a mechanical shop at 1866 Dudley Ave, it is operated by Ag. Services, the phone number is 612-625-7817. Vehicle and equipment maintenance and service is available for a fee, see the web site for details http://agservices.cfans.umn.edu/.

Vehicles
For your convenience the department has a mini-van for general checkout. The mileage charge (as of 9/12) is $0.78/mile for the mini-van. The vehicle checkout book is located in the mailroom, 435 Borlaug Hall, keys for the mini-van are there also.

All traffic offense fines and penalties are the personal obligation of the driver. Fines for traffic or parking violations are not reimbursable University expenses.

Authorized drivers must comply with all requirements of the University’s Vehicle Loss Control Program and must follow the rules in the Appendices section of this policy. The University of Minnesota vehicle use policy can be viewed at the following URL: http://policy.umn.edu/finance/vehicles
Fuel is available on campus 24/7, if you are below half a tank, fill it up, it is only courteous to do so. The pump is at the Ag Services building directly east of Crops Service. Use the fuel “computer chip key” attached to each car’s key ring.

Keys should be dropped off in the mailroom immediately after you are finished with the vehicle, do not wait until the next morning.

Please inform Thor of any concerns or problems as they arise, a note in the vehicle checkout book is a nice gesture for the next user but will likely not solve the problem.

Vehicles can also be rented on a daily/weekly/monthly time period from Fleet Services, http://www1.umn.edu/pts/fleet/. The service is very convenient and parking is available at no cost. Hours are M-F 6:30 a.m. to 6:30 p.m., and Sunday 7:00 a.m. to noon. After hours drop-off is available. If you are traveling more than 170 miles it is cheaper to rent from Fleet Services than to use the departmental van. If you can use a mid-size sedan it is cheaper if you traveling over 105 miles and half the cost at 350 miles.

To reiterate, to operate a university vehicle you must:
- possess a valid U.S. driver’s license, and be at least 19 years of age.
- return the vehicles as soon as possible.
- return the vehicles clean and full of fuel.
- accidents must be reported immediately and forms filled out within 24 hours. Forms are available on fleet services website.
- report any problems to Field Crew Office, 262 Borlaug Hall, p) 5-2712.

Safety

We will do whatever we can to provide you with a safe work environment but this is only possible if you practice safe work habits. Safety should be practiced when operating a motor vehicle, working in extremely hot or dusty environments, fields recently treated with pesticides, as well as the more obvious laboratory situations. Project leaders and supervisors are responsible for the safety and well being of their employees, and are required to instruct you in safe procedures for working in your work place. Safety training is required of all employees and includes both video and in person training, depending on the employee’s work environment. To document this training, please use the CFANS “Worker Training Requirement Checklist”. Training should be updated as the work environment of the employee changes, noting these changes on the checklist. Annual refresher training is also helpful and should be documented as well. Finally, while the supervisor has responsibility to provide training, employees must also be aware of hazards in their work environment, ask questions as needed and obtain safety related guidance whenever the work situation calls for it.

For minor cuts and scrapes, there is a supply of bandages, gauze, antiseptic etc. in the Soil, Water, and Climate main office, 439 Borlaug Hall, as well as a very well stocked first aid cabinet located in room 412 Borlaug Hall, that we share with Agronomy & Plant Genetics.

Summary

In conclusion, our Department has some excellent research facilities available for you. Please use them fully, but don’t abuse them. If we all treat these facilities with care, they will be available in good order the next time you want to use them.
PROGRAMS & EVENTS

An orientation session is conducted for new graduate students in the Department of Soil, Water, and Climate yearly. Pertinent information is presented at this session as well as a tour of the Department facilities.

Departmental Socials
There are several traditional social activities which occur in the department annually. They range from Explore All Traditions (EAT) Night to holiday parties to social hours. The graduate students generally organize a weekly happy hour and send emails out about events.

Graduate Student Luncheons
These are luncheons put on by the graduate students to raise money to fund the LAAS Graduate Student Association. They usually include a Welcome Lunch, EAT Night, and a holiday lunch.

Departmental Seminars
Seminars are held at 3:30 PM on Wednesdays. All are welcome to attend. The Kuehnast Lecture in the Fields of Meteorology and Climatology is held every fall and the William E. Larson and Raymond R. Allmaras Emerging Issues in Soil and Water Lecture is held every spring. Details can always be found on our website at www.swac.umn.edu.
COMMITTEES

STRUCTURES & FUNCTIONS

Awards
Submits applications for College, University, and professional society awards.
(Nater, chair; Baker, Millet, Nordstrom, Cheng)

Civil Service
Discuss issues that affect civil service employees and plan luncheon get together to
form cohesiveness so that civil service employees would feel part of a group.
(Barber, McNairney; P&A rep, Wheeler)

Consultative*
Elected from nominations to serve for a staggered two-year period (non-consecutive).
Provides continuous staff input into decision-making and planning processes of the de-
partment. Agenda items which invoke faculty issues of a sensitive nature may be dis-
cussed in the absence of non-faculty members or the Department Head.
(Fernandez, Toner, Strock, Jelinski, Twine, Nelson, Spackman)

Curriculum
Evaluate and recommend changes in undergraduate and graduate curriculum.
(Bell, chair; Jelinski, Toner, Twine, Gupta, Yoo)

External Relations/Edowment
Work with development office to seek funding opportunities from donors.
(Rosen, chair; Seeley, Gupta, Fairchild, Munson, Nordstrom)

Graduate Student
Discuss issues that affect graduate students in LAAS.
(Faculty liaison: Millet, President; Jared Spackman, VP/Treasurer: Persephone Ma, So-
cial Chair: Adrian Wackett) COGS Rep: Tamás Varga; GSB Rep: Jared Spackman

Graduate Studies*
Curriculum, recruitment, admission, student programs, and examination. Committee
chaired by the Director of Graduate Studies. Members serve a three-year elected term
and are eligible for consecutive terms.
(Co-DGS: Millet & Mulla; Spokas, Snyder, Toner, Jared Spackman)

Grievance*
Serve as third party to hear grievances and try to resolve them within the department
– may need to use college human resources staff to help resolve grievances.
(Sadowsky, Toner, Bonse)

Faculty Review/Annual Review*
Works to perform evaluations and reviews of faculty members for the department.
(Mulla, Twine, Kaiser, Griffis, Toner)

Research Facilities/Equipment
Climatological Observatory: (Boulay)
Greenhouses: (Kaiser, Sellie) - Pam Warnke
Growth Chambers: (Gutknecht, Sellie)
Radioisotopes: (Sadowsky, Spokas)
Analytical Services: (Rosen, Toner, Nater, Kaiser, Spokas, Barber)

Safety
Distribute laboratory audit checklist developed by Environmental Health & Safety that
consists of a list of questions that address issues such as general house-keeping, chem-
ical storage, waste management, required training and paperwork. Responsible for
making sure employees who are handling chemicals go through the required training
and responsible for maintaining records of training taken by employees.
(Sadowsky, Chair; Spokas; Sellie; Dolan, Piotrowski)

Seminar
Plan, schedule and conduct departmental seminars during the year.
(Gupta, Yoo)

Social
Parties, picnics, fun and fellowship
(Fernández, Nordstrom, Ishii, students Wackett, Ma, Looker)

Space
Space utilization, needs, and requirements
(Rosen, chair; FCC, Venterea)

Student Fees
Advise and make recommendations related to student and teaching technology needs.
Appointed by Department Head.
(Twine, chair; Gupta, Nelson, Rosen, ex-oficio)

* Denotes an elected committee
CAMPUS INFORMATION

The University of Minnesota was chartered in 1851, seven years before the Territory of Minnesota became a state. It began as a preparatory school, was beset by financial crises during its early years, and was forced to close during the Civil War. In 1869 the University reopened its doors with 9 faculty members and 18 students. Two students were graduated at the University’s first commencement in 1873. The first PhD was awarded in 1888 and the Graduate School celebrated its 100th anniversary during the 1987-88 academic year. Today the University is one of the largest in the U.S. On the Twin Cities campus alone there are 16 colleges, 375 departments, and 15,049 employees, and 51,659 students (data taken from Institute of Office of Institutional Research and Reporting). The Twin Cities Campus has three campuses – East Bank (Mpls), St. Paul Campus (St Paul), and West Bank (Mpls). The University system also includes branches at Duluth, Morris, Crookston, Lamberton, and Rochester.

Campus Facilities and Services

Employee Benefits
Handles benefit and retirement options for employees. It provides assistance to employees when choosing retirement and benefit options. The Department is housed in 100 Donhowe on the Mpls campus. Their website is: https://humanresources.umn.edu/benefits

University Regents Scholarship
The Regents Scholarship Program covers a portion of tuition costs for eligible employees enrolled in the University of Minnesota credit-bearing courses. The portion covered is: 90% of the tuition cost for eligible employees matriculated for the first time in a baccalaureate degree program, 75% of the tuition cost for other eligible employees enrolled in courses covered under the Regents Scholarship program. To download application or more information about eligibility, the website is http://onestop.umn.edu/finances/financial_aid/grants_and_waivers(regents.html.

International Services
Counseling and advisory services are provided for personnel from other countries by the International Student and Scholar Services in 190 Humphrey School, 626-7100. It provides assistance to those seeking information about visa regulations; federal, state and local regulations governing foreign nations; English language; and other educational, social and personal problems. http://www.iss.s.umn.edu/

Police Escort Service
The University of Minnesota Police Department offers an escort service to the University community and is available 24 hours a day during school year. Call 624-WALK.

Boynton Health Service
St. Paul Clinic is a small satellite clinic. The staff includes licensed and certified physicians, physician assistants, nurse practitioners, licensed practical nurses, and certified medical assistants. Located at 109 Coffey Hall, St. Paul, MN 55108. Hours vary and are listed here: http://www.bhs.umn.edu/hours-locations/index.htm

Counseling Services (St. Paul)
Located in the Student Affairs Office provides assistance to those students who wish to learn more about themselves as they develop in an educational setting. Counseling services include the areas of academic or educational decisions, vocational or career planning, personal or family problems, marital relationships, and other concerns. Assistance is offered to develop reading and study skills (990 Coffey Hall, 624-3115). Assistance for career related questions can be directed to the St. Paul Campus Career Center, which is located in 198 McNeal Hall (624-2710) the website is http://www.careerhelp.umn.edu/

Athletic Facilities
The University offers extensive indoor and outdoor athletic facilities and opportunities for use by all students, staff and faculty. Students may purchase reduced price tickets for intercollegiate athletic events. The recreational sports program is designed to provide opportunities for students to participate in a wide variety of competitive and non-competitive, organized and informal sports activities. Gyms are located in Minneapolis and St. Paul, housing basketball, volleyball and racquetball courts, swimming pools, etc. Outdoor facilities include tennis courts and golf courses. The rec center website can be found at http://recwell.umn.edu/.

On-campus and Off-Campus Housing Information
Housing information may be obtained from the Housing Offices: Comstock Hall, 210 Delaware Street SE, Mpls. Campus (4-2994) and 190 Coffey Hall, St. Paul. Go to https://housing.umn.edu/

Bus Service
The Campus Shuttles connect the Minneapolis/St. Paul segments of the Twin Cities campus. Info is available at http://pts.umn.edu/bus/shuttle.html. The Metro Transit bus line also runs between the Minneapolis and St. Paul Campus and throughout the metro campus. Info is available at http://www.metrotransit.org/. Schedules are also available in Minneapolis and St. Paul Campus Student Unions.

Parking
Parking is available on a per day or contract basis. The nearest lots are on Gortner (ramp), Upper Buford Circle and on the Fairgrounds. Parking availability is through Student Commuter Contract Services—lotteries are held each semester. Announcements for scheduled lottery drawings are stated in Daily campus newspaper. Further details are available from Parking Services Office (626-7275) or http://pts.umn.edu/.

Other Options
The Transportation Services Division also provides information on rail lines, bicycling resources, and using walking paths through tunnels during inclement weather at http://pts.umn.edu/.

Places to Eat on Campus
The St. Paul Student Center offers a few options nearby (Terrace Café Food Court, Subway, and the Gopher Spot) and Lori’s Café and Mim’s Café are right across Cleveland from campus at Buford. Hours vary and may change during the summer months. There are extensive vending machines located on the second floor in McNeal Hall. A microwave and change machine are also available.
The University of Minnesota-Twin Cities Libraries is one of the largest library systems in the country with over 7 million books, 109,000 journals, 13 locations, and expert librarians for each department on campus. The Libraries are committed to offering a full range of services for instructors, researchers, and students at the University of Minnesota.

Library Liaison for the Department of Soil, Water, and Climate
Megan Kocher
82 Magrath Library
mkocher@umn.edu
612-626-3605

Megan is available for one-on-one or group consultations on literature searching, databases, citation managers, pdf organization, copyright, data management, impact factors, and finding grant funding.

St. Paul Campus Libraries
Magrath Library
(Agricultural, Biological, and Environmental Sciences)
1984 Buford Avenue (4-2233)

Natural Resources Library
(Forestry, Entomology, Fisheries, and Wildlife)
375 Hodson Hall (4-9288)

Veterinary Medical Library
(Veterinary Medicine)
450 Veterinary Science (4-4281)

Minneapolis Libraries
Biomedical Library
East Bank
Diehl Hall (6-2227)

Walter Library
(Science & Engineering)
East Bank
Walter Library (4-2006)

Wilson Library
(Humanities and Social Sciences)
West Bank
Wilson Library (4-3321)

For hours and locations of all 13 campus libraries, visit
https://www.lib.umn.edu/about/collections

Online
www.lib.umn.edu
The University of Minnesota Libraries have a robust website where you can search collections, chat 24/7, access online databases, journals, tool, and access library services.

MNCAT Discovery
MNCAT Discovery is the main search tool on the Libraries website. It searches the Libraries’ book, journal, and media holdings as well as several large article databases. Here are some tips for using MNCAT Discovery:

• Sign in on the results page to see more journal articles in your results.
• Pay attention to the material type in your search results list since articles, journals, books, and more are mixed together.
MNCAT Discovery, cont.

- Click “Get It” or “View It” to request or view an item.
- To narrow your results to just library holdings (no articles), click the “Libraries Catalog” tab in your search results.
- Make an appointment with your subject librarian for an in-depth tour of MNCAT Discovery.

Subject-specific Databases

The University Libraries offer access to thousands of journal databases. Our subject librarians have created guides with the top databases in each field. These guides are useful as a starting point in your own field or when selecting databases for interdisciplinary research.

- Soil Sciences: https://www.lib.umn.edu/subjects/rgs/194
- Water Resources: https://www.lib.umn.edu/subjects/rgs/209
- To find a guide for any subject, use the “By Subject” dropdown list under “Databases” on the Library home page.

Interlibrary Loan

(https://umn.illiad.oclc.org/illiad/logon.html)

Use the Libraries’ Interlibrary Loan service to request books, articles, and other materials that the library does not own. Books requested through this service will be delivered to the campus library of your choice, and most journal articles will be delivered electronically. This service is free of charge.

Course Reserves

(https://www.lib.umn.edu/services/reserves)

For various courses taught in the Department of Soil, Water, and Climate, library materials may be placed on Reserve at the instructor’s request. Items on reserve are available on request at the selected library’s service desk. Reserve items may be checked out of the library for two hours at a time when the library is open.

Circulation Policies

(https://www.lib.umn.edu/services/borrowing)

- Use your UCard to check out books from the libraries
- Use the Library website to have books sent to any library on campus for pickup
- The initial loan period for graduate students, faculty, and staff is 13 weeks, but items can be renewed for up to 2 years if they are not recalled.
- There is no limit on the number of items that can be checked out at one time.
POLICIES & PRACTICES

A) Administration of the Graduate Program

1) The Graduate School:

The LAAS Graduate Program operates within the general policies and practices of the Graduate School. Details pertaining to the general regulations and organization of the Graduate School are outlined in the Constitution and Bulletin of the Graduate School; both faculty and graduate students should be familiar with these documents. Information summarized in this document is provided as an additional guide to those specifically concerned with advanced studies in Soil Science at the University of Minnesota.

2) The Graduate Advisory Committee and Director of Graduate Studies:

The general policies of the graduate program are established by the LAAS Graduate Faculty, and are administered by the Graduate Advisory Committee and the Directors of Graduate Studies. The Committee is concerned with a number of activities aimed at serving both faculty and graduate students in the maintenance of academic standards without impinging on the student-advisor relationship. Problems related to the progress of a graduate student may be directed to the Committee by either the student or faculty advisor. The Director(s) of Graduate Studies chairs the Graduate Advisory Committee, and is the facilitator for a range of program activities, and signatory for most program documents. Membership of the Graduate Advisory Committee is as follows: The graduate advisory committee for the Land and Atmospheric Sciences program is made up of five members of the faculty in the program plus the Director(s) of Graduate Studies, and a representative for the graduate students in the program. The five members span the disciplines in the program, with a minimum of 2 members each from the atmospheric and the soils faculty. The members serve terms of 3 years.

B) Selection of Candidates for Graduate Studies

Student Recruitment Procedures

Students will be recruited by the graduate committee and members of the graduate program. Faculty members with grant funding for the student will assume the main responsibility of recruitment. The program will use web based material along with materials being developed with the College of Food, Agricultural, and Natural Resources Sciences for recruitment. The website and promotional materials will be overseen by the DGS.

1) Applications for Admission to the Graduate School and for Financial Assistance:

Applications are done online. Applications materials including official transcripts and test scores are submitted to the Graduate School, 309 Johnston Hall, University of Minnesota, Minneapolis, Minnesota 55455; while departmental forms along with three letters of recommendation, and other program specific materials are returned to the Director of Graduate Studies, Department of Soil, Water, and Climate, 439 Borlaug Hall.

2) Evaluation and Selection of Applicants:

Applicants judged as qualified by the Graduate School and by Graduate Advisory Committee are recommended for admission to the Director of Graduate Studies, who subsequently makes a recommendation to the Graduate School, which will only question recommendations for acceptance of a student when that student’s grades or GRE scores fall significantly below the preferred standards established by the program. The Graduate School will notify the applicant of the decision to accept or reject, but subsequent information on the conditions of appointment and the possibility of financial support will be supplied by the program. The formal review process will normally take 4-6 weeks, once all documents have been received. This formal application selection procedure does not preclude faculty members from making preliminary contacts, interviews, and evaluation of potential applicants; these types of contacts are encouraged, particularly if the applicant seeks funding. However, it should be made clear to the applicant during this process that any tentative commitments are subject to approval of the Departmental Graduate Advisory Committee, the Director of Graduate Studies, and the Graduate School.

3) Basis of acceptance into the Graduate Program of Land and Atmospheric Sciences:

To be considered as acceptable for admission into the Graduate Program in Land and Atmospheric Sciences, we prefer applicants who are competent in English speaking and writing, have a minimum undergraduate GPA of 3.0 out of 4.0 and have achieved scores in the Verbal, Quantitative, and Analytical sections of the Graduate Record Exam (GRE) which would place them in the 50th percentile or higher for each section of this exam. However, each applicant will be judged on their overall record with trends in the student’s performance in upper division courses, in those courses most pertinent to their emphasis area, or to superior scores in the Quantitative and Analytical sections of the GRE, considered especially important in marginal cases.

International students for whom English is a second language must show academic qualifications equivalent to a GPA of 3.0 out of 4.0. They should also provide evidence that they ranked in the top 20% of the graduating class. Such students will also be expected to demonstrate English proficiency equivalent to achieving a Test of English as a Foreign Language (TOEFL) score meeting the Graduate School minimum (a score of at least 79 on the Internet-based TOEFL with section scores of 21 on writing and 19 on reading [550 on the paper-based test]). Scores of at least 4 on the Test of Written English (TWE) are also recommended. These scores are not, in themselves, sufficient to permit the student to undertake unrestricted coursework, but are considered adequate for limited coursework on topics familiar to the student.

Applicants who do not meet the preferred standards stated above, but who are judged to have sufficient academic strength to warrant their admission to the M.S. program, may be accepted on conditional status. If accepted on conditional status, the following conditions will prevail:

1. A minimum undergraduate GPA of 3.0 out of 4.0 is required, along with GRE scores in the Verbal, Quantitative, and Analytical sections of the Graduate Record Exam (GRE) which would place them in the 50th percentile or higher for each section of this exam.
2. International students for whom English is a second language must show academic qualifications equivalent to a GPA of 3.0 out of 4.0. They should also provide evidence that they ranked in the top 20% of the graduating class. Such students will also be expected to demonstrate English proficiency equivalent to achieving a Test of English as a Foreign Language (TOEFL) score meeting the Graduate School minimum (a score of at least 79 on the Internet-based TOEFL with section scores of 21 on writing and 19 on reading [550 on the paper-based test]). Scores of at least 4 on the Test of Written English (TWE) are also recommended. These scores are not, in themselves, sufficient to permit the student to undertake unrestricted coursework, but are considered adequate for limited coursework on topics familiar to the student.
3. Applicants judged as qualified by the Graduate School and by Graduate Advisory Committee are recommended for admission to the Director of Graduate Studies, who subsequently makes a recommendation to the Graduate School, which will only question recommendations for acceptance of a student when that student’s grades or GRE scores fall significantly below the preferred standards established by the program. The Graduate School will notify the applicant of the decision to accept or reject, but subsequent information on the conditions of appointment and the possibility of financial support will be supplied by the program. The formal review process will normally take 4-6 weeks, once all documents have been received. This formal application selection procedure does not preclude faculty members from making preliminary contacts, interviews, and evaluation of potential applicants; these types of contacts are encouraged, particularly if the applicant seeks funding. However, it should be made clear to the applicant during this process that any tentative commitments are subject to approval of the Departmental Graduate Advisory Committee, the Director of Graduate Studies, and the Graduate School.

4. To be considered as acceptable for admission into the Graduate Program in Land and Atmospheric Sciences, we prefer applicants who are competent in English speaking and writing, have a minimum undergraduate GPA of 3.0 out of 4.0 and have achieved scores in the Verbal, Quantitative, and Analytical sections of the Graduate Record Exam (GRE) which would place them in the 50th percentile or higher for each section of this exam. However, each applicant will be judged on their overall record with trends in the student’s performance in upper division courses, in those courses most pertinent to their emphasis area, or to superior scores in the Quantitative and Analytical sections of the GRE, considered especially important in marginal cases.

5. International students for whom English is a second language must show academic qualifications equivalent to a GPA of 3.0 out of 4.0. They should also provide evidence that they ranked in the top 20% of the graduating class. Such students will also be expected to demonstrate English proficiency equivalent to achieving a Test of English as a Foreign Language (TOEFL) score meeting the Graduate School minimum (a score of at least 79 on the Internet-based TOEFL with section scores of 21 on writing and 19 on reading [550 on the paper-based test]). Scores of at least 4 on the Test of Written English (TWE) are also recommended. These scores are not, in themselves, sufficient to permit the student to undertake unrestricted coursework, but are considered adequate for limited coursework on topics familiar to the student.

Applicants judged as qualified by the Graduate School and by Graduate Advisory Committee are recommended for admission to the Director of Graduate Studies, who subsequently makes a recommendation to the Graduate School, which will only question recommendations for acceptance of a student when that student’s grades or GRE scores fall significantly below the preferred standards established by the program. The Graduate School will notify the applicant of the decision to accept or reject, but subsequent information on the conditions of appointment and the possibility of financial support will be supplied by the program. The formal review process will normally take 4-6 weeks, once all documents have been received. This formal application selection procedure does not preclude faculty members from making preliminary contacts, interviews, and evaluation of potential applicants; these types of contacts are encouraged, particularly if the applicant seeks funding. However, it should be made clear to the applicant during this process that any tentative commitments are subject to approval of the Departmental Graduate Advisory Committee, the Director of Graduate Studies, and the Graduate School.
Most assistantship stipends are based on 0.5 FTE (full-time equivalent) availability is difficult to predict; consequently, availability will vary from time to time. Financial support is most frequently in the form of research or assistance, and such opportunities for leadership should be accessible to all members of society. The Graduate School and its constituent graduate programs are therefore committed to providing equal access to educational opportunities through recruitment, admission, and support programs that promote diversity, foster successful academic experiences, and cultivate the leaders of the next generation.

4) Diversity:
The Graduate School embraces the University of Minnesota’s position that promoting and supporting diversity among the student body is central to the academic mission of the University. We define diversity to encompass many characteristics including (but not limited to) economic disadvantage, special talents, evidence of leadership qualities, race or ethnicity, gender identity, a strong work record, and disability. A diverse student body enriches graduate education by providing a multiplicity of views and perspectives that enhance research, teaching, and the development of new knowledge. A diverse mix of students promotes respect for, and opportunities to learn from others with the broad range of backgrounds and experiences that constitute modern society. Higher education trains the next generation of leaders of academia and society in general, and supports diversity among the student body is central to the academic mission of Land and Atmospheric Sciences irrespective of status of financial support.

5) Financial Support:
While acceptance into the Graduate School is a requirement for receiving financial assistance, Graduate School admission does not automatically assure the availability of such assistance. Financial assistance is most frequently in the form of research or teaching assistantships that are awarded to the best qualified applicants. Because research assistantships are generally funded by award of external research grants, their availability is difficult to predict; consequently, availability will vary from time to time. Most assistantship stipends are based on 0.5 FTE (full-time equivalent) appointments, although appointments between 0.25 and 0.5 time may be made on occasion.

Retention of regular appointment is contingent on continued registration and satisfactory performance in the academic, research, and teaching aspects of the graduate program and the availability of assistantship funds. You must register each semester that the appointment is held during the academic year. Registration during the summer session is not required.

Graduate students not on a regular assistantship may be supported by fellowships administered by the Graduate School or by non-University agencies, and some may be self-supporting. The same standards of performance and the same obligations to assist in teaching activities pertain to all graduate students in Land and Atmospheric Sciences irrespective of status of financial support.

6) Prerequisites:
Student course admission prerequisites are as shown below. Students admitted with deficiencies would be provided with a list of courses they are required to take before the completion of their degree. This list would be developed by the Directors of Graduate Studies Program in consultation with the student’s faculty advisor.

Basic Sciences
Students are expected to have taken a minimum of four of the following courses (or their equivalent): Calculus I (Math 1271 or Math 1142), Linear Algebra (Math 2243), Physics I (Phys 1111) and II (Phys 1121 or ES 3133), Intro Biology (Biol 1009), Chemistry I (Chem 1021) and II (Chem 1022), or Intro Statistics (STAT 3011).

Environmental Sciences
Students are expected to have taken a minimum of two of the following (or similar) courses: Issues in Environment (ESPM 1011), The Atmosphere (ESPM 1252), Earth Sails (Sail 2155), Earth and its Environments (Geol 1001), Intro Microbiology (ESPM 3612 or Microb 3301), or Intro Ecology (Biol 3407).

International Students
International students are welcome to apply. The International Student and Scholar Services at the University of Minnesota has excellent resources available to assist international students in the application and visa process. They also provide academic and personal counseling. Find out more online: iss.umn.edu
LAAS DEGREE REQUIREMENTS
MS plan A and B, and PhD

Summary
The program aims to educate and train students in the fundamentals of Earth system processes related to land and atmosphere and the coupled interactions between the two. Coursework consists of unifying core classes in “Land & Atmospheric Science” for all students, plus graduate electives spanning soil science, ecosystem processes, and atmospheric science.

The LAAS program offers no formal tracks. Students may choose either a Soil Science or the Atmospheric Science area of interest or, in consultation with their graduate committee, may design a rigorous course of study that spans across these areas, according to their own specific focus within Land & Atmospheric Science (for example, biogeochemical cycling, environmental chemistry, biometeorology, etc).

Students should work closely with their advisors to determine a suitable set of courses for their particular area of study. These courses should give the student skills to address scientific problems that are inherently multidisciplinary. Courses selected for the Degree Program form must be approved by the advisor and Director of Graduate Studies, preferably by the end of the first year after admission.

Unifying core classes
Goals:
1. Interdisciplinary yet rigorous introduction to Earth system processes related to land and atmosphere and the coupled interactions between the two
2. Opportunity to build strong connections with professors and peers
3. Building graduate student cohorts and morale

Registration Requirements and Deadlines
All admitted and current full-time students need to be registered for a minimum of 6 and a maximum of 14 credits by the deadline for fall and spring semester. Important dates and deadlines are available online: https://onestop.umn.edu/dates-and-deadlines

LAAS MS
The LAAS MS is a research degree. Students will take a minimum of 30 credits in either the Plan A or the Plan B option. The typical Plan A option includes: 5 credits in required LAAS core courses; 9 credits in other LAAS (or related) courses relevant to the student’s research; 6 credits in minor/related courses; and 10 thesis credits. Students will need to work closely with their advisors to determine a suitable set of courses for their particular area of study.

The Plan B MS degree requires 10 more course credits and a more modest research project. It requires at least 20 credits in core and minor courses along with the required LAAS core courses for a total of 30 credits.

Please notify Kari Jarcho of the plan type for your MS; this needs to be on file before additional paperwork can be completed.

LAAS PhD
Requires a total of 50 credits, including: 10 credits in required LAAS core courses; 6 credits in LAAS courses relevant to the student’s research; 10 credits in minor/related courses; and 24 thesis credits. The student’s graduate committee and graduate advisor will approve the selection of appropriate courses to meet this requirement; depending on the student’s emphasis and background, additional coursework may be required.

Current PhD students who already hold an MS degree from the LAAS program are expected to complete all PhD program requirements. They are responsible for taking an additional 6 credits of course work including Research in Land and Atmospheric Science (2.0 credits) if it wasn’t taken during the MS. In addition, they are responsible for taking Seminar (1.5 credits), Ethics (0.5 credits), Teaching (3 credits), and an additional 24 credits of Thesis Research above the requirements for an MS.

Students who have already received credit for LAAS 8123 Research Ethics or GRAD 8101 Teaching in Higher Ed will be required to take additional courses such as Responsible Conduct of Research (RCR training) and Directed Teaching Experience (LAAS 8128). Equivalent substitutions will be considered by the program.

Course Credit Requirements

Required Core Courses for the MS degree (5 credits)
- LAAS 5050, Integrated Topics in Land & Atmospheric Science (3 cr, Fall)
- LAAS 8128, Seminar (1.5 cr, Fall)
- LAAS 8123, Research Ethics (0.5 cr, Spring)

Required Core Courses for the PhD degree (10 credits)
- LAAS 5050, Integrated Topics in Land & Atmospheric Science (3 cr, Fall)
- LAAS 5051, Thesis Proposal Writing for Land & Atmospheric Science (2 cr, Spring)
- LAAS 8128, Seminar (1.5 cr, Fall)
- GRAD 8101, Teaching in Higher Ed (3 cr, Fall, Spring)
- SOIL 8123, Research Ethics (0.5 cr, Spring)
GRADUATE EDUCATION
STUDENT-CENTRIC
POLICY GUIDE

What does the policy govern? What is the SAME from previous policy? What has CHANGED from previous policy?

- Admission
- Program requirements
- Transfer credits
- Credits in common
- Time limit
- Minimum and maximum (total) credits for degree
- Minimum credits for minors
- Thesis credits

- Plans must have at least 12 semester course credits
- All courses must be at 4000 level or above
- GPA requirement: 2.800
- Students may transfer up to 40% of the credits on the Graduate Degree Plan
- Transfer coursework must be taken post-baccalaureate, graduate level, and taken for graduate credit
- Master’s Plan A: complete ten thesis credits (8777) and a minimum of 20 graduate-level course credits
- Master’s level minor: requires a minimum of six credits
- Plan A thesis credits can be registered for at any time during a master’s student’s degree program
- Doctoral students must complete 24 dissertation credits (8888)
- Doctoral-level minor: requires a minimum of 12 credits
- At least 50% of the certificate course credits on the Graduate Degree Plan must be 5000 level or above
- Maximum of three credits in common between two University post-baccalaureate certificates
- Students must complete and have the post-baccalaureate certificate within five calendar years of the initial enrollment
- Master’s level maximum credits allowed:
  - Plan A: 36 (combo course and ten thesis)
  - Plan B: 36
  - Plan C: 48
- Doctoral-level maximum credits allowed: 72 (combo 24 course and 24 thesis)
- Doctoral dissertation credits (8888) can be taken at any time after admission to the doctoral program - eligibility determined at the program level

EXAMPLE
PhD TIMELINE

First Semester
- LAAS 5050, Integrated topics in Land & Atmospheric Science (3 cr, Fall), Nater/Twine
  - Team taught by faculty
  - Covers key bridging topics in an intellectually rigorous way, allowing for different student backgrounds
- LAAS 6128, Soil, Water & Climate Seminar (1.5 cr, Fall), Toner

Second Semester
- LAAS 5051, Thesis Proposal Writing for Land & Atmospheric Science (2 cr, Spring), Twine
  - Proposal-based class (required for PhD only)
  - Write and review proposals
  - Present prospective research.
  - Discuss effective presentation skills as small groups
  - Learn communication skills needed for orals and PhD defense
  - Preparation for proposal part of preliminary exam
- PhD students will be required to take GRAD 8101 Teaching in Higher Ed (3 credits).
  This course is offered spring/fall.
- SOIL 8123, Research Ethics (0.5 credits)

Other Course Offerings
LAAS/SOIL courses (MS and PhD)
- LAAS 5311 Soil Chemistry and Mineralogy (3 cr)
- LAAS 5425: Atmospheric Processes I (3 cr)
  - Atmospheric physics, dynamics
- LAAS 5426: Atmospheric Processes II (3 cr)
  - Atmospheric radiation, chemistry
  - Climate variability and climate change
- LAAS 5316 Soil Formation: Earth Surface Processes and Biogeochemistry (3 cr)
### Examples of courses that might be used in the Major Field

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AGRO 5321</td>
<td>Applied Experimental Design (4cr)</td>
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<tr>
<td>AGRO 5321</td>
<td>Ecology of Agricultural Systems</td>
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<tr>
<td>BIOL 4121</td>
<td>Microbial Ecology (3 cr)</td>
</tr>
<tr>
<td>CE 4502</td>
<td>Water and Wastewater Treatment (3 cr)</td>
</tr>
<tr>
<td>CE 4582</td>
<td>Environmental Remediation Technology (3 cr)</td>
</tr>
<tr>
<td>CE 5180</td>
<td>Air Quality Engineering (3cr)</td>
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<tr>
<td>CE 5541</td>
<td>Environmental Water Chemistry (3 cr)</td>
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<tr>
<td>CE 5542</td>
<td>Experimental Methods in Environmental Engineering (3 cr)</td>
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<tr>
<td>CE 8503</td>
<td>Environmental Mass Transport (4 cr)</td>
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<tr>
<td>CE 8506</td>
<td>Stochastic Hydrology (4cr)</td>
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<tr>
<td>CE 8521</td>
<td>The Atmospheric Boundary Layer (4cr)</td>
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<tr>
<td>CE 8542</td>
<td>Chemistry of Organic Pollutants in Environmental Systems (3 cr)</td>
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<tr>
<td>CE 8561</td>
<td>Analysis and Modeling of Aquatic Environments I (3 cr)</td>
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<tr>
<td>CE 8562</td>
<td>Analysis and Modeling of Aquatic Environments II (3 cr)</td>
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<tr>
<td>EEB 4068</td>
<td>Plant Physiological Ecology (3 cr)</td>
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<tr>
<td>EEB 4611</td>
<td>Biogeochemical Processes (3 cr)</td>
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<tr>
<td>EEB 5053</td>
<td>Ecology: Theory and Concepts (4 cr)</td>
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<tr>
<td>EEB 5146</td>
<td>Science and Policy of Global Environmental Change (3 cr)</td>
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<tr>
<td>EEB 5601</td>
<td>Limnology (3 cr)</td>
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<td>EBB 5605</td>
<td>Limnology Laboratory (2 cr)</td>
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<td>EBB 8441</td>
<td>Spatial Ecology (3 cr)</td>
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<tr>
<td>ESCI 4401</td>
<td>Aqueous Environmental Chemistry (3 cr)</td>
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<td>ESCI 4402</td>
<td>Biogeochemical Cycles in the Ocean (3 cr)</td>
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<td>ESCI 5102</td>
<td>Climate Change and Human History (3cr)</td>
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<td>ESCI 5205</td>
<td>Fluid Mechanics in Earth and Environmental Sciences (3cr)</td>
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<tr>
<td>ESCI 5705</td>
<td>Limnogeology and Paleoenvironment (3 cr)</td>
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<td>ESPM 5061</td>
<td>Water Quality and Natural Resources (3 cr)</td>
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<td>ESPM 5111</td>
<td>Hydrology and Water Quality Field Methods (3 cr)</td>
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<td>ESPM 5601</td>
<td>Principles of Waste Management (3 cr)</td>
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<td>ESPM 5609</td>
<td>Air Pollution Impacts, Management, and Ethical Challenges (3 cr)</td>
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<td>FNRM 5262</td>
<td>Remote Sensing of Natural Resources and Environment (4cr)</td>
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<td>FW 5459</td>
<td>Stream and River Ecology (3 cr)</td>
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<tr>
<td>GEOG 5401</td>
<td>Geography of Environmental Systems and Global Change (4cr)</td>
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<td>GEOG 5421</td>
<td>Introduction to Atmospheric Science (4cr)</td>
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<td>GEOG 5423</td>
<td>Climate Models and Modeling (3cr)</td>
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<td>GEOG 5426</td>
<td>Climatic Variations (3cr)</td>
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<td>GEOG 5820</td>
<td>Climatology (3cr)</td>
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<tr>
<td>LAAS 5131</td>
<td>Environmental Biophysics and Ecology (3cr)</td>
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<tr>
<td>LAAS 5142</td>
<td>Biometeorology (3cr)</td>
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<tr>
<td>LAAS 5425</td>
<td>Atmospheric Processes I: Thermodynamics &amp; Dynamics of the Atm.(3 cr)</td>
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<tr>
<td>LAAS 5426</td>
<td>Atmospheric Processes II: Radiation, Composition, and Climate (3 cr)</td>
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<tr>
<td>LAAS 5480</td>
<td>Special Topics in LAAS (1-4 cr)</td>
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<tr>
<td>LAAS 5515</td>
<td>Soil Formation: Earth Surface Processes and Biogeochemistry (3 cr)</td>
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<tr>
<td>MICB 4111</td>
<td>Microbial Physiology and Diversity (3 cr)</td>
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<tr>
<td>PBO 5412</td>
<td>Plant Physiology (3 cr)</td>
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<tr>
<td>PubH 6100</td>
<td>Measurement and Properties of Air Contaminants (2cr)</td>
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<tr>
<td>PubH 6190</td>
<td>Environmental Chemistry (2cr)</td>
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<td>PubH 6191</td>
<td>Air Pollution (2cr)</td>
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<td>SOIL 5232</td>
<td>Vadose Zone Hydrology (3 cr)</td>
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<td>SOIL 5555</td>
<td>Wetland Delineation (2 cr)</td>
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<td>SOIL 5611</td>
<td>Soil Biology and Fertility (3cr)</td>
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<td>SOIL 8252</td>
<td>Advanced Soil Physics (2 cr)</td>
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<tr>
<td>SOIL 8510</td>
<td>Advanced Topics in Pedology (2-4 cr)</td>
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<tr>
<td>SOIL 8541</td>
<td>Aquatic and Soil Chemistry (3 cr)</td>
</tr>
<tr>
<td>STAT 5021</td>
<td>Statistical Analysis (4 cr)</td>
</tr>
<tr>
<td>STAT 5302</td>
<td>Applied Regression Analysis (4 cr)</td>
</tr>
<tr>
<td>STAT 5303</td>
<td>Designing Experiments (4 cr)</td>
</tr>
</tbody>
</table>
### EXAMPLE LAAS PhD PROGRAM

One example of an integrated LAAS PhD Program

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fall</td>
<td>LAAS 5050 Int. Topics in LAAS</td>
<td>3.0R</td>
</tr>
<tr>
<td>1</td>
<td>Fall</td>
<td>LAAS 5402 Biometeorology</td>
<td>3.0L</td>
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<tr>
<td>1</td>
<td>Fall</td>
<td>LAAS 8128 Seminar</td>
<td>1.5 R</td>
</tr>
<tr>
<td>1</td>
<td>Fall</td>
<td>LAAS 8888 Thesis Research</td>
<td>4.0T</td>
</tr>
<tr>
<td>1</td>
<td>Spring</td>
<td>LAAS 5051 Research in LAAS</td>
<td>2.0R</td>
</tr>
<tr>
<td>1</td>
<td>Spring</td>
<td>LAAS 5611 Soil Biology and Fertility</td>
<td>3.0L</td>
</tr>
<tr>
<td>1</td>
<td>Spring</td>
<td>GRAD 8108 Teaching in Higher Ed</td>
<td>3.0R</td>
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<tr>
<td>1</td>
<td>Spring</td>
<td>SOIL 8123 Research Ethics</td>
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<tr>
<td>1</td>
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<td>LAAS 8888 Thesis Research</td>
<td>3.0T</td>
</tr>
<tr>
<td>2</td>
<td>Fall</td>
<td>EEB 5053 Ecology: Theory and Concepts</td>
<td>4.0M</td>
</tr>
<tr>
<td>2</td>
<td>Fall</td>
<td>FR 5262 Remote Sensing of Nat Res and Env</td>
<td>4.0M</td>
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<tr>
<td>2</td>
<td>Fall</td>
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<td>6.0T</td>
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<tr>
<td>2</td>
<td>Spring</td>
<td>ESPM 5575: Wetlands</td>
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<td>2</td>
<td>Spring</td>
<td>LAAS 8888 Thesis Research</td>
<td>11T</td>
</tr>
<tr>
<td>2</td>
<td>Spring</td>
<td>Prelim Exam</td>
<td></td>
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<tr>
<td>3</td>
<td>Fall/Spring</td>
<td>LAAS 8444 Advanced Status/Dissertation Defense</td>
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Program Complete

<table>
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<tr>
<th>Year</th>
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<tbody>
<tr>
<td>51</td>
<td></td>
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<td>(1 extra)</td>
</tr>
</tbody>
</table>

**Special Registration Categories**

As you approach the end of your studies, you will have a choice of options to remain enrolled, but not taking coursework. These special registration categories have different benefits and costs. Please work with your advisor and program coordinator to find out what will work best for you situation. Explanations of the different options can be found online: [https://onestop.umn.edu/academics/special-registration-categories-graduate-and-professional-students](https://onestop.umn.edu/academics/special-registration-categories-graduate-and-professional-students)

**Key**

- **R**, required (minimum of 10 credits)
- **T**, thesis (need 24 credits)
- **L**, LAAS specialty (minimum of 6.0 credits)
- **M**, minor credit (minimum of 10.0 credits)
ASSIGNMENT OF ADVISOR

The Director of Graduate Studies will appoint a research advisor at the time the student enters the graduate program. The advisor assists the student in planning the academic program and will start the student on the research phase of the program as soon as feasible. It is considered implicit in all advisor-advisee affiliations that the entering student has the opportunity during the first two semesters in residence to change advisors, providing mutually satisfactory arrangements can be made with all the staff members concerned, particularly where assistantship appointments are involved. The Graduate Advisory Committee may be asked by staff members or by students to assist in such arrangements. Students with program already well under way are advised that changes in the advisor affiliation may result in additional time for degree completion and may jeopardize any previous arrangements for financial assistance.

When you have identified a faculty member and they have agreed to serve as your major advisor, contact the Graduate Program Coordinator, Kari Jarcho (in the instance where this was not set at the time of admittance). The advisor will be recorded in University records and forwarded to the DGS for approval. If you change your thesis topic and need to change your major advisor or co-advisor, you may do so in the same way.

All MS and PhD students are expected to complete an annual review form. See page 48 for details.

PRELIMINARY EXAM

The Written Preliminary Examination and Oral Preliminary Examination must be passed by every PhD candidate. The purpose of these exams is to demonstrate a comprehensive knowledge of core concepts in Land and Atmospheric Science and within the student’s specific subdiscipline; and to assess the student’s analytic ability, creativity, and potential for successful completion of the PhD program in LAAS. The student is responsible for completing all Preliminary Exam-related forms and procedures that are required by the Graduate School and by the LAAS graduate program (see http://www.grad.umn.edu/current-students-forms/formsdoctoral). Both the Written and Oral Preliminary Examinations should normally be completed by the end of the student’s second year in the program. If you have questions, please contact the LAAS administrator or DGS.

Part A - Written Preliminary Examination

1) Students develop, write and orally defend an original, hypothesis-driven research proposal that:
   - Outlines a series of experimental approaches that will test the validity of the hypothesis.
   - Establishes the scientific context of the proposed research with respect to prior work and the current state of knowledge in the field.
   - Demonstrates knowledge of core information and concepts in their field within Land and Atmospheric Science.

   The Written Proposal is an NSF or USDA-style research grant proposal. The proposal must be hypothesis-driven and an original contribution by the student. It cannot be based on one that was supplied by the advisor. The proposal topic should be selected by the student and approved in advance by the exam committee. The proposal must contain an abstract, a brief review of the literature pertinent to the specific question, a detailed description of experiments designed to test the hypothesis, a discussion and interpretation of the anticipated results, a concise statement of the significance of the project and a list of references.

2) The written proposal should be submitted to the examination committee by eight weeks prior to the end of the student’s second year in the program.

3) The proposal should be 5-8 single-spaced pages (12 pt font, 1” margins), not including references or figures, and will be distributed to all members of the exam committee. Each member of the exam committee, with the exception of the minor field examiner, will prepare a written critique.

4) Examiners will be asked to comment specifically on the creativity, originality and validity of the proposal and of the experimental approaches proposed to test the postulated hypothesis as well as on the quality of the presentation.
Within 2 weeks of receiving the proposal, the exam committee will take an “pass or fail” vote on the acceptability of the research proposal and the readiness of the student to proceed to the oral examination phase.

If the proposal is deemed acceptable by the exam committee, the oral examination is then scheduled for a date not later than 6 weeks after the exam committee vote.

If the proposal is deemed unacceptable by the exam committee, the student will have ONE opportunity to revise their proposal. The revised proposal should be submitted no more than 3 months after the evaluation of the initial proposal is returned, and may be submitted earlier depending on the extent of revision required. The exam committee will then vote on the revised proposal within 2 weeks of its receipt. If the revised proposal is found acceptable by the exam committee, the oral exam shall be scheduled for a date not later than 6 weeks after the exam committee vote.

The preliminary exam committee consists of a minimum of 4 faculty members. The Graduate School requires 3 major field members and 1 "minor or supporting program" member. The committee is selected by the student in consultation with the DGS and Advisor. The DGS will maintain balance on the committee. The student’s advisor must represent the major on the committee. The student shall select one faculty member in the major field to serve as chair of the exam committee; this can be the student’s advisor if desired. See https://www.grad.umn.edu/current-students-graduate-student-services-progress/examining-committees-new for more details.

The preliminary exam committee is not necessarily the same as the thesis committee, but can be. Students can change the membership of the thesis committee as needed based on the development of the student’s thesis research.

In the case of an irreconcilable disagreement among the exam committee members regarding the written preliminary examination, it shall be the responsibility of the DGS to determine a solution. The decision will need to be recorded and submitted by your GPC before your oral exam can be scheduled.

**Part B - Oral Preliminary Examination**

The oral preliminary examination must be scheduled within 6 weeks of the exam committee's acceptance of the written proposal.

The oral preliminary examination will be used to 1) test the student's ability to present and defend the written proposal (Part A) (no more than 45 minutes) and 2) to test the breadth of the student's knowledge of fundamental concepts in Land and Atmospheric Science and their specific sub-discipline (90-135 minutes).

At the beginning of the exam, the student will give a short oral presentation introducing the written proposal to the committee. Preliminary data are not required. This presentation can be a maximum of 20 minutes in length. Committee members will NOT be allowed to ask questions during the student’s presentation.

Committee members will NOT be allowed to ask questions during the student’s presentation.

Following the presentation, committee members will ask questions about the written proposal or topics related to the written proposal. The total time for the presentation and questions from the committee on the proposal will be 45 minutes.

For the remainder of the exam, the committee will test the student on breadth of knowledge of fundamental concepts in Land and Atmospheric Sciences.

The outcome of the examination, with all committee members present and voting, is recorded in one of three ways: pass, pass with reservations, or fail. The voting proportions necessary for these decisions are as follows: if the committee consists of four members, a favorable verdict for passing consists of either a unanimous vote or a vote of 3-1; if the committee consists of five members, an unanimous vote or a vote of 4-1 is needed; if the committee consists of six members, a unanimous vote or a vote of 5-1 or 4-2 is needed; and if there are seven members, a unanimous vote or a vote of 6-1 or 5-2 is needed. Candidates who do not earn committee votes in these proportions fail the examination. If, to achieve the minimum number of votes to reach a verdict of pass, any vote of pass with reservations is included, then the outcome will be recorded as a pass with reservations. A vote to pass the student with reservations still constitutes a passing vote.

A pass with reservations is appropriate when the student demonstrates overall competence, but is found to be deficient in some specific area. In this case, the student is informed immediately, but the committee is permitted one week in which to convey its reservations to the student in writing, informing the student of the steps that must be taken to remove them. A copy of this letter must be sent to the Graduate School and should accompany the signed Oral Examination Report Form. The committee may require that the student take a specific course to address the deficiency, take a second oral examination concerning that sub-topic, or write a scientific paper on the topic. Any additional requirements are to be completed within 6 weeks of the original oral examination. When the student has satisfied the committee's reservations, a second letter informing the student and the Graduate School that the reservations have been removed and that the student may proceed toward the degree is also required. Both letters should be written by the committee chair. In the case of a fail vote, the student may, at the discretion of the examining committee, have one opportunity to repeat the oral examination and must obtain either a pass or a pass with reservations to remain in the program. The re-examination must be conducted by the original preliminary oral examining committee, and in no case may the re-examination take place before 10 weeks have passed after the first oral examination. No more than one re-examination is allowed.

A pass with reservations is included, then the outcome will be recorded as a pass with reservations.
Students who have passed the oral and written PhD preliminary exams should complete a 5 page (single spaced) thesis proposal on their PhD research topic. This proposal should be submitted to the advisor for approval within one semester of completing the PhD preliminary exams. The format of the thesis proposal is flexible, but should include section headings such as Abstract, Introduction and Literature Review, Research Hypotheses, Research Objectives, Research Methodology, and Expected Results. It is no longer necessary to submit a Thesis Degree Proposal form to the Graduate School but does need to be on file in the Department Office.

PhD Dissertation Proposal Following Successful Completion of PhD Oral Exam

The maximum amount of time for completion of degrees will be 5 years for an MS student and 7 years for a PhD student. Students exceeding these time periods will normally be discontinued from the program, unless a time extension is granted by the Graduate School.

Advanced status

Advanced status is a registration option that is advantageous to our students and graduate faculty. It is a one-credit (8333/8444) registration that certifies students as full-time and is a significant savings for the adviser, if on an assistantship.

It is available to MS students the term after:
- approved master’s Degree Program Form is on file with The Graduate School
- all coursework included on the Degree Program Form is complete, with grades posted to the transcript prior to the term of application
- if Plan A, the master’s thesis credit requirement (10 semester credits of LAAS 8777) has been met
- if Plan B, all coursework is complete and only the Plan B project is not graded
- Application (http://policy.umn.edu/sites/policy.umn.edu/files/forms/otr194.pdf) has been completed by the DGS and submitted to the GSSP Office by August 15th for fall term and December 15th for spring term.

PhD students are also eligible and should use the form for 8444 (http://policy.umn.edu/sites/policy.umn.edu/files/forms/otr195.pdf) and meet these requirements:
- Successfully complete the preliminary written examination.
- Successfully complete the preliminary oral examination; signed examination form on file with the Graduate Student Services and Progress (GSSP) Office.
- Complete all coursework included on the Degree Program Form, with grades posted to the transcript.
- Completed 24 doctoral thesis credits (LAAS 8888).

GPAS (Graduate Planning & Audit System)

This system allows grad students to plan future coursework and/or view student degree progress. You only need to add coursework that you plan on taking because the audit report will already track completed coursework and requirements. You may choose to only have your GPAS autofill and monitor requirements met. Your GPAS will need to be submitted at least one semester before you plan to defend. If you have any questions about unfulfilled requirements or requesting exceptions in your degree plan, please work with your graduate program coordinator. Kari can help you with making edits to your GPAS and assist with the approval process. You can find your GPAS through the Student Center in MyU. There are instructions for this program at onestop.umn.edu/academics/gpas
DEGREE COMPLETION STEPS

Master’s Plan A

In order to receive your degree, the following procedures must be completed. You must maintain active student status by registering every fall and spring semester until your degree is awarded. Contact your program advisor for program-specific requirements and deadlines.

1. Submit Graduate Planning & Audit System Planner (GPAS)
   - Submit at least one semester prior to completing your degree. GPAS guide can be found online at onestop.umn.edu/academics/how-use-gpas-planner

2. Assign members to master’s final exam committee
   - Complete final exam committee assignments at least one semester prior to exam at onestop.umn.edu/examination-committees

3. Download Graduation Packet
   - The packet will include the Master’s Final Examination Report form and Reviewers’ Report Form

4. Submit Application for Degree
   - Apply by the first day of the month you plan to graduate. Instructions are available at onestop.umn.edu/academics/apply-graduate

5. Submit Final Examination Report
   - Must be submitted no later than the last business day of anticipated month of graduation

6. *Submit Thesis
   - The thesis must be submitted and approved by GSSP no later than the last business day of the anticipated month of graduation. onestop.umn.edu/thesisdissertation-submission-and-formatting

Questions?
Contact the Graduate Student Services and Progress office (333 Brunininks Hall).
https://onestop.umn.edu/academics/contact-gssp

Degree Progress & Completion
gssp@umn.edu | 612-625-3490

For links to these Degree Completion Steps, use:
https://assets.asr.umn.edu/files/gssp/otr201g_MasterPlanA_GPAS.pdf

DEGREE COMPLETION STEPS

Doctor of Philosophy

In order to receive your degree, the following steps must be completed. You must maintain active student status by registering every fall and spring semester until your degree is awarded. Contact your program advisor for program-specific requirements and deadlines.

1. Submit Graduate Planning & Audits System Planner (GPAS)
   - Submit at least one semester prior to completing your degree. GPAS guide can be found online at onestop.umn.edu/academics/how-use-gpas-planner

2. Assign members to preliminary oral exam committee
   - Complete at least one semester prior to exam: onestop.umn.edu/academics/examination-committees

3. Complete Preliminary Written Exam
   - Program staff report results to GSSP. Must be on file with GSSP to be authorized to take preliminary exam.

4. Schedule preliminary oral exam
   - Notify GSSP of scheduled exam at least one week in advance

5. Submit Preliminary Oral Report
   - Submit for your record to reflect doctoral candidacy

6. Assign members to doctoral final exam committee
   - Complete at least one semester prior to exam: onestop.umn.edu/academics/examination-committees

7. Download Graduation Packet
   - Packet will include the Graduate Application for Degree form and Reviewers’ Report Form.

8. Schedule doctoral final exam
   - Notify GSSP of scheduled exam at least one week in advance

9. Submit Application for Degree
   - Submit a later than the first business day of anticipated month of graduation: onestop.umn.edu/academics/apply-graduate

10. Submit Reviewers’ Report
    - Submit prior to your defense

11. Submit Doctoral Final Exam Report
    - Submit no later than the last business day of anticipated month of graduation.

12. *Submit dissertation/project
    - Submit by the last business day of anticipated month of graduation.

For links to these Degree Completion Steps, use:
https://assets.asr.umn.edu/files/gssp/otr204g_Doctoral_Philosophy_Education_GPAS.pdf

* Students who wish to delay the release of the dissertation to ProQuest and the University Digital Conservancy may request a temporary hold using the Thesis or Dissertation Hold Request form found at, https://onestop.umn.edu/forms/think-accordion-panels-middle-header-2
Important notice regarding commencement attendance

Commencement attendance does not imply that you have completed all degree requirements and officially graduated. For information specifically related to eligibility requirements and deadlines for attending the Graduate School commencement ceremony, please refer to the Graduate School’s Commencement Attendance Approval form, available in your graduation packet and online.

More information and forms can be found on OneStop Student Services website under the Academics tab: https://onestop.umn.edu/academics/graduate-student-services-and-progress-gssp

Additional information can be found on the CFANS website: https://www.cfans.umn.edu/academics/grad-resources/commencement/commencement-students

GENERAL COMPLETION REQUIREMENTS

M.S. or Ph.D. Degree in LAAS

Graduate Tenure

The recommended maximum period of full-time study (equivalent to half-time appointment) leading to the M.S. degree is 2.5 calendar years, and that of the Ph.D., 3.5 calendar years beyond the M.S. degree. These time periods may be extended by non-resident status or by formal written petition, signed by the advisor, to the Graduate Advisory Committee. Duration of assistantships should be established at the time of the appointment.

The University of Minnesota does NOT have a residency requirement for graduate degrees.

Academic Performance

The Graduate Advisory Committee maintains surveillance on the overall academic standards of the graduate program and works closely with all staff advisors to carry out this function. Evaluation of student performances is generally made on receipt of Progress Reports from the Graduate School.

Students are expected to maintain an average of 3.0 in the M.S. and Ph.D. program course work to remain in good standing. The Graduate Advisory Committee may place a student on probation for failure to meet scholastic or other requirements, including thesis research. Removal from probation is accomplished upon specific recommendation from the student’s major advisor to the Graduate Advisory Committee. Generally, registration beyond the second semester will be refused a student whose GPA is less than 3.0.

Seminar - LAAS 8128

The departmental seminar provides a forum for the presentation of topics of interest and significance to soil science. As such, all faculty and graduate students are expected to attend, support the seminar, contribute to it, and enter into the discussions. One credit in seminar is required for each M.S. and two seminar credits are required for each Ph.D. program in LAAS. One of these at the Ph.D. level should be a presentation which reviews literature available in the student’s specific field of research, and which lays out a possible research program for discussion. This should be scheduled within the first 18 months after acceptance to the program. Seminar requirements are to be satisfied and grades recorded before defense of thesis is scheduled. Arrangements for satisfying the seminar credit are made with the Department Seminar Committee. This involves formal presentation of a seminar topic. All seminar credits are graded on the (S-N) system. If requested by the student or advisor, the seminar committee and the advisor will meet with the student to discuss and constructively evaluate formal seminar presentations.

Graduate Student Education in Research and Professional Ethics - SOIL 8123

Students must take this required class to meet the requirement for professional ethics in research. This course is usually offered during J-term under spring session and is usually taught along with Plant Pathology and Applied Plant Sciences programs.

Minor Programs Relating to LAAS

Minor programs in other fields include (but are not limited to) Agronomy, Chemistry, Ecology, Forestry, Geography, Geology, Microbiology, Microbial Ecology, Plant Pathology, and Water Resources. Course requirements for these minors usually vary from 6 to 9 credits for the M.S. minor to 12-14 for the Ph.D. minor, and will often include specific courses. Courses cannot be used toward both a major and minor program. The minor program must be approved by the Director of Graduate Studies in the minor field. Where a formal minor is proposed, both external members of the student’s committee must be from that program.

Not all colleges use the same paperwork or systems. Additional documentation may be required with a minor program. Check with the program for more information.
The Minor in LAAS

The minor in LAAS for doctoral students requires a minimum of 12 graduate level credits of regular course work (not special problems) in Land and Atmospheric Science. The minor in LAAS for master’s students requires a minimum of 9 graduate level credits in LAAS. All courses for use in the minor must be taken using the A-F grading system, unless approved by the Graduate Advisory Committee, or if they are offered on an S-N basis only. All students seeking a minor in LAAS must take LAAS 5050, Integrated Topics in Land & Atmospheric Science (3 cr). The remaining 9 or 6 credits for the doctoral or master’s minor, respectively, must come from other graduate-level LAAS courses. Courses for use in the minor must be selected with the consultation of the Land and Atmospheric Science graduate faculty member serving as the minor adviser and approved by the Director of Graduate Studies.

GRIEVANCES

Grievances related to graduate study are limited to non-academic matters; i.e. decisions or judgments concerning a student’s scholastic performance are not considered grievable. The grievance procedure follows the guidelines established by the University. Information on the procedures in filing a grievance can be obtained by contacting the Departmental Grievance Officer.

To initiate formal grievance procedures, graduate students should contact the thesis advisor, the head of the Departmental Grievance committee, the Director of Graduate Studies or the Department Head, whichever is more appropriate. If the issue cannot be resolved informally through this mechanism, the student should contact the Student Conflict Resolution Center, the Office of Equal Opportunity and Affirmative Action or the Graduate School Grievance Committee. Normally formal grievance claims need to be submitted in writing within 30 working days after the action occurred or commenced.

LEAVES OF ABSENCE

Contact the Director of Graduate Studies for a leave of absence request. These are considered on a case-by-case basis and must be justified by exceptional circumstances.

Sick Leave
Graduate assistants are entitled to paid sick leave, not to exceed two weeks (10 days) consecutive pay for absences caused by occasional or serious illness or injury to themselves, their dependent child, or the dependent child of a registered same sex domestic partner. In the case of repeated absences due to illness, the responsible administrator/supervisor may request a healthcare provider’s certification verifying the inability to work. For GAs on an hourly pay appointment, sick leave shall be unpaid except in the following circumstances: (1) work hours are fixed on a weekly basis, and the sick day falls on the day of the week normally scheduled for work; OR (2) the work schedule is variable with sick pay prorated for the work week.

Parental Leave
Graduate assistants/students may be eligible for parental leave, paid or unpaid. Depending on your appointment/circumstances, you could be eligible for up to 6 weeks of paid leave. Contact Marjorie Bonse for more information.

FMLA
Graduate assistants and student employees may be eligible for FMLA leave if they meet the requirements. Contact Marjorie Bonse for more information. FMLA leave can be used for the following:
1. the employee’s own serious health condition;
2. the serious health condition of an employee’s immediate family member; or
3. caring for a newborn or newly-placed adopted child or foster child.

Refer to the Administrative Policy: Family & Medical - FMLA Leave. https://policy.umn.edu/hr/fmla

Bereavement Leave
Graduate assistants are provided, at the discretion of the department, up to three workdays paid bereavement leave upon death of an immediate family member. This leave is granted for purposes of (1) attending the funeral services, ceremonies, and/or interment; (2) making necessary arrangements; (3) travel related to the death; and (4) bereavement time. Responsible administrators/supervisors are encouraged to make special arrangement to accommodate granting of leave.

Vacation Leave
Graduate assistants do not receive paid vacation leave.

For the following leaves, please refer to the Administrative Policy: Military, Court and Civic Duty Leaves. https://policy.umn.edu/hr/milcourtcivicleave

Military Leave
Graduate assistants are entitled to fifteen days leave in a calendar year for active military duty; such leave falling within a paid appointment period shall be with pay. Verification of notice to report for duty (including dates of leave) shall be provided to the responsible administrator/supervisor. Refer to the Administrative Policy: Military, Court, and Civic Duty Leaves.

Jury Duty
Graduate assistants are entitled to paid leave for jury duty. A copy of the court notice shall be provided to the responsible administrator/supervisor. If released early from jury duty by the court administrator, the GA shall return to work.

Voting Leave
Graduate assistants are eligible for a paid leave of absence to vote in any state-wide general election or state-wide primary election, or in any election to fill a vacancy in the office of a United States senator or representative during the morning of the election day.
Paid leaves to vote shall cover only those hours the employee is regularly scheduled to work and shall be reasonable in relation to voting site location and distance. As federal and state Work-Study regulations do not permit payment for hours not actually worked, work-study students must be granted upon request an unpaid leave of absence to vote in elections as described here.

The Council of Graduate Students (COGS) is the official governing body representing graduate students at the university. The COGS provides opportunities for graduate students to participate actively in University administrative and policy decisions. Graduate students in each degree-granting program are entitled to elect one representative to serve on COGS, which also recruits student representatives for the Graduate School Policy and Review Councils, the University Senate, and many College of Liberal Arts and University-wide committees.

In addition, COGS provides ombudsman services for graduate students and disseminates information, primarily through the Gradletter and through general meetings held twice per semester. Information on housing University governance, and grievance procedures is available from the COGS office.

Students may contact COGS at 322 Johnston Hall, University of Minnesota, 101 Pleasant Street S.E., Minneapolis, MN 55455 (612-626-1612) or online at http://www.cogs.umn.edu/.

Graduate Student Participation in Departmental Activities
A majority of the departmental committees includes at least one voting graduate student member who participates in making policies. Graduate student representatives are elected by graduate students from among volunteers wishing to serve on the different committees. Student committee members report directly to the Graduate Club chair, which in turn, is the communication link with the department graduate student body. In addition, the Graduate Club chair of COGS representative attends all departmental meetings in an official capacity. In addition, students organize social activities, give seminars, teach and instruct. The students also have their own student board.

Graduate students will be provided with (at minimum) an annual written evaluation of his or her academic progress as measured against the published performance expectations of the graduate degree program and The Graduate School. The annual review should occur during Spring semester and should be conducted during a meeting with the advisor(s) and the student’s Advisory Committee. The evaluation should include a review of academic performance, timeliness in meeting Program and Graduate School guidelines for submitting course programs, thesis proposals, etc., satisfactory progress on thesis research, professional development, and adequate performance of assistantship activities. Students will receive an email in early spring with a secure link to fill in academic progress and personal achievements. The information will be available for your advisor/s to review and comment before being polled by the college for information that helps provide funding for our program in the future.

See Intellectual Property Web Site, University of Minnesota Fostering Integrity in Research, Scholarship and Teaching http://www.research.umn.edu/ethics/policies/IntellectualProperty.htm
HUMAN RIGHTS STATEMENT

The Board of Regents has committed itself and the University of Minnesota to the policy that there shall be no discrimination on the basis of race, creed, color, sex, age, or national origin. In adhering to this policy, the University abides by the requirements of Title VI and VII of the Civil Rights Act of 1964, Revised Order No. 4, Executive Orders 11246 and 11375, Sections 799A and 845 of the Public Health Service Act, and other federal regulations and pertinent acts of Congress.

It is also the policy of the University of Minnesota not to discriminate on the basis of sex in its educational programs, admissions, activities, or employment policies as required by Title IX of the Education Amendments of 1972.

Inquiries regarding compliance may be directed to Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall, University of Minnesota, Minneapolis, Minnesota 55455, (612) 624-9547, or to the Director of the Office of Civil Rights, Department of Health, Education and Welfare, Washington, D.C. 20201.

CODE OF CONDUCT

The University of Minnesota is committed to the highest standards of professional conduct. Therefore, all members of the University community are expected to adhere to the highest ethical standards of professional conduct and integrity. We hold the following values as essential to responsible professional behavior: honesty, trustworthiness, respect and fairness in dealing with other people; a sense of responsibility toward others; and loyalty toward the ethical principles espoused by the institution. It is important that these values and the tradition of ethical behavior be consistently demonstrated and carefully maintained. An online training module on sexual harassment is required to be completed by all students and employees.

For more information: Board of Regents Policy

University Holidays

2018 - 19

<table>
<thead>
<tr>
<th>Date</th>
<th>Holiday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, July 4, 2018</td>
<td>Independence Day</td>
</tr>
<tr>
<td>Monday, September 3</td>
<td>Labor Day</td>
</tr>
<tr>
<td>Thursday, November 22</td>
<td>Thanksgiving Day</td>
</tr>
<tr>
<td>Friday, November 23</td>
<td>Floating Holiday</td>
</tr>
<tr>
<td>Friday, December 24</td>
<td>Floating Holiday</td>
</tr>
<tr>
<td>Monday, December 25</td>
<td>Christmas Day</td>
</tr>
<tr>
<td>Monday, January 1, 2019</td>
<td>New Year’s Day</td>
</tr>
<tr>
<td>Monday, January 21</td>
<td>Martin Luther King, Jr. Day</td>
</tr>
<tr>
<td>Friday, March 22</td>
<td>Floating Day</td>
</tr>
<tr>
<td>Monday, May 27</td>
<td>Memorial Day</td>
</tr>
<tr>
<td>Unassigned</td>
<td>(One Personal Floating Holiday)</td>
</tr>
</tbody>
</table>

Religious Calendar

The University is required to accommodate student and employees’ sincerely held religious observances or practices, unless the accommodation would impose an undue hardship on the work or business of the University. Refer to the page on Religious Accommodation Resources (https://diversity.umn.edu/eoaa/religiousaccommodationresources) for University policies regarding staff and student absences for attending religious observances.
Opportunities exist for students to become members of professional societies. The advantages of this association are many. Once a graduate student accepts a research assistantship, that person is, in fact, a professional scientist because an assistantship is not a scholarship – one is paid for the performance of an investigation. Thus, one has the opportunity to associate with a professional organization. As a benefit of membership, each organization provides one or more journals and has a placement service for help in employment upon graduation. During one’s graduate career, a student is encouraged to present papers or posters at the annual meetings and often only members are accorded this privilege. Similarly one must be a member to publish in the society journal, although only one of these authors on the paper needs to be a member. This policy varies with the society. Usually these are written using the format of a given professional journal in which the student is most likely to publish his/her results.

Several societies are appropriate to join. All have student membership fees that are much lower than full member fees. A few are listed below:

- American Association for the Advancement of Science
- American Geophysical Union
- American Meteorological Society
- American Society for Horticultural Sciences
- American Society for Microbiologists
- American Water Resources Association
- Clay Minerals Society
- Geochemical Society
- Geological Society of America
- International Soil Science Society (membership is available when joining the Soil Science Society of America)
- National Water Resources Association
- Soil Science Society of America (and its sister societies, American Society of Agronomy and Crop Science Society of America)
Financial Aid Information
Twin Cities - 210 Fraser Hall (612) 624-1665
www.onestop.umn.edu/finances/financial_aid/

General Campus Information
Twin Cities - http://twin-cities.umn.edu/ (612) 624-4177
St. Paul (612) 625-9794

Graduate Assistant Employment Office
319 15th Ave. SE (612) 624-7070
http://humanresources.umn.edu/find-job/graduate-assistant-jobs

Graduate Assistant Health Insurance Office
N-323 Boynton (612) 624-0627
http://www.shb.umn.edu/index.htm

Graduate Student Services Office
316 Johnston Hall (Student files, exam scheduling, graduation) (612) 625-3490
http://www.grad.umn.edu/students

Health Services
Minneapolis - 410 Church St. SE (612) 625-8400
St. Paul - 109 Coffey Hall (612) 624-7700
http://www.bhs.umn.edu/east-bank-clinic/index.htm
Dental Clinic - Moos Health Tower (612) 624-9998
Pharmacy - 410 Church St. SE (612) 624-7555

Housing Services
Twin Cities - Comstock Hall East (612) 624-2994
http://housing.umn.edu/

International Student & Scholar Services
190 HHH Center (West Bank) 626-7100
http://isss.umn.edu/

Minnesota International Student Association (MISA)
201 Coffman Memorial Union Room http://www.misa-umntc.com/ (612) 625-6119

On-Campus Post Office
Coffman Postal Station, Coffman Memorial Union (612) 624-8602
West Bank Postal Station, West Bank Skyway (612) 624-6338
St. Paul Postal Station, St. Paul Student Center (612) 625-9794

University Directory
http://www.onestop.umn.edu (612) 625-5000

Registration, Records & Admissions
Twin Cities 200 Fraser Hall (East Bank) or 130 West Bank Skyway (West Bank) (612) 624-1111
130 Coffey Hall http://onestop.umn.edu/registration/index.html (612) 624-3731
Duluth Student Assistance Center, 23 Solon Campus Center (218) 726-8000
http://www.d.umn.edu/fareg/

Fee Payments - Bursar’s Office
Twin Cities
145 Williamson Hall (East Bank), Minneapolis Campus (612) 625-7535
MyU portal

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Dylan Millet 6-3259
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