

**Earth & Environmental Science  
Professional Master's Programs**

**Student Handbook**

**Master of Environmental  
Studies  
&  
Master of Science in Applied  
Geosciences**

University of Pennsylvania



College of Liberal and Professional Studies  
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## ***Introduction***

The purpose of this handbook is to provide students in the Masters of Environmental Studies (MES) and Master of Science in Applied Geosciences (MSAG) programs with information vital to the successful completion of the program. In this handbook you will find information on academic requirements, recommended courses, program and University policies, and resources both inside and outside of Penn. This handbook is designed to provide general information and does not supplant official publications, University web pages, or regular meetings with your advisor. *You should plan to meet with your advisor at least once per term to discuss your progress and course selection.* In addition, should you have questions that are not answered here or problems that you cannot resolve, you should consult your advisor or the EES PM Staff immediately.

## *I Program Overview*

The MES and MSAG at the University of Pennsylvania are 12-course, non-thesis graduate programs designed to prepare students to enter various environmental professions.

The Master of Environmental Studies (MES) encourages a broadly interdisciplinary approach to the study of the environment and requires exposure to sciences, humanities, and social sciences as well as in-depth study of a selected concentration. As a culminating exercise, students must complete an individual project that demonstrates their ability to define a project, develop appropriate methods, complete research, and present the results in a clear and concise manner. Many MES students select a format for this project that represents the profession they hope to enter.

The Master of Science in Applied Geosciences (MSAG) is designed to prepare students to enter into careers as professional geologists or technical specialists. Students take courses specific to their field of interest. As a culminating exercise, students must complete an individual project that demonstrates their ability to define a project, develop appropriate methods, complete research, and present the results in a clear and concise manner. Most MSAG students select a format for this project that represents the profession in which they hope to work.

Students may study in either program part-time or full-time and may take either day or evening courses in any school at the University of Pennsylvania, provided the courses are pre-approved by the student's advisor. All required courses and the most popular electives are offered in the evening, and part-time students are expected to complete their degree in no more than four years.

### **Relationship Within the University**

The Earth and Environmental Science Professional Master's are housed in the School of Arts and Sciences (SAS), are overseen by the Director of Professional Programs in Earth and Environmental Science, and are located in the Department of Earth and Environmental Science. The programs are administered through the College of Liberal and Professional Studies (LPS), SAS's division of continuing education. The programs schedule specially designed courses in the evenings that

are taught by members of Penn's standing faculty, affiliated Penn faculty, and experienced environmental professionals from the Philadelphia region. Students in the program may also take graduate courses from any department or school within the University with the approval of a program advisor and permission of the department offering the course.

MES and MSAG students are eligible for Penn services available to other graduate students with the same enrollment status (part-time or full-time). Full-time students are enrolled in three or four courses per semester while part-time students are enrolled in two or fewer courses.

## ***II EES PM Curriculum***

Students are required to complete at least 12 CUs of graduate level course work for the MES and MSAG programs.

### ***Master of Environmental Studies Curriculum***

There are three required courses for the MES program: ENVS 601-Proseminar, ENVS 533-Research Methods, and ENVS 699-Capstone Seminar. Students also take four foundation courses and five concentration courses to round out their program.

#### ***ENVS 601-Proseminar***

The Proseminar introduces **MES** students to critical issues in the environment and exposes them to current environmental research, analysis, and management practices. Students are challenged to understand the complexity that confounds many environmental issues and are introduced to several environmental professions. The course is comprised of three parts:

- Readings and lectures on basic Environmental Science
- Readings and class discussions on critical environmental issues (e.g., metabolic, social, and political uses of energy; geopolitics of water; climate change; and cause and effect in complex systems)
- Team research on specific sectors of the environmental professions (e.g., government/public sector, private consulting, advocacy/not-for-profit, environmental research).

#### ***Foundation (Core) Requirements for MES***

Based on the premise that environmental issues and solutions have both scientific and social dimensions, the **MES** requires students to take coursework in both scientific and social aspects of environmental problems outside of their chosen concentrations. To assure the interdisciplinary breadth necessary to address complex environmental issues, each student selects four courses from the list of topics presented below. In consultation with an advisor, students may select foundation courses from MES or MSAG offerings or from appropriate courses in any school or department in the University.

- Environmental Biology
- Environmental Chemistry
- Environmental Geology
- Environmental History
- Environmental Literature
- Environmental Policy
- Environmental Law

### *Concentrations for MES*

In addition to the foundation requirements, each student must develop a five-course concentration that will provide sufficient expertise for them to assume a lead role in analysis and management in that area. The development of a concentration should be done in consultation with a program advisor (assigned at the end of the student's first semester at Penn). Ideally, each student builds on previous academic and professional experience when developing a concentration. However, occasionally, a student may seek to move in a different direction. In such cases, additional coursework may be required beyond the 12-course minimum.

Concentration courses may be selected from among courses developed specifically for the MES program, from other graduate courses in the College of Liberal and Professional Studies, from graduate groups in Arts and Sciences and from graduate courses in other schools in the University. Graduate courses are those courses numbered 400 or above. Students are expected to work closely with their program advisor and with faculty advisors in selecting courses that will provide cohesive understanding in a specific area. A description of the primary concentrations in the MES program follows.

- *Environmental Advocacy and Outreach* - This concentration focuses primarily on preparing students to communicate complex environmental concepts to various audiences. It includes environmental education, journalism, and advocacy. Graduates may find themselves teaching in classroom or non-traditional settings (museums or nature centers), working in not-for-profit organizations doing community outreach and communication, or in media organizations. Among the courses that students in this concentration take are writing courses, communication courses, social science courses, and education courses.

- *Environmental Biology* - This concentration aims to prepare students in the environmental biological sciences. Students may concentrate in either microbial or population studies. Students in this concentration must have the equivalent of an undergraduate major in biology and should expect to take at least four of their concentration courses in the Biology Department. Graduates may continue environmental research at the Ph.D. level, or work in environmental consulting or in horticulture or wildlife fields as biologists.
- *Environmental Health* – This concentration is designed to prepare students to work in various environmental health fields. Students typically have strong science backgrounds and take courses in the Biomedical Graduate Programs (e.g., toxicology, epidemiology, immunology), Public Health Program, Bioethics Program, or Medical Anthropology.
- *Environmental Humanities* – This concentration draws from history, literature, and writing. Students may prepare to work in museum settings or in publishing.
- *Environmental Geology* – Students in this concentration study surface and subsurface environmental science. They should have a strong undergraduate or professional background in geology. The courses available include surface-water and groundwater hydrology, soil science, engineering geology, digital mapping, and bioremediation. Students with a strong interest in water resources select this concentration. Graduates may work as environmental geologists or in soil and groundwater remediation.
- *Environmental Policy* – Students concentrating in policy usually fit in one of three areas. Most policy students develop programs around land-use planning and land-use regulation. These students combine courses developed for the MES with courses in city and regional planning or landscape architecture. These students are preparing for private consulting or public sector work. The second group studies environmental regulation at the federal, state, and local level. These students primarily take courses developed for the MES program or in the Fels Program (Government Administration). These students primarily work in the public sector after graduation. The final group of policy students studies business and environment. They take many courses such as

risk management and cost benefit analysis in the Wharton School. These students are preparing for careers in business.

- *Resource Management* – This concentration prepares students to work in habitat restoration, land conservation, and wildlife management. For students in this concentration, the distinction between foundation and concentration courses is not as clear-cut. Students use nine courses to develop a curriculum that combines science (e.g., ecology, geology, chemistry) with policy (e.g., law and planning) and field techniques. Students are required to have at least one field course and to do a field-based Capstone exercise. Graduates work in land and wildlife management positions.
- *Urban Environment* – Students in this concentration, whether studying policy, humanities, or sciences, focus on urban areas. They may study urban brownfield remediation, urban education, community redevelopment or government administration. These students select their courses from MES courses, the Urban Studies Program, and City and Regional Planning. Graduates may work in municipal government or in urban institutions.
- *Individualized* – Occasionally a student's interests do not fit within one of the above concentrations. Those students develop an individualized concentration under the supervision of a faculty advisor. This must be approved by the Program Director and the Faculty Committee.

### ***Research Methods Course***

Each student must take a semester-long course in methods that will prepare them for the Capstone exercise. This may be done in one of several ways: the MES Research Methods course (ENVS 533); a field methods course; a statistics course; a disciplinary methods course (e.g., ethnography); or an independent study with emphasis on methods. At the end of the course, each student should have a clear idea of the methods appropriate for their selected Capstone project. The student must produce a Capstone proposal that defines the planned Capstone project content and scope, identifies appropriate methods, selects a format and intended audience, and demonstrates sufficient background to undertake the exercise. This proposal must be completed and approved by the Capstone advisor before undertaking the Capstone project.

## *ENVS 699- Capstone Project*

The Capstone project is the culmination of an **MES** student's graduate study. It reflects each student's concentration and the coursework that prepared him/her to undertake the proposed Capstone project. Capstone projects may differ from traditional master's theses. One central difference is that **MES** Capstone projects tend to be applied rather than basic research.

In the **MES** program the Capstone draws on methodology from two or more disciplines. By integrating multiple academic perspectives into a Capstone project, each student reconfirms the interdisciplinary nature of environmental studies and of the **MES** program itself.

While it is expected that each **MES** student should have a good working familiarity with the literature in his/her field, the student's knowledge of this literature need not be as exhaustive as for students writing Master's theses or doctoral dissertations. Nor is it necessary that the work be publishable in a scholarly journal, although this is encouraged.

The Capstone carries one course unit of credit and reflects the equivalent of one semester of work. The Capstone length varies depending on the scope and format agreed upon by the student and the advisor. Although there are no set guidelines for Capstone projects, there are three common approaches to completing the project. Each approach has some general guidelines.

- In the first approach, the Capstone is an extended research paper, based on primary and/or secondary sources, that demonstrates the student's ability to understand and synthesize complex environmental problems. In this approach, the Capstone should reflect the student's **MES** coursework, but may also build upon the student's previous academic or professional experience.
- In the second approach, the Capstone is a professional report that serves as a portfolio of professional skills. For example, a student may prepare an environmental inventory of a specific site using GIS technology; another may develop a wildlife management plan for a specific habitat; yet another may evaluate the state of current technology as applied to a specific environmental

problem. In this approach, the student should supplement his/her writing with a short analytical piece that outlines the necessary components that comprise a professional report of the type presented and explain what decisions about format, audience, and methodology were made and why.

- In the third approach, the Capstone is a report documenting a student's experience in an internship or field exercise. A student selecting this format must outline his/her responsibilities and accomplishments and relate them, with scholarly research, to the sector of the environmental professions within which the internship occurred and to underlying environmental issues or geologic principles.

A student completing the Capstone will take the Capstone course ENVS 699, which is offered through the **MES** Program. Although the course does not meet formally every semester, a writing advisor is available to help with drafts of the Capstone and serves as a guide to planning and writing a Capstone project. The student's advisor will work directly with the student on all technical aspects of the project.

In addition to the final written Capstone, students are also expected to create a poster detailing their work. These posters will be put on display at the end of each semester for faculty and students to view. The Capstone student is not required to stand with the poster while it is on display, but contact information should be included on the poster in the event that there are questions or suggestions about the work. Poster creation and printing will be taught in ENVS 533—Research Methods and ENVS 699-Capstone Seminar, and the EES Department has a poster printer, foam board, and easels available for final printing and display.

### **Field Courses**

Although not specifically required, students in the MES are encouraged to take at least one field-based course while at the University of Pennsylvania. The MES program has developed several field courses to meet the needs of our students. These courses are designed not only to provide the content that our students need, but to fit with the schedules of working adults. Sample field courses include:

- *ENVS 530-Rocky Mountain Field Geology and Ecology* – This course combines a two-week intensive field trip with a 12-week online course in geology, natural history, and ecology of the Greater Yellowstone Ecosystem. This ecosystem comprises a range of environments from the mile-high semi-deserts of intermontane basins to the alpine tundra of the Beartooth Plateau above 12,000 feet. The field portion of the program is based at the Yellowstone-Bighorn Research Association (YBRA) field station on the northeast flank of the Beartooth Mountains near Red Lodge, Montana and runs for two weeks in mid-summer. It includes day trips from the field station as well as overnight visits to sites within Yellowstone National Park. Students are required to attend online classes prior to the field portion of the course. These online sessions ensure that all students are adequately familiar with basic principles of field-based natural science before the trip to Montana. Students also have interactive discussions with the instructors on sampling methods and topics that will be explored in more detail in the field. Post-trip online classes are used to discuss the results of projects carried out in the field and to assist students in completion of field reports.
- *ENVS 610-Regional Field Ecology* - Over the course of six weekend field trips, students travel from the barrier islands along the Atlantic Ocean in southern New Jersey to the Pocono Mountains in northeastern Pennsylvania and visit representative sites of the diverse landscapes in the region along the way. At each site they study and consider interactions among geology, topography, hydrology, soils, vegetation, wildlife, and disturbance. Students summarize field trip data in a weekly site report. In addition, evening class meetings provide the opportunity to review field trips and reports and preview upcoming trips. Six all-day field trips and one overnight trip are required.
- *Conservation and Land Management* - Using protected lands in the Delaware Valley, this field-based course explores various strategies for open-space conservation and protection. In addition, students are introduced to land management techniques used on such sites to restore or preserve them in accordance with goals set for their use or protection. Emphasis is placed on developing skills in “reading the landscape” to determine conservation and restoration priorities. Students produce a site assessment report and/or field reports on sites that they visit.

## ***Master of Science in Applied Geosciences Curriculum***

Students must take seven required foundation courses, four electives, and complete a Capstone project in order to earn an MSAG degree.

### ***Required Foundation Courses***

- Geomechanics
- Geocomputations
- Geochemistry
- Introduction to Geophysics
- Engineering Geology
- Introduction to Hydrology
- Ground Water Hydrology

### ***Four Elective Courses***

Students choose four electives within their area of concentration as follows.

Note: Other courses may be used as electives if pre-approved by the student's advisor.

#### **Engineering Geology**

- Geology of Soils
- Data Analysis and Modeling
- Engineering Geology and Geotechnics
- Geographic Information Systems (GIS)
- Geostatistics

#### **Hydrogeology**

- Hydrogeology (Flow & Solute Transport)
- Aqueous Geochemistry
- Advanced Biogeochemistry
- Water and Waste Treatment
- Bioremediation

#### **Environmental Geology**

- Cartographic Modeling
- Digital Mapping
- Water and Waste Treatment
- Aqueous Geochemistry
- Environmental Geology

## **Individualized Concentration**

For this concentration, the student meets with the Director of the EES PM and creates a program that consists of a coherent set of courses that aid the student in reaching their academic and professional goals.

## **The Capstone Project GEOL 699-Project Design**

Toward the end of the program, students undertake a Capstone Project, a semester-long professional exercise that demonstrates mastery of a particular area of applied geoscience. The subject of this project can be selected to complement or further develop a student's work-related interests. The Capstone, which can be completed independently or as a member of a team, documents the student's ability to:

- Identify a geotechnical, hydrologic, or environmental problem or issue that would be encountered in professional practice
- Design a protocol to address this question
- Acquire the data necessary to clarify, if not resolve, the question
- Critically assess the quality of the data acquired
- Draw defensible conclusions from those data
- Communicate this process and conclusions to professional colleagues with clarity and precision

## **Field Opportunities**

Field trips and site visits are incorporated within the curriculum. Students in the program also have access to other earth science research projects within the Department of Earth and Environmental Science.

## ***III EES PM Policies***

### ***Academic Standards***

Students in the MES and MSAG are expected to maintain the highest possible academic standards. To assure that students are making satisfactory progress toward their degree, the advisors regularly review student performance. The EES PM Faculty Advisory Committee has adopted the following requirements for MES and MSAG students as they progress toward their degrees:

- Students must take all courses that will count toward the MES or MSAG degree requirements for a letter grade. Pass/Fail courses may not be counted toward the degree.

- Students must maintain a 3.0 average in order to be in good standing and to graduate.
- No more than one course with a grade below “B” may be counted toward the degree requirements.
- Students who receive a grade below a C+ or have more than one C+ will be reviewed by the EES PM Faculty Committee and may be placed on academic warning or dismissed from the program.
- With the permission of the EES PM Faculty Committee, students may take additional courses in order to increase their GPA or to replace courses with grades below a “B”.
- MES and MSAG students are limited to one incomplete (I, GR, U, or NR) at a time. Students with two or more incompletes on their transcript will have their registration automatically blocked until they complete those courses. Incompletes will automatically be turned to an “F” at the end of the semester following the term in which the Incomplete was received.

### ***Academic Grievances***

Evaluation of a student's performance in a course is the responsibility of the course instructor. Should a final grade in a course be disputed, the student must submit a written appeal to the instructor within the first two weeks of the academic semester immediately following the semester in which the grade was received. The instructor must respond in writing to the student within two weeks of receiving the written appeal. If, after receiving the written response from the instructor, the student still believes that the grade has been unfairly assigned, the student must submit a written appeal to the EESMP Program Committee. If the Committee believes the appeal demonstrates evidence of negligence or discriminatory behavior, a sub-committee will be formed to review the student's appeal and make a recommendation to the full Academic Committee. The decision of the EES PM Program Committee is final.

### ***Inactive Status***

Students who do not enroll in courses for three consecutive terms, including Summer, will be considered inactive and will be automatically withdrawn from the program. Students who are withdrawn from the program will be required to apply for readmission to the program. Standard application fees will apply.

### ***Leave of Absence***

MES and MSAG students are not required to take courses in each term to remain active in the program. However, they must take a course every three semesters (including Summer) to be kept active.

Students who discover that they are unable to continue with their course work after three semesters, but who wish to remain in the program should consider a leave of absence. Those students should notify the EES PM Director in writing of their desire to take a leave and give their reason for the leave. If the students must extend the leave for more than one year, they should request an extension in writing from the Director of the program.

### ***Submatriculation***

Undergraduate students in their *junior year or before the end of their seventh semester* at the University of Pennsylvania may apply for submatriculation into either the MES or MSAG. Second-semester seniors are not eligible for this option. Submatriculation allows students to take graduate-level courses while still undergraduates, allowing most to complete their bachelor's and master's degrees in five years. Students should discuss submatriculation with the Director of the EES PM and then apply for submatriculation at their undergraduate office.

Students sub-matriculated into the MES or MSAG may double count up to four graduate level courses toward both their undergraduate and graduate degrees. These courses must be pre-approved by the committee. Only graduate courses taken after the student is fully sub-matriculated into the program may count toward the MES or MSAG. Courses taken at Penn prior to submatriculation are not eligible to be used toward completion of the degree requirements in the MES or MSAG. Students should obtain a "Request for Sub-matriculation Course Double Counting" form from the EES PM Office to apply for course approval for double counting. All College student requests for double counted courses must be made no later than eight weeks into the student's eighth semester at Penn. LPS students should contact the EES PM Office for deadlines specific to their program of study. Additional information on sub-matriculation can be found on the College website.

### ***Provisional status***

Many students seeking admission to the EES PM are returning to school after a long absence or have undergraduate records that do not accurately reflect their academic ability. Some of those applicants are accepted into the EES PM provisionally. Applicants accepted as provisional admits should adhere to the following procedure:

- Students must complete two graduate level courses at Penn. MES students must take ENV5 601- Proseminar as one of those two courses.
- Student must receive a grade of "B" or better in both courses.
- Student must receive a favorable recommendation from two different faculty members in the EES PM program.

Students who meet the above requirements will be formally admitted to their EES PM degree program.

### ***Deferred Enrollment***

Students who are admitted to the MES or MSAG may defer their matriculation for one year. Students who wish to defer should notify the EES PM office in writing of their intentions as early as possible. It is not necessary for deferred students to reapply. However, students must inform the EES PM if they enroll at any other institution prior to their matriculation at Penn, and they must submit final official transcripts of any coursework completed prior to their enrollment at Penn.

### ***Transfer Credit***

Students who enter the MES or MSAG from Penn's Post-Baccalaureate Undergraduate Studies program may *count up to 2 graduate level* courses toward their MES or MSAG degree. These courses must be submitted to the Faculty Advisory Committee for approval during the first semester of matriculation in the student's program. Only courses appropriate to the student's degree program (MES or MSAG) will be considered for approval.

Students who enter the MES or MSAG from another graduate program at the University of Pennsylvania may count up to four graduate-level courses toward their Professional Master's degree. These courses must be submitted to the committee for approval during the first semester of matriculation in their program. Only courses appropriate to the student's degree program (MES or MSAG) will be considered for approval.

Students who enter the MES or MSAG from a graduate program at another university may count up to two graduate-level courses toward their degree. These courses must be submitted to the committee for approval during the first semester of matriculation in their program. Only courses appropriate to the student's degree program (MES or MSAG) will be considered for approval.

Courses taken outside of the University of Pennsylvania during a student's matriculation in the MES or MSAG are not eligible for transfer credit.

### ***Financial Aid***

#### ***Tuition Support***

MES and MSAG students are not eligible for University-based fellowships, teaching or research assistantships, or scholarships. United States citizens or permanent residents are eligible to apply for loans through Penn's Office of Student Financial Services, <http://www.sfs.upenn.edu/>. Full-time students (students taking three or more courses in a semester) are eligible for full loan support. Part-time students (students taking one or two courses in a semester) are eligible for partial loan support. International students are not eligible for loans through the University.

Students can seek outside scholarship support. In the recent past MES and MSAG students have received support from the following organizations (among others):

Ford Foundation  
National Science Foundation  
Rotary International  
UNESCO  
U.S. Environmental Protection Agency  
World Bank

#### ***Research Support***

The Earth and Environmental Science Professional Master's program has limited funding available to support costs incurred during the conduct of student research. These funds are awarded on a competitive basis. These funds are typically available for equipment and lab fees associated with the student's research and are typically on the order of a few hundred dollars. In addition, MES and MSAG

students may apply for funds to present their research at a conference or scientific meeting.

To be eligible for research funds through the Earth and Environmental Science Professional Master's program, students must identify an advisor who will work with them on the research project. Proposals (including a detailed budget) are accepted at the end of the Fall and Spring semesters. *Check with the EES PM director for proposal requirements and deadlines.* No proposal will be accepted outside these deadlines.

Students applying for funds to cover expenses associated with an oral or poster presentation at a conference or meeting must submit a copy of the accepted abstract, the notice of acceptance of that abstract, and a budget of the costs associated with travel to the conference. *There are no deadlines for these requests, but students must submit materials at least 4 weeks prior to travel to allow for processing of such requests.*

## ***IV Designing Your Program***

### ***Student Advising***

Each student entering the MES or MSAG will be assigned an interim advisor. That advisor will guide the student through the initial course registration and program introduction. At the end of their first semester, students will meet with their interim advisor, choose a concentration, and define a plan for the remainder of their professional masters career. The student will then be assigned an academic advisor based on the concentration they have chosen.

Students should meet with their advisor at least once a semester to discuss their program progress and choose courses for the following semester. Students should use the student worksheet available on Penn InTouch (<https://sentry.isc.upenn.edu/intouch/>) to help plan their courses and define their program. Students should work with their advisor to best plan their program and ensure that all degree requirements are fulfilled.

### ***Course Selection***

The University's Course Register, which is available online at <http://www.upenn.edu/registrar/register/index.html>, provides course descriptions for many courses offered at Penn. Departmental web pages often include course descriptions as well. In addition, the Course Timetable appears in March and October and may be reached online at <http://www.upenn.edu/registrar/timetable>. A new feature available through PennInTouch allows students to search for courses online using keyword searches.

LPS offers evening courses in most areas of the Arts and Sciences. A complete listing of evening courses with times and descriptions is published in the LPS Course Guide available in March for the following Fall term, in October for the Spring term, and in February for the Summer Sessions. Courses numbered at the 400-level or above may be taken for graduate credit. The LPS course guide [may](#) be found on the LPS website.

## ***V Course Registration Procedures***

### ***Advance Registration***

The course registration process involves two registration periods. The first is Advance Registration during which students enter their requests for courses they wish to take. Students are encouraged to register during this period so that they have the best chance of getting into the courses they prefer. At the end of Advance Registration, a scheduling program processes all registration requests at the same time to determine who gets enrolled in the courses that have been requested. Students will then receive a written schedule of the courses in which they have actually been enrolled. Students may advance register during a two-week period starting in late March for the following Summer and Fall Terms and during a two-week period in early November for the following Spring term. Check the LPS and/or Registrar's website for the exact dates for Advance Registration.

### ***Registration***

The Regular Registration Add/Drop period opens approximately three weeks after the Advance Registration request period has closed and students have been notified of their schedules. During the Regular Registration period students know immediately whether or not they will be able to enroll in the course they are requesting. Students may register for courses through Penn InTouch (on-line registration) or with the assistance of an EES PM advisor or staff person. Registering through Penn InTouch requires the use of a personal computer and access to the World Wide Web.

In order to access the system, students must have a PennKey. To establish a PennKey, go to <http://www.upenn.edu/computing/pennkey> and follow the steps there. [Note: A PennKey SetUp Code will be mailed to each new student's home address to set up a PennKey.] The Penn InTouch web address is <https://sentry.isc.upenn.edu/intouch>.

### **Some important information to remember when registering for courses:**

- Check with your advisor to be sure the course for which you are registering fulfills a requirement for your degree.
- Courses must be taken for a normal letter grade in order to count toward the MES or MSAG degrees.
- Only courses numbered 400 and above (the first set of three digits after the course subject is the course number -- e.g., ENVS 420 001 but **not** ENVS 001 601 may count toward the degree.
- As a master's student, permission may be needed from the instructor to register for some graduate courses in other departments or schools.
- Full-time students should enroll in 3 or 4 courses. Students are not permitted to enroll in more than 4 courses per semester.
- Part-time students should enroll in 1 or 2 courses per semester.

### ***Permits***

Courses that require special permission from the instructor are indicated in the Course Timetable as "Permit Required." Permits are obtained from the instructor and entered electronically into the Student Record System (SRS) by the department offering the course. A permit is not a registration. Students must "claim" the permit by actually enrolling in the course through Penn InTouch. After both Advance Registration and Regular Registration is complete, the Registrar's Office removes unused permits from students' records.

### ***Independent Study Courses***

Students interested in pursuing an individualized study project should obtain a "Request for Independent Study" form from the EES PM Blackboard website or from the EES Department. The student should then approach a faculty member and obtain agreement from them to direct their project. It is the responsibility of the student to define the individualized project. Students should not approach a faculty member and request that they define a project for the student. Students must obtain the appropriate signatures from their advisor and the Director of the Earth and Environmental Science Professional Masters program. Independent Study Courses may not duplicate other courses offered during the same semester. Students should bear in mind that faculty members are not required to supervise

an Independent Study course. MES and MSAG students may register for up to 2 Independent Study courses during their career.

### ***Auditing Courses***

MES and MSAG students may audit courses. However, they will be charged tuition and fees at the Professional Masters Program tuition level. Audited courses will appear on the student's transcript, but no grade will be issued and the course will not count toward the 12 courses needed to complete the program. Most courses are open to auditors on a space-available basis.

### ***Registering for Non-MES or MSAG Courses***

MES and MSAG students may register for graduate courses (numbered 400 or above) in other Penn departments and schools, if those courses are appropriate to the student's program. Students should consult with their advisor to determine if the course is appropriate to their program before registering. MES and MSAG students may need permission to register for courses outside the Department of Earth & Environmental Science. In such cases, students should contact the instructor of the course they wish to take. Students may also need the approval of the Graduate Group Chair of the department in which the course is offered. Students wishing to take courses outside of EES may not be able to register until all students in the home department or school have had a chance to register. Permits will then be issued on a first-come-first-served basis. Students should be aware that Law School courses often begin the week before the official start of the semester. They should contact the Law School for details.

### ***Course Changes***

MES and MSAG students are subject to LPS registration and drop/add deadlines which may be different than deadlines for other schools and departments. Students should consult the current LPS Course Guide or the LPS web site for deadline dates for making registration changes and for the corresponding financial obligations. Adherence to LPS deadlines is strictly observed. Should students need to drop or withdraw from a course beyond the deadline, they should contact their academic advisor or the masters program director. It may be necessary to provide documentation of the situation that necessitates the drop or withdrawal, particularly if the student is requesting a refund of tuition.

### ***Adding a Course***

Students may add a new course through the second week of the term. After that it is not possible to add a course. Students may add a course during the first two weeks of the semester via Penn InTouch or by contacting the Program Director.

### ***Dropping a Course***

Students may drop a course with no financial obligation until the published deadline in the current LPS Course Guide (approximately two weeks into the term). Students may also drop a course between the second and fourth weeks of the term, but in so doing they will incur a 50 percent financial obligation for the tuition and fees for the dropped course. Absence from class does not constitute a drop, nor does notifying the instructor. Students can officially drop a course through Penn InTouch through the second week of the term. After the second week of the semester, students must contact the EES PM Director directly to drop a course. When making registration changes via Penn InTouch, it is always advisable to double check to make sure the changes have taken effect before logging-out. Students may also want to contact the EES PM Director or their advisor to confirm that the dropped courses are no longer on their schedules. Students who fail to drop a course officially may receive a grade of F and will be required to pay the full tuition rate.

### ***Changing Grade or Credit Status of a Course***

All MES and MSAG courses must be taken for a letter grade. However, students may register for courses that they do not want to count for their programs on an audit or Pass/Fail basis. Before doing so, however, they should discuss this with their academic advisor. Once they have done so, students may change their status in a course from credit to audit, from a letter grade to Pass/Fail or from Pass/Fail to a letter grade until the published deadline in the current LPS Course Guide (approximately four weeks into the term). No change is permissible after the published deadline. Auditors pay full tuition and fees.

### ***Withdrawing from a Course***

Students may withdraw from a course after the deadline to drop a course has passed (approximately four weeks into the term). To withdraw, students must see the EES PM Director, submit a petition to the LPS Advising Committee outlining the reasons for the request, and obtain written approval from the instructor. Normally, permission is granted and a W (withdrawal) is recorded on the transcript. After the published withdrawal deadline, students are permitted to withdraw only under extraordinary circumstances, which must be documented. Students who withdraw from a course have full financial obligation, except in documented cases of illness, military service, or other extraordinary circumstances, when they may petition for a 50 percent refund.

Note: Dropping a course is not identical with withdrawing from a course. Withdrawing from a course takes place after the sixth week of class and carries with it full financial obligation. In addition, the student's transcript will read "W" (Withdrawal) next to the title of this course. However, if a student drops a course during the normal Add/Drop period, no record of that course will appear on the transcript.

### ***Master's Thesis Registration***

MES and MSAG students who have not completed their Capstone projects within the semester in which they registered will be automatically enrolled in the non-credit Master's Thesis course for two additional semesters or until the Capstone is complete, whichever comes first. The cost of thesis registration is less than the cost of a course and keeps the student active. Students enrolled in Master's Thesis have access to the library and maintain their Penn e-mail accounts. Should a student wish to extend Master's Thesis registration beyond two semesters, they must receive permission from the EES PM Faculty Advisory Committee.

### ***Student Status***

Students with Visa restrictions and/or loan requirements should be aware of their student status. Students are considered Full-time if they meet one of the following criteria:

- Student is enrolled in 3 or 4 courses in a single semester
- Student is enrolled in Capstone (ENVS 699 or GEOL 699)
- Student is enrolled in Masters Thesis (ENVS 990 or GEOL 990)

If a student is enrolled in 2 or fewer courses in a single semester (other than Capstone or Masters Thesis) they are considered Part Time.

Students who meet the requirements of a full time student are automatically enrolled in Penn's student Health Insurance coverage unless the student shows proof of coverage through another source. See the student health website for more information.

## *VI Capstone and Graduation Procedures*

### *Faculty Readers*

Two faculty readers are required for the Capstone Project: one designated as the primary reader and the other as the secondary reader. The primary reader will help the student compile the bibliography, suggest the research methods that should be employed in the Capstone, and ultimately approve both the proposal and the final Capstone Project. The secondary reader will evaluate drafts of the proposal and/or project, though they may also be involved in formulating the project. The primary reader must be an expert in the Capstone topic the secondary need not be.

Capstone faculty readers need not be members of the Penn standing faculty, and one reader may be drawn from outside of Arts and Sciences. However, they must be academically engaged in the student's Capstone topic. Professors from local universities have served as Capstone readers, as have adjunct faculty members and lecturers. In general, students choose faculty readers from among the professors they have had within the Earth and Environmental Science Professional Masters program.

Students should attempt to identify a reader as early as possible in their career. If they are having difficulty identifying faculty readers, the EES PM advisors can recommend likely prospects among the faculty. However, it is the student's responsibility to contact the potential readers and discuss their project in depth.

### *Registering for Capstone*

In order to enroll in the Capstone seminar, a Capstone Project Proposal must be submitted to the EES PM office and approved by the end of the semester prior to the one during which the student plans to complete the Capstone. If the student meets this requirement, an EES PM advisor will issue a permit for the Capstone Seminar.

## *Writing the Capstone*

The Capstone may take one of two forms: an extended traditional academic research paper or a creative piece. For example, students may produce handbooks or create a film for their Capstone. If a student chooses to do a creative Capstone, they must write a brief analytical paper that places the creative piece in an academic context.

Details about what is expected for the Capstone proposal and Project, including a timeline for completing the Capstone, are available from the Capstone supervisor in charge of the course the semester the student enrolls.

## *Forms*

There are three forms which need to be completed for the Capstone. These forms are available on the Blackboard website and in the EES office.

- **Graduation application** – This form should be filled out online at the beginning of the term in which the student intends to complete the program and graduate. See the LPS website for the application and current deadlines.
- **"Form 100: Agreement to Serve on EES PM Capstone Committee"**— certifies that two people have agreed to serve as the student's Capstone readers. This form must be filed along with a Capstone Proposal in order to register in the Capstone Seminar.
- **"Form 200: Certification of Completion of Capstone Project"**— to be completed by both readers to certify their approval of the completed Capstone Project. This form will be submitted by the Faculty reader. However, the Capstone is not considered complete until the final, bound Capstone is submitted to the EES PM office, no later than one week after the last day of classes in the term in which the student intends to graduate.

- **Scholarly Commons Application** — required in order to publish the student’s work on Penn’s online publication the Scholarly Commons. Students must fill out the form and return with the completed Capstone.

### *Capstone Project Timetable and Deadlines*

It is never too early to begin thinking about a Capstone project topic and students are encouraged to discuss Capstone ideas with faculty, academic advisors, and the EES PM Director. Students should also tentatively select faculty readers as early as possible. Once they have identified both a topic and two readers who have agreed to serve on their Capstone committee, they should submit a completed faculty reader agreement (Form 100) and a copy of their proposal to the EES PM office. We recommend that students take ENVS 533 Research Methods as early as the second semester of matriculation in order to help develop and write an appropriate proposal for the Capstone.

During the semester in which the student intends to graduate, they should complete and submit a graduation application. When the Capstone is complete, students are responsible for ensuring that the faculty readers complete the final Capstone approval form (Form 200). The table that follows indicates the deadlines for submitting the necessary forms. Refer to this table and the LPS Academic Calendar to determine when classes begin and end, as these dates change each term and every academic year.

### **Capstone and Graduation Timetable**

Copy of approved Capstone proposal due in EES PM office	Last Day of Classes in the term prior to the term the student intends to complete the Capstone
Faculty Reader Agreement (Form 100)	Before End of Classes in term prior to the term in which the student intends to complete the Capstone
Graduation Application	Spring Term: Feb 1 Summer Term: June 1 (Feb 1 if you wish to participate in May Ceremony) Fall Term: Oct 1
Capstone project completed and approved	Submit Bound Copy of Capstone no later than one week after the Last Day of Classes to the EES PM Office
Capstone Project Approval (Form 200)	Submit Signed Form 200 to EES PM Office no later than one week after the Last Day of Classes

### ***Incomplete Capstone Projects and Master's Thesis Registration***

Students who fail to complete Capstone projects before the final deadline for the term in which they register for the Capstone Seminar (ENVS 699 or GEOL 699) must remain active students in all subsequent terms in order to complete their MES or MSAG program and graduate. In brief, Capstone Projects are projects which students complete by enrolling in a 1 CU/1 term course, and the final Capstone product is due to the Capstone Readers approximately two weeks prior to the end of term (students should check with their readers to see if they will need additional time for grading) to permit the EES PM staff to process the grades and audit students for graduation. Any students who have not submitted their final bound Capstone and Form 200 within one week of the end of classes in the semester for which they are enrolled in Capstone will be given an Incomplete for the Capstone project and will be registered automatically for Master's Thesis (ENVS 990 or GEOL 990) in the subsequent term and for each and every term thereafter until the completed and approved Capstone is submitted to the Earth and Environmental Science Professional Masters Program.

In addition to the requirements for enrollment in each term during which students continue to work on the Capstone, graduation posting will also be affected. Students must reapply online for graduation in the term during which they plan to complete the Capstone. The student;s graduation date will be posted for the term in which they complete their capstone and receive a grade, not the term in which the student registered for the capstone course.

## ***VII University Policies and Resources***

### ***Enrollment Status***

MES and MSAG students who are enrolled for three courses per term are considered full-time students and will be billed the full general fee. This fee covers access to many of the services described below. MES and MSAG students enrolled in one or two courses per term are considered part-time students. However, students enrolled in the MES or MSAG Capstone (ENVS 699 or GEOL 699 respectively) or Master's Thesis (ENVS 990 or GEOL 990 respectively) are considered full-time.

### ***Student Identification***

#### ***Social Security Number***

A valid social security number is required for matriculation. This number will be used as a student identification number during the matriculation process. Once a student is enrolled, a student I.D. number (Penn I.D.) will be issued and used for registration and other transactions throughout the University. A student who does not have a social security number may obtain one by contacting the local Social Security Office. International students will be issued a student I.D. number to be used for all University transactions upon enrollment. Never give out your social security number via email or fax.

#### ***PennCard***

The PennCard is the official University of Pennsylvania identification for students, faculty, and staff. The PennCard provides access to University facilities, services, cash convenience, and more. To obtain a PennCard, students should bring a valid form of photo ID (driver's license, passport, etc.) to the PennCard Center, 150 Franklin Building, 3451 Walnut Street. Only active students registered for courses in the current or upcoming term may receive a PennCard, which should be carried at all times. The PennCard web site is [www.business-services.upenn.edu/penncard](http://www.business-services.upenn.edu/penncard).

### ***PennKey***

A PennKey is required to authenticate, or verify, an individual's identity for many of Penn's networked computer systems and services. Authorized users need a PennKey and password to access such resources as Penn InTouch (course registration), Blackboard (used in most classes), certain library resources, and public campus computers. A PennKey is also required to obtain a Penn email address. New students should receive a letter with information on how to create a PennKey and password within a few days of their admission to the MES or MSAG programs. The following web site provides more information about the PennKey, [www.upenn.edu/computing/pennkey](http://www.upenn.edu/computing/pennkey).

### ***Penn InTouch***

Penn InTouch provides secure access via the Internet to online course registration, class schedules, academic records, future academic planning, billing, financial aid application status and awards, address corrections and updates, and student health information. A PennKey is required to access Penn InTouch at <https://sentry.isc.upenn.edu/intouch>.

### ***Email***

All students enrolled at the University of Pennsylvania are eligible for a Penn email address free of charge. Even if the student plans to use a non-Penn email account, they should also establish a Penn address. The EES PM Director will send out program information to this address and also contact students with important information through this system. Course instructors will be given this address as well and will expect to contact students in this way. Should students wish, they may forward email from their Penn address to another account through Penn's webmail site. Instructions on how to create and use a Penn email account are available through SAS Computing at [www.sas.upenn.edu/computing/help/Email](http://www.sas.upenn.edu/computing/help/Email). Students can arrange to forward email from their Penn account to another account at <https://webmail.sas.upenn.edu/>. Follow the link to "manage account" before logging in.

### ***Academic Support Services***

The Weingarten Learning Resources Center, located at 3702 Spruce Street, Suite 300, provides professional consultation services in skills such as academic reading, writing, study strategies, and time management. This academic support is provided through a variety of services and programs including the very popular series of study skills workshops offered at the beginning of each Fall and Spring term for LPS students. Consult the LPS Course Guide for specific dates and times for these workshops. For more information about the Weingarten Learning Resources Center visit their web site at <http://www.vpul.upenn.edu/lrc/> or call 215.573.9235.

The University of Pennsylvania's Access & Achievement Programs/AAP (3820 Locust Walk, 215.898.0809) offer individual and group tutoring, and mid-term and finals review sessions for all Penn students. The support services help students enhance learning in core academic subjects, manage their time, find financial aid, and feel more confident about their abilities. Assistance and counseling are available on an individual basis. For information, consult the Academic Support Program at [http://www.vpul.upenn.edu/aap/aap\\_home.html](http://www.vpul.upenn.edu/aap/aap_home.html)

### ***Student Financial Services***

Student financial aid, including applications and disbursement of money, are handled through Student Financial Services, located in room 100 of the Franklin Building at 3451 Walnut Street. Call (215) 898-1988 or visit the website at <http://www.sfs.upenn.edu> for more deadlines and procedures.

### ***Penn Bookstore\*\****

Located on the corner of 36th St. and Walnut St., the Penn Bookstore carries textbooks and trade books as well as stationery, art supplies, school supplies, gifts, and other items. There is also a check cashing service, notary, SEPTA token and transpass window, and ATM located within the store. The Computer Connection, within the Bookstore, also carries computers, software, and computer supplies. Visit <http://upenn.bkstore.com/> or call 215.898.7595 for store hours.

\*\*Note that many faculty members use the Pennsylvania Book Center, on 34<sup>th</sup> Street between Walnut and Sansom Streets, to order their courses' texts. 215.222.7600.

### ***Career Counseling***

The University provides career counseling through the Career Services office. Students may create a file of recommendations and transcripts that can be provided to potential employers or forwarded to graduate schools. To make an appointment with a counselor, visit the Career Services website at <http://www.vpul.upenn.edu/careerservices/> or contact the office at 898-7530. The Career Services office is located on the ground floor of the McNeil Building.

### ***Computer Labs***

For a current list of computer labs on campus, along with eligibility requirements, go to <http://www.upenn.edu/computing/view/labs/>.

### ***Computer Resource Center***

The Computer Resource Center (CRC) offers advice, training, consulting services and computer support to Penn students. The CRC is located in Suite 202 Sansom West (Grad Tower B), 3650 Chestnut Street. The entrance is located off Steve Murray's Way (mid-block between 36th and 37th on Chestnut). Students will need their PennCard for access to the building. Go to <http://www.upenn.edu/computing/isc/csg/> or call 215.898.9085 for more information on hours and services available.

### ***Libraries***

Van Pelt Library, the main University library, is located at 3420 Walnut Street (the entrance is on the College Green across from College Hall). For information about holdings and hours for each of the University libraries, go to <http://www.library.upenn.edu/>.

### ***Writing Center***

The Writing Center provides free writing consultation from advanced graduate students. Go to <http://www.writing.upenn.edu/critical/> for more information.

### ***Recreation Facilities***

MES and MSAG students have access to all of the recreation facilities available to the University community. For information on hours, programs, locker rentals, etc. go to <http://www.upenn.edu/recreation/>.

### ***Student Disabilities Services***

The Office of Learning Resources includes the Student Disabilities Services (SDS), which provides comprehensive professional services and programs for students with disabilities to ensure equal academic opportunities and participation in University sponsored programs. Reasonable accommodation to a qualified student's known disability may be provided to assure equal access. Penn invites students with disabilities to identify themselves at any time during their course of study as enrolled students. Although the self-identification process is confidential and completely voluntary, it is required for those requesting accommodation. SDS may be contacted via the web at <http://www.vpul.upenn.edu/lrc/sds/index.html>, by phone at 215.573.9235, and by TDD at 215.746.6320.

### ***Office of the University Ombudsman***

The Office of the Ombudsman assists individuals in finding solutions to problems that they may not be able to resolve through normal channels. The office is concerned with safeguarding individual rights and promoting better channels of communication throughout the University. It is independent of all administrative offices. The Ombudsman is not an advocate for any one individual or group. He or she is an advocate for fairness, adherence to University regulations, due process, and personal responsibility. The Office supplements, but does not replace, any existing grievance mechanisms or modes of redress. It can and does recommend changes in the existing rules and practices when necessary. The Office of the Ombudsman may be reached at 215.898.8261 or [www.upenn.edu/ombudsman](http://www.upenn.edu/ombudsman).

### ***Student Health Information***

The university has a number of health-related requirements for students. These include completion and submission of health and immunization records, coverage for outpatient medical care through the Student Health Service (SHS) and maintenance of health insurance coverage for in-patient and catastrophic care. Students are advised to call SHS at 215-662-2850 or consult their web site at [www.upenn.edu/shs](http://www.upenn.edu/shs) for the most accurate and up-to-date information on student health requirements.

### ***Student Health Service***

The University provides outpatient medical care to students through its Student Health Service. The SHS offers an array of clinical services, including initial and follow-up treatment of acute medical illness and injury, management of chronic health problems, health screening and preventive care. All full-time students must carry coverage for care at the Student Health Service, either through payment of the Clinical Fee or through enrollment in the Penn Student Insurance Plan (PSIP). Full-time students who have private or employer-sponsored insurance do not have to purchase the student plan, but they must still pay the clinical fee for coverage at the Student Health Service. Coverage for the Student Health Service (either through the clinical fee or through enrollment in PSIP) is optional for part-time students. The Student Health Clinic is located on the lower level of Penn Tower at 34th Street and Civic Center Boulevard, directly across the street from the Hospital of the University of Pennsylvania (HUP). Be sure to bring your PennCard and insurance information whenever you go for medical care. For hours and other information refer to the Student Health web site [www.upenn.edu/shs](http://www.upenn.edu/shs) or call 215.573.2523.

### ***Student Health Insurance***

The university requires all full-time students to maintain medical insurance with coverage for in-patient care and catastrophic illness and injury. Students may satisfy insurance requirements through private or employer-sponsored plans or through enrollment in PSIP. All full-time students must either enroll in PSIP or submit a waiver indicating alternative coverage. Students who fail to provide information about coverage will be enrolled and billed for PSIP. Part-time students may enroll voluntarily in PSIP, but they are not subject to the insurance requirement, and will not be enrolled by default in PSIP. Coverage for the Student Health Service (either through the Clinical Fee or through enrollment in PSIP) is optional for part-time students.

### ***Immunization***

Students enrolled in the MES or MSAG are part of the University community and benefit from the University's efforts to provide a safe and healthy environment. All MES and MSAG students are required to comply with immunization requirements upon first enrolling in credit courses.

To comply, students should complete a Pre-Matriculation Health Record obtained from the Student Health Service. Please note: Students born on or before January 1, 1957 are exempt from the above requirements. The Student Health Service can provide missing immunizations at a fee that covers costs. In the event of an outbreak of a communicable disease in any Penn class, all students in that class would be required to comply immediately with the University's immunization requirements. Contact the Immunization Coordinator at 215.349.5047 for more information.

### ***Code of Academic Integrity***

Inasmuch as the standing of an educational institution and the value of a degree from that institution are dependent upon the integrity of study and research carried on at that institution, the Code of Academic Integrity is drawn to make clear the policy of the University concerning academic honesty. Each student attending the University must abide by this code, the text of which appears in the Pennbook and is found at this website: <http://www.vpul.upenn.edu/osl/acadint.html>

### ***Confidentiality of Student Records***

Pursuant to the Family Educational Rights and Privacy Act of 1974, as amended, in general, personally identifiable information can be disclosed to people outside the University only with the written consent of the student or alumnus/na involved. A statement setting forth specific University policy concerning (1) disclosure of information to people outside the University, (2) disclosure of information to people within the University, (3) permitting students to inspect and review records and (4) providing students with the opportunity to seek the correction of their records appears in the Pennbook and is found at this website: <http://www.vpul.upenn.edu/osl/confiden.html>

### ***Nondiscriminatory Policy***

The University of Pennsylvania values diversity and seeks talented students, faculty and staff from diverse backgrounds. The University does not discriminate on the basis of race, color, sex, sexual orientation, religion, national or ethnic origin, age, disability or status as a disabled or Vietnam Era veteran in the administration of its educational policies, programs, or activities, admissions policies and procedures, scholarship and loan programs, employment, recreational athletic or other University administered programs. Questions or concerns regarding the University's equal opportunity and affirmative action programs and activities or accommodations for people with disabilities should be directed to the Director of Affirmative Action, 1133 Blockley Hall, 418 Service Drive, Philadelphia, PA 19104-6021 or 215.898.6993 (Voice) or 215.898.7803 (TDD).

### ***Student Responsibility***

While advisors, faculty, and staff will assist the student in every aspect of their graduate study, it is the **responsibility of the student** to ensure that all steps and necessary paperwork have been completed and submitted to the Program Director and or LPS as appropriate. Grant proposals, awards, accepted publications and other records of achievement should also be submitted to the Director.