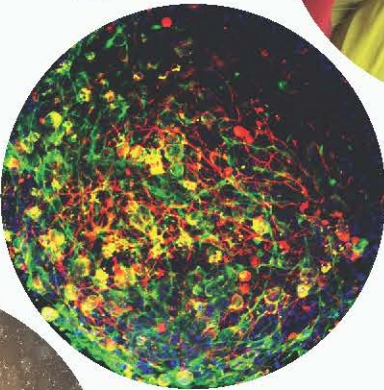
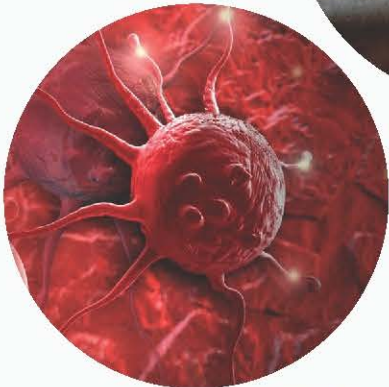


Department of Environmental Health and Engineering



Student Handbook 2018-19

The Johns Hopkins University Whiting School of Engineering 2018-19 Academic Year Calendar

Fall 2018

Th August 30 – F Dec 21

First day of classes –meet according to Monday schedule _____	Th Aug 30
Labor Day – no classes _____	M Sept 3
Last day to add courses _____	F Sept 14
Last day to drop courses _____	S Oct 14
Fall Break – no classes _____	F Oct 19 – S Oct 21
Graduate registration for spring semester _____	M Nov 5
Last day for course withdrawal _____	F Nov 16
Thanksgiving Vacation – no classes _____	Nov 19 – S Nov 25
Last day of classes _____	F Dec 7
Reading Period _____	S Dec 8 – T Dec 11
Final Exam Period _____	W Dec 12 – F Dec 21
Mid-year vacation _____	S Dec 22 – S Jan 6

Spring 2019

M Jan 28 – Th May 16

Intersession _____	M Jan 7 – F Jan 25
Observance of MLK, Jr. Birthday – no Intersession classes _____	M Jan 21
First day of classes _____	M Jan 28
Last day to add courses _____	F Feb 8
Last day to drop courses _____	S Mar 10
Spring vacation – no classes _____	M Mar 18 – S Mar 24
Graduate registration for fall semester _____	M Apr 8
Last day for course withdrawal _____	F Apr 19
Last day of classes _____	F May 3
Reading Period _____	S May 4 – T May 7
Final Exam Period _____	W May 8 – Th May 16

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DEPARTMENTAL FORMS CAN BE ACCESSED VIA THE STUDENT RESOURCES TAB ON THE [EHE WEBSITE](#)

DEPARTMENT OF ENVIRONMENTAL HEALTH AND ENGINEERING

Departmental Administration

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Environmental Health and Engineering Student Organization (EHESO)

EHESO is the departmental student organization formed for the purpose of facilitating social, intellectual, and service-oriented interaction between students, staff, and faculty of the Department of Environmental Health and Engineering. EHESO unites students from the different disciplines of the Department and provides a forum for students to voice their concerns and share ideas and research. Networking opportunities, social events, student-sponsored conferences, and lectures are all benefits of EHESO. For further information please contact JHSPH.EHESO@jhu.edu or visit the [EHESO Facebook](#) page.

2018-19 BOARD MEMBERS

Dana Freeman

President

Kyle Aune

Secretary

Alexandra Lorentz

Research Committee Representative

Kathryn Dalton (BSPH) & Cassie Cosans (WSE)

Treasurers

Keith Arora-Williams, Andrea Fraser, & Hannah Gray

WSE Representatives

Marsha Wills-Karp

Faculty Adviser

Katie Overbey

President-Elect

Vy Tran

Student Assembly Representative

Chloe Kashiwagi

Master's Representative

Emily Illingworth

Educational Programs Committee Representative

Sarah Attreed & Taylor Etzel

Doctoral Student Council Representatives

ADMINISTRATIVE INFORMATION

The Department of Environmental Health and Engineering reserves the right to change any programs, policies, requirements, and regulations in this handbook. Updates and revisions to this handbook will be posted on the departmental website and students will be notified of major changes. Students are responsible for reviewing additional policy information in various School publications including the WSE website.

Accounts

Students should monitor their SIS account on a monthly basis so that problems may be resolved in a timely manner. The Department may deposit funds for tuition and certain fees into accounts, but the student is responsible for charges related to expenses that are not covered by the Department. These charges include late registration fees, even when the Department pays for tuition costs. More information can be found on the [Student Accounts](#) website.

Financial Support

All qualified applicants are considered for scholarship opportunities. Please note that funding for non-U.S. citizens is very limited. The allocation process is very competitive and funding sources vary each year. In most cases, admitted students will be notified at the time of acceptance if they are awarded any type of financial support with the amount and type of support specified in the award notification. Students should contact the Academic Program Administrator if they have any questions about their award or accounts. Students are encouraged to visit the School's website for [graduate financial aid](#) and [fellowships & grants](#).

International Travel

As a graduate student at the Johns Hopkins Whiting School of Engineering, you may have an opportunity to supplement your education or conduct research in another country. These opportunities often enrich the academic curriculum, contribute to dissertation research, and allow you to apply the knowledge you obtain in the classroom to the world's communities. While the School encourages participation in these kinds of experiences, international tensions can be high and the resources on the [international travel website](#) are provided to assist you in making an informed decision.

Students are not obligated to travel internationally, and each student has the right to decline to travel abroad. If the student is supported by a research project that requires such travel and the student chooses not to travel, the student may be removed from that project following discussions with the principal investigator and the EHE program directors.

Graduate students who decide to travel abroad must demonstrate that they understand and voluntarily accept the risks inherent in international travel. To do so, students must first receive the appropriate departmental approvals for the trip through their adviser and program director(s). Once approved, students must complete the following steps:

1. Consult the Department of State website at <http://travel.state.gov>. Information on US embassies, travel advisories, and the availability of transportation should the situation in a country deteriorate may be found on this site.
2. Register your travels with the [JHU International Travel Registry](#).
3. Complete the Graduate Student Study Release form. Submit the document to Jessica Elroy (jelroy1@jhu.edu) at least one week in advance of your proposed travel date.

IMMUNIZATIONS

If you are traveling to a less developed part of the world, you should be certain to contact your health care provider or the Johns Hopkins International Travel clinic to learn about recommended immunizations and other matters to guard your health. Located on the East Baltimore campus, you can reach the [International Travel Clinic](#) by telephone at 410-955-8931. Please note that the Johns Hopkins International Travel clinic can be used for immunizations and vaccinations, however they are not covered by student health insurance. Student Health does many vaccinations (exceptions are: rabies, Japanese encephalitis, and the yellow fever series). Walgreen's pharmacies provide the full series of travel vaccinations.

STAY INFORMED

Students are encouraged to vigilantly monitor consular and press reports regarding the country (or countries) where they plan to travel. Students may also check the consular reports of countries friendly to the U.S. (e.g., Australia, Canada, and Great Britain) as well as reports from other international agencies (e.g., United Nations). Students should participate in the security briefings offered by other organizations with whom they may be working.

MAINTAIN COMMUNICATION

When traveling in an area where regular communication is difficult, students are encouraged to maintain contact with their adviser and/or academic program administrator.

STATE DEPARTMENT REGISTRATION

For students who are likely to stay for a prolonged period in a high-risk area of the world, registration at the U.S. embassy or consulate is essential.

INTERNATIONAL STUDENTS

International students must contact the Office of International Services (OIS) well in advance of any travel to avoid compliance issues with their visa status. OIS may also be contacted at 410-955-3371.

INTERNATIONAL SOS

Johns Hopkins University partners with International SOS, the leading medical assistance, international healthcare and security assistance company. Travel security services are provided by a joint venture of International SOS and Control Risks, the world's leading security risk management firm. SOS card information can be found at http://www.jhu.edu/purchasing/travel/intl_sos.pdf. To obtain a travel insurance card please contact the Risk Management Department at 443-997-8258.

Parental Accommodations

Full-time graduate students and postdoctoral trainees may request from their school a [“new child accommodation”](#) for 8 weeks. A new child accommodation is designed to make it possible to maintain the parent’s existing status, and to facilitate their return to full participation in classwork, research, teaching, and clinical training in a seamless manner.

Eligible graduate students who plan to utilize a new child accommodation are expected to notify the Chair of the department/program or designated faculty or staff member* as soon as the student is aware of the need to use a new child accommodation to facilitate appropriate scheduling. This should ideally be at least 90 days before the proposed start date of the new child accommodation.

Standards of Performance

Students are expected to adhere to the policies stated in the EHE Student Handbook and the [WSE Policies and Procedures](#). These policies include those related to grade requirements, registration, academic progress, deadlines, satisfactory completion of exams, and the School’s [Academic Ethics Code](#). Students who fail to follow or meet the established policies may be subject to dismissal.

HUMAN SUBJECTS RESEARCH

The Whiting School of Engineering is committed to protecting the rights and welfare of individuals participating as subjects in research. All human participant research conducted under the auspices of the School is evaluated by an [Institutional Review Board \(IRB\)](#) to ensure that the rights and welfare of participants are fully protected.

All faculty and students who are involved in human subjects research must meet the compliance training requirements of the Homewood IRB. It is the responsibility of students and faculty to make certain that approval is obtained from the IRB before beginning any research involving human subjects. The IRB is also

responsible for determining whether certain research activities qualify for exempt status under the regulations and institution policy.

For IRB announcements and updates, and for additional information and requirements on conducting human research, please contact the Homewood IRB Office, Wyman N472 (410-516-6580); email at hirb@jhu.edu.

Registration

It is the student's responsibility to register for courses during the appropriate time periods specified by the [Homewood Office of the Registrar](#) (and available on the academic calendar). Students are expected to discuss course plans with their adviser before registration and confirm registration details with their adviser every term. Regardless of funding sources such as grants, stipends, etc., students are responsible for any applicable fees if they do not register properly.

Waivers

Waiver requests will be considered when a student has taken a similar, graduate-level course(s), with a passing grade, in another division of JHU or another university. A waiver will not be granted for courses in which the student received less than a B, or did not receive a letter grade. Please note that approval of a waiver does not reduce the total number of credits a student is required to earn to meet graduation requirements.

PROGRAM REQUIRED COURSES

Students must complete the course waiver request form and provide documentation (i.e. transcript and syllabus) to support the request. The completed form and supporting documentation should be merged into one PDF and emailed to the adviser and academic program administrator, Jessica Elroy jelroy1@jhu.edu. The academic program administrator will return the form to the student and notify them of the decision. A copy will also be kept in the students' academic file.

Student Assistance

On occasion, problems may arise between students and other members of the Whiting School of Engineering community. The purpose of these guidelines is to help resolve disputes informally between students and other members of the Hopkins community. The student is encouraged to make a good faith effort to resolve the dispute informally prior to initiating formal [Grievance Procedures](#). For those disputes that cannot be resolved informally, a Student Grievance Procedure has been created by the School to provide students and student groups with a formal process to seek resolution of a grievance. In certain circumstances, other governing bodies also assist in these situations. A student who has a concern about a decision or act of a faculty or staff member of the Department of Environmental Health and Engineering should follow the steps outlined below.

1. The student should first approach the person or parties (e.g., academic adviser, related office, etc.) directly involved as soon as possible to discuss questions or concerns.
2. If the issue or concern is not resolved informally, the student should contact the program director for assistance. A written request for problem resolution is requested at this stage. This request should include specific details about the problem, documentation if appropriate, and a suggestion for resolution.
3. If no resolution can be found in prior steps, the matter will be referred to the Department Chair, who will address the problem as they deems necessary.
4. If the matter is not resolved within the Department or requires review and/or decision at the School or

University level, a student should refer to the [School's Student Grievance Procedure document](#).

Additionally, the [Johns Hopkins Student Assistance Program](#) (JHSAP) is a life management resource that can help students identify and manage challenging issues in healthy ways. Getting help is free, convenient, and confidential. Free JHSAP services include: short-term counseling, crisis response, healthy relationship support and educational workshops.

Code of Conduct

The faculty and students of the Whiting School of Engineering have the joint responsibility for maintaining the academic integrity and guaranteeing the high standard of conduct of this institution.

An ethical code is based upon the support of both faculty and students who must jointly accept the responsibility to live honorably and to take action when necessary to safeguard the academic integrity of this University.

Students enrolled in the Whiting School of Engineering assume an obligation to conduct themselves in a manner appropriate to The Johns Hopkins University's mission as an institution of higher education. A student is obligated to refrain from acts which he or she knows, or under the circumstances has reason to know, impair the academic integrity of the University. Violations of academic integrity include, but are not limited to: cheating; plagiarism; knowingly furnishing false information to any agent of the University for inclusion in the academic record; violation of the rights and welfare of animal or human subjects in research; and misconduct as a member of either School or University committees or recognized groups or organizations.

PROCEDURE

All members of the Johns Hopkins community are responsible for immediately informing the Dean of Student Life of any suspected violations of the Code of Conduct.

Allegations of sexual misconduct are covered by JHU's [Sexual Misconduct Policy and Procedures](#) for faculty, staff, and students. The University encourages individuals to report incidents of sexual misconduct and provides a variety of avenues, both formal and informal, by which individuals can report complaints of sexual harassment. Allegations of sexual harassment by students are covered under the JHU program and under the [Student Conduct Code](#).

Required Courses

Students in EHE are required to attend the following courses and seminars regarding safety, ethics, and research.

RESEARCH AND SAFETY

An email invitation will be sent during the first week of classes, confirming the Safety Seminar Dates for each academic year.

EHE Safety Seminars

Tentatively, the dates for the upcoming EHE Safety Seminar training sessions are below. **Attendance at ALL of these September safety meetings is required if you intend to do any lab or field work— this applies to all of our graduate students and most of our undergrads.**

Session I: Tuesday, September 11, 12:00 - 1:15 (location TBD)

Session II: Tuesday, September 18, 12:00 - 1:15 (location TBD)

Session III: Tuesday, September 25, 12:00 – 1:15 (location TBD)

Be sure to sign the roster so that we can confirm you attended. Attendance is mandatory for anyone planning on doing any:

- lab-based research (whether for credit or for pay or even simply for the experience)
- field-based research
- students enrolling in 570.304, Environmental Engineering and Chem Lab; 570.411/610 Engineering Microbiology; 570.452/652 Experimental Methods

This safety training needs to be completed each Fall semester for any student in the above categories. If there is a conflict with another class, students should ask the instructor whether they can be excused from the other class.

RESPONSIBLE CONDUCT OF RESEARCH (RCR)

All EHE graduate students who conduct research must take the Responsible Conduct of Research training. It is expected that this training is conducted prior to participating in any research, preferably in the first semester of coursework. Students will not be able to graduate until this requirement is satisfied.

PhD students must take the in-person version of this course, AS.360.625.

Master's students must take the online version of the course if participating in any research at Hopkins (for pay or for credit). Master's students being paid from an NIH grant must take the in-person course.

Please view the [WSE policy and information](#).

ACADEMIC ETHICS COURSE

20-minute online tutorial to help educate all new graduate students about their academic and ethical responsibilities— all new students are required to complete this and receive a passing grade of four out of four. You must successfully complete the online tutorial and quiz within the first eight weeks of your first semester in the graduate program. Students are automatically enrolled in the course. Students will not be able to graduate until this requirement is satisfied.

DOCTOR OF PHILOSOPHY PROGRAM

Training Competencies

The goal of PhD training in EHE is to, through interest-specific courses, qualifying examinations, and mentored research, prepare graduates to be independent investigators who engage in scholarship that creates new knowledge, use research to transform practice and improve environmental health, and effectively communicate research findings.

Faculty Advisers

PhD students are assigned a faculty adviser once they are admitted to the program. The adviser serves as the primary contact for the Department and will assist the student with course selection each semester, planning research rotations if appropriate, preparation of seminar presentations, and the interpretation of Departmental and School policies. This affiliation, however, does not exclude significant interactions with other members of the faculty. The faculty adviser and academic program administrator must approve student registration and course plans (as applicable). Each academic year, the adviser and the student must review academic progress and determine plans for the future year that will keep the student on track toward graduation. This information is also reviewed by the director of graduate studies and the academic program administrator. In the event that the student wants to change advisers, they must discuss the reasons with director of graduate studies and submit a request to the academic program administrator. Such changes are considered upon mutual agreement and availability of an appropriate adviser. Changes will be noted on the students' transcript.

Doctoral Registration

In addition to the School's residency requirement, full-time doctoral students in the Department must register on a continuous basis for a minimum of 20-credits each academic term. Registration is not required during the summer* or interim sessions and tuition funding is typically not provided for these terms. All students are required to discuss course registration with their adviser prior to the start of each term. Full-time students who fail to register by the published deadlines during a regular academic term will incur a late registration fee from the School that must be paid by the student. If a student still does not register after the add/drop deadline for the term, they will be considered withdrawn by the School and the Department.

Note: Some students will be registered by the Department during the summer term for administrative purposes; however, this registration does not imply that didactic courses will be funded.

Assessment of Progress

In order to monitor and document adequate academic performance and progress, a review of the doctoral student's grades and activities is carried out continually. This information is reviewed by the adviser, the director of graduate studies and a Departmental committee. In addition to maintaining satisfactory academic progress and being in good standing with Departmental standards, each student must successfully complete a Departmental qualifying oral evaluation and the school-wide preliminary oral examination. Failure to successfully complete any of these requirements will be grounds for dismissal from the program.

The Department requires doctoral students to maintain a minimum 3.0 cumulative GPA. Students with a GPA falling below 3.0 will be placed on academic warning and will have one term of registration in which to raise their GPA above the threshold for their degree. The academic program administrator will notify students placed

on academic warning and their performance will be reviewed by the Educational Programs Committee (EPC). All recommendations about academic standing will then be presented to the Department's Executive Committee for final disposition. Students not meeting the minimum GPA after one term may be granted additional term(s) on academic warning if academic progress has been shown in the cumulative GPA; any approval beyond one term must be reported to the School's Committee on Academic Standards. Students on academic warning must meet with their academic adviser and program directors each term to review their academic plan and receive approval for their course schedule prior to registering for courses.

Seminars

In addition to attendance at formal courses, students are required to attend Departmental and program seminars. These seminars include the M. Gordon Wolman Seminar (EN.570.841) for which Hopkins faculty, scientists from other institutions, and alumni are invited to present their latest research results and the Environmental Engineering and Science Seminar (EN.570.881) where students will attend and present (once per year in years 2-5) their ongoing research. In addition, students are required to participate in the annual Departmental research retreat.

Vacation

Students will take no more than two weeks of vacation per academic year (University holidays are approved time off and are not included in the two weeks of vacation time). Students must discuss all plans for vacation or other absences with their adviser and graduate program director. Non-compliance with attendance or vacation is grounds for dismissal.

Attendance

Students are required to attend all classes, including seminars, and participate actively. Scheduling conflicts that arise must be discussed with the student's adviser. Since research and practice are fundamental parts of the curriculum, it is required that students will work (with the approval of their adviser) in the laboratory, or pursue other research, including participation in public health practice opportunities during term breaks.

Leave of Absence

Academic leave of absence refers to, and is limited to, students in a degree program requiring continuous enrollment who, while in good academic standing, are forced to withdraw temporarily from graduate work due to paternal/family leave or reasons beyond their control, such as illness, military service, or pressing personal reasons justifying an interruption of the degree program. Students may be given a leave of absence for other reasons (e.g. involuntary, medical leave).

Leaves of absence are typically limited to one year except for military service. Students requiring additional terms of leave beyond the one year must reapply. Students who have had federal financial aid may be subject to additional restrictions and should check with the [Financial Aid Office](#) before extending a leave of absence beyond two terms. No more than two years of leave may be granted.

If it becomes necessary to take a break from studies, students should contact their adviser and determine if a formal leave of absence (LOA) is necessary. Any request for change of status must be submitted to the academic program administrator and approved by the School and the Department. Please contact Jessica Elroy (jelroy1@jhu.edu) for details about requesting a formal LOA.

PhD Examinations and Procedures

The following information regarding doctoral exams and thesis serves as a general guide to Departmental policies and procedures.

RESEARCH PROPOSAL

All PhD students are required to develop a written proposal to prepare for the preliminary oral examinations. The proposal will be in the form of a standard NIH or other funding agency format. It is the responsibility of the adviser to inform the student if there are any track-specific deviations from this requirement. This preliminary proposal supports the student in outlining key questions to be addressed in further research.

DEPARTMENTAL QUALIFYING ORAL EVALUATION

In preparation for taking the Graduate Board oral examination, all PhD students of the Department of Environmental Health and Engineering are required to achieve satisfactory performance on a Departmental qualifying oral evaluation (DQE). This Departmental evaluation provides an opportunity for the student to demonstrate the effective verbal communication skills and the ability to engage in scientific exchange that will be tested on the official formal School-wide preliminary oral examination.

The evaluating committee will consist of five faculty members with primary or joint appointments in EHE: four from WSE (including the adviser) and one from within the Department but from BSPH. The most senior faculty member (excluding the student's adviser) will serve as the chair of the evaluation process. Students should work with their adviser to select the faculty composition and exam time and complete the Departmental oral evaluation form provided by the office of the academic program administrator. Students must submit a copy of their thesis proposal to the committee members approximately 2 weeks prior to the exam date. *(Note: no more than two of the faculty on this practice evaluation can serve in the group of 5 primary members of the Graduate Board oral examination.)*

The evaluation commences with a discussion among the faculty (in the student's absence) concerning the student's academic performance and activity. The student is then invited back into the room and begins by presenting a 10-15-minute talk about their thesis proposal. The faculty will question the student to determine whether they are adequately prepared to conduct the research outlined in the proposal. Questions will not be confined to the proposal, but can cover any topic deemed to be fundamental to a doctoral student in their particular field. Questioning continues until all faculty members have had the opportunity to ask questions and have acquired sufficient information about the student's knowledge and abilities. The student will then be excused from the room, and the faculty will decide whether the student performed well enough to proceed to the school-wide preliminary oral examination. If the committee feels the student is not ready, they will decide on the appropriate next step. The most common option is to simply allow more time for a student to study and practice answering questions orally, with a repeat of the Departmental practice evaluation at some specified later time. If the student doesn't achieve an acceptable performance level at this second session, the faculty may either decide on a third and final practice session or recommend to the track directors that the student leave the PhD program. Doctoral students who are not able to continue in the program may request a transfer to one of the Departmental master's programs. Following each of these practice evaluations, the adviser will submit a brief report summarizing the decision of the committee to the academic program administrator.

GRADUATE BOARD PRELIMINARY ORAL EXAMINATION

The Graduate Board preliminary oral examination (GBO), administered by the School's Office of Academic Affairs under University guidelines, determines whether the student has the ability, depth, breadth, and knowledge to undertake significant doctoral-level research in their specialized area of interest. The examination should be taken at the earliest feasible time, no later than the end of the student's third year in residence, and before significant engagement in dissertation research.

The student and their adviser are responsible for initiating arrangements for this examination. Requests for scheduling the exam must be sent to the School's Office of Records and Registration at least one month prior to the examination; therefore, the form must be submitted in advance of this time to the academic program administrator. All members of the committee must be present at the scheduled exam location; teleconference participation is not permitted. If the student fails the preliminary oral examination and is permitted a re-examination, they must be re-examined within one year.

THESIS ADVISORY COMMITTEE

Upon successful completion of the preliminary oral examination, a thesis advisory committee will be formed to provide continuity in the evaluation of progress and development of the student. The principal responsibilities of the committee are to review the student's dissertation proposal, to advise and guide the student's research, and to read and evaluate the student's final dissertation. Students work in consultation with their adviser and/or graduate program director to select members of the committee.

The committee consists of the student's adviser and two to four other faculty members from both inside and/or outside the student's Department with expertise in areas relating to the proposed research of the student. Membership of the committee may change as dictated by the needs of the student and direction of the research. It is required that the student will meet formally at least twice per year (every six months) with the committee, beginning six months after the successful completion of the school-wide preliminary oral examination and continuously until the final defense. At these meetings, the student will present progress on their thesis project and the committee will offer advice. For each meeting, an evaluation (completed Thesis Advisory Committee Form) of the student's development and progress will be prepared by the adviser in consultation with the committee, discussed with the student, and submitted to the academic program administrator to be included in the student's file. As the thesis project progresses, the committee may indicate a target date for completion of the thesis research. Noncompliance with committee meeting requirements is grounds for dismissal from the program.

FINAL ORAL DEFENSE AND PUBLIC SEMINAR

The committee of thesis readers shall conduct the oral defense of the thesis after the thesis advisory committee agrees that the candidate is ready for the formal defense (also known as Final Oral Exam or FOE). During this defense the committee shall evaluate:

- I. The originality and publication potential of the research;
- II. The candidate's understanding of the details of the methodologic and analytic work;
- III. The final quality of the written thesis document.

Once a date for the defense has been agreed upon by the committee of thesis readers, a formal request for the final oral defense should be submitted to the Office of Records and Registration at least one month prior to the

exam date. This should be submitted in advance of the one-month period to the academic program administrator for processing. The adviser will confirm that the thesis is in a final form that is ready to be submitted to the readers and that all other School and Department requirements for the degree have been fulfilled.

The final oral examination is a defense of the thesis before a committee of at least four readers. Typically, most or all of the members of this committee were also members of the student's thesis advisory committee. The readers include the thesis adviser and at least three other faculty members with the rank of assistant professor or higher. At least three Departments of the University, including at least two Departments within WSE must be represented. Normally, two readers are from EHE. The senior faculty member outside EHE will normally serve as chair and must hold the rank of full or associate professor. The primary appointment of faculty members determines whether they are considered inside or outside the Department.

The thesis should be in its final form before distribution to the readers. This is confirmed by the adviser signing off on the thesis before it is distributed to the readers. Thesis readers must have at least one month to read the thesis before the final examination is held as they might have suggested revisions as well.

All doctoral candidates are required to give a formal presentation of their completed thesis work at a public seminar. Administrative staff is available to assist in scheduling a room for this event as well as advertising this event to the appropriate audience.

The Department requests one bound copy of the thesis. The School recommends using [Thesis on Demand](#). The binding should be black, the student's name, degree and year should be on the spine, and thesis title and name on the front. The Department does not cover the cost of electronic thesis submission or binding. All Departmental copies are placed in Ames 316.

TIME OF COMPLETION OF PHD REQUIREMENTS

PhD students have seven years from the time of matriculation to complete their degree requirements. However, it is expected that all doctoral students will have completed the program within five years after matriculation. Students will receive a maximum of five years of funding from the program, dependent on continued satisfactory progress. Student funding beyond five years is not available. A formally approved leave of absence does not count toward this time.

MASTER'S PROGRAMS

The Department of Environmental Health and Engineering offers three master's degree programs: Master of Science in Engineering (MSE) in geography and environmental engineering, Master of Science (MS) in geography and environmental engineering, and the Master of Art in geography and environmental engineering (MA). These programs are designed to address the educational and training needs of students within the broad range of disciplines in the field of environmental engineering, as described below. The Department of Environmental Health and Engineering has partnered with the Center for Leadership Education (CLE) to sponsor the Environmental Systems Analysis, Economics and Public Policy technical concentration within the Master of Science in Engineering Management degree (MSEM).

The **MSE in Geography and Environmental Engineering** comprises coursework which is normally completed in two semesters. MSE students have the option to complete an independent research project, submitted as a formal essay or a group project report. An MSE degree with significant research components will usually require three to four semesters for completion and is generally intended for those students planning to work in engineering practice. The MSE degree is open to students with an ABET-accredited undergraduate engineering degree or demonstrated equivalent. Students within this degree program can choose between four tracks: Contaminant Fate and Transport, Environmental Process Engineering, Water Resources Engineering, or Environmental Management and Economics. Each individual's program of study is planned by the student in consultation with department faculty and must be approved by the faculty adviser.

The **MS in Geography and Environmental Engineering** requires a minimum of two semesters of coursework. MS students have the option to complete an independent research project, submitted as a formal essay. An additional one to two semesters are typically required to complete the degree with a research project. The MS degree is open to students with undergraduate degrees in engineering, mathematics, biology, chemistry, physics, geology and other scientific disciplines. MS students can choose from two tracks within the program: Environmental Science, or Environmental Science and Policy. MS students may also follow the tracks within the MSE degree program. Each individual's program of study is planned by the student in consultation with department faculty and must be approved by the faculty adviser.

The **MA in Geography and Environmental Engineering** is a degree program open to students with undergraduate degrees in social sciences or the humanities. Three semesters of coursework are typically required to complete the degree and MA students have the option to complete an independent research project, submitted as a formal essay. Students can focus on one of the Department's areas of interest or construct their own program that complements and expands their undergraduate experience. Each individual's program of study is planned by the student in consultation with department faculty and must be approved by the faculty adviser.

The **MS in Engineering Management** is a degree program combining advanced course work in highly-specialized technical fields with a professional education in contemporary business, entrepreneurship, and management practices. The Environmental Systems MSEM is one of 15 possible choices of technical concentrations in the MSEM program. To check out all the possible technical concentrations and to read more about their sponsoring departments within WSE, visit the [MSEM website](#).

Advisers

All new master's students will be assigned an adviser before their arrival. The adviser serves as the primary

contact for the Department and will assist the student with course selection each term as well as interpretation of Departmental and School policies. Master's students who choose to complete a research project as a part of their degree may choose a research adviser separate from their adviser.

Assessment of Progress

Each semester the student and their adviser will review grades from the previous term. Specific goals will be determined following this review. Students must meet minimum academic standards to remain in the master's program. A student who is experiencing academic difficulty will be notified in writing if they are expected to achieve a specific GPA during the upcoming term. Failure to meet any of the following criteria is grounds for dismissal from the program.

CUMULATIVE GPA

The Department requires master's students to maintain a minimum of 2.75 cumulative grade point average. Students with a GPA falling below 2.75 will be placed on academic warning and will have one term of registration in which to raise their GPA above the threshold for their degree. The academic program administrator will notify students placed on academic warning and their performance will be reviewed by the Educational Programs Committee (EPC). All recommendations about academic standing will be then presented to the Department's Executive Committee for final disposition. Students not meeting the minimum GPA after one term may be granted additional term(s) on academic warning if academic progress has been shown in the cumulative GPA. Students on academic warning must meet with their academic adviser and program director (or academic program administrator) each term to review their academic plan and receive approval for their course schedule prior to registering for courses.

GRADES IN CORE COURSES

Students must earn a minimum grade on a set of required program-specific core courses: "Pass" for courses offered only on a pass/fail basis; "C" or higher for master's students for courses offered for letter grading. Students are permitted to apply up to two classes with a grade of "C" toward their degree. A student who earns a grade below that threshold in a course that meets a core requirement must, at the next opportunity, make a second attempt to complete the core course by repeating the same course or by completing another course that has been approved by the program director. A grade below the threshold on the second attempt may be grounds for dismissal and must be reported to the School's Committee on Academic Standards.

MSE in Geography and Environmental Engineering

Track in Contaminant Fate and Transport

The Master of Science in Engineering track in Contaminant Fate and Transport emphasizes the student's understanding on physical, chemical and biological phenomena that affect the movement and transformation of pollutants in the environment.

Degree Program Requirements

- A minimum of 30 credits including no more than 1 credit of seminar, 1 credit of intercession course work, 1.5 credits from the Center for Leadership Education (with adviser approval) and 6 credits of independent research counting toward the 30 credits
- At least 50 percent of the 30 credits must come from courses within the department
- Students are permitted to apply up to two classes with a grade of "C" toward their degree. No classes with "D" or "F" can be applied
- Five to six required courses and four to five recommended elective courses depending on track (note: in order to substitute an alternate course for a recommended elective, students must receive written approval from their adviser)
- Prerequisites (required) for the MSE program includes mathematics through differential equations and computing skills.
- Up to two AAP ([Advanced Academic Programs](#)) or EP ([Engineering for Professionals](#)) courses can be taken and counted to receive a master's degree as long as there is sufficient rigor as deemed by the adviser. Students must have written consent from their adviser (an email will suffice) prior to signing up for the course.
- The Whiting School of Engineering strongly discourages Master's students from using 300-level courses to count towards the required number of Master's graduation credits. Exceptions to this rule should be reviewed on a case-by-case basis by the department. No more than two 300-level courses can be used to count towards the 30 Master's-level credits required for graduation. Advisers must provide an email to the academic program administrator to be kept in the student's file. The email must indicate:
 - The 300-level course has been reviewed and deemed to have acceptable rigor, and
 - Where applicable, identifying the name and course number of the class that the 300-level course will replace

Program Track Course Requirements

Core Courses:

- EN.570.610 Engineering Microbiology
- EN.570.641 Environmental Inorganic Chemistry
- EN.570.642 Environmental Organic Chemistry
- EN.570.643 Aquatic and Biofluid Chemistry
- EN.570.652 Experimental Methods in Environmental Engineering Chemistry

Plus one course in applied mathematics, numerical analysis, or engineering mathematics, such as:

- EN.570.695 Optimization Foundations for Environmental Engineering and Policy Design
- EN.570.697 Risk and Decision Analysis

- EN.530.661 Applied Mathematics for Engineering
- EN.570.693 Economic Foundations for Environmental Engineering and Policy Design

Students should select elective courses from the list of recommended electives appropriate for each track. Students may substitute an alternate course for a recommended elective and should seek approval from their faculty adviser before registering for the substituted course.

Recommended electives include:

- EN.570.446 Biological Process of Wastewater Treatment
- EN.570.657 Air Pollution
- EN.570.619 Methods in Microbial Community Analysis
- EN.570.647 Hydrologic Transport in the Environment
- AS.270.641 Present and Future Climate

Note that EN.570.676 Stochastic Programming will not be offered in the Fall 2018 semester. Approved replacements for this course for the Fall 2018-Spring 2019 academic year include:

- EN.560.348 Probability & Statistics for Engineers
- EN.560.442 Equilibrium Models in Systems Engineering
- EN.550.439 Time Series Analysis
- EN.550.453 Mathematical Game Theory
- EN.520.601 Introduction to Linear Systems Theory

MSE in Geography and Environmental Engineering

Track in Environmental Process Engineering

The Master of Science in Engineering track in Environmental Process Engineering involves the analysis and design of processes of water treatment, waste treatment and environmental remediation, and includes a solid grounding in the chemical, biological and physical principles underlying treatment and remediation technologies.

Degree Program Requirements

- A minimum of 30 credits including no more than 1 credit of seminar, 1 credit of intersession course work, 1.5 credits from the Center for Leadership Education (with adviser approval) and 6 credits of independent research counting toward the 30 credits
- At least 50 percent of the 30 credits must come from courses within the department
- Students are permitted to apply up to two classes with a grade of “C” toward their degree. No classes with “D” or “F” can be applied
- Five to six required courses and four to five recommended elective courses depending on track (note: in order to substitute an alternate course for a recommended elective, students must receive written approval from their adviser)
- Prerequisites (required) for the MSE program includes mathematics through differential equations and computing skills.
- Up to two AAP ([Advanced Academic Programs](#)) or EP ([Engineering for Professionals](#)) courses can be taken and counted to receive a master’s degree as long as there is sufficient rigor as deemed by the adviser. Students must have written consent from their adviser (an email will suffice) prior to signing up for the course.
- The Whiting School of Engineering strongly discourages Master’s students from using 300-level courses to count towards the required number of Master’s graduation credits. Exceptions to this rule should be reviewed on a case-by-case basis by the department. No more than two 300-level courses can be used to count towards the 30 Master’s-level credits required for graduation. Advisers must provide an email to the academic program administrator to be kept in the student’s file. The email must indicate:
 - The 300-level course has been reviewed and deemed to have acceptable rigor, and
 - Where applicable, identifying the name and course number of the class that the 300-level course will replace

Program Track Course Requirements

Core Courses:

- EN.570.610 Engineering Microbiology
- EN.570.643 Aquatic and Biofluid Chemistry
- EN.570.644 Physical and Chemical Processes
- EN.570.446 Biological Process of Wastewater Treatment
- EN.570.648 Physical and Chemical Processes II
- EN.570.652 Experimental Methods in Environmental Engineering Chemistry

Plus one course in applied mathematics, numerical analysis, or engineering mathematics, such as:

- EN.570.695 Optimization Foundations for Environmental Engineering and Policy Design
- EN.570.697 Risk and Decision Analysis
- EN.570.693 Economic Foundations for Environmental Engineering and Policy Design

Additional Requirements: an introductory fluid mechanics course. If this prerequisite is lacking, it can be taken as part of the course of study, but the credits will not be counted toward the 30-credit requirement.

Students should select elective courses from the list of recommended electives appropriate for each track. Students may substitute an alternate course for a recommended elective and should seek approval from their faculty adviser before registering for the substituted course.

Recommended electives include:

- At least one course in Geomorphology, Hydrology or Ecology
- At least one course in Systems Analysis and Economics
- EN.570.642 Environmental Organic Chemistry
- EN.570.691 Hazardous Waste Engineering and Management

Note that EN.570.676 Stochastic Programming will not be offered in the Spring 2018 semester. Approved replacements for this course for the Fall 2017-Spring 2018 academic year include:

- EN.570.616 Data Analytics in Environmental Health and Engineering
- EN.560.348 Probability & Statistics for Engineers
- EN.560.442 Equilibrium Models in Systems Engineering
- EN.550.439 Time Series Analysis
- EN.550.453 Mathematical Game Theory
- EN.520.601 Introduction to Linear Systems Theory

MSE in Geography and Environmental Engineering

Track in Environmental Management and Economics

The Master of Science in Engineering track in Environmental Management and Economics, commonly referred to as “Systems” within the Department, focuses on using models of physical and economic systems to analyze and improve the design of public policies and environmental control systems.

Degree Program Requirements

- A minimum of 30 credits including no more than 1 credit of seminar, 1 credit of intersession course work, 1.5 credits from the Center for Leadership Education (with adviser approval) and 6 credits of independent research counting toward the 30 credits
- At least 50 percent of the 30 credits must come from courses within the department
- Students are permitted to apply up to two classes with a grade of “C” toward their degree. No classes with “D” or “F” can be applied
- Five to six required courses and four to five recommended elective courses depending on track (note: in order to substitute an alternate course for a recommended elective, students must receive written approval from their adviser)
- Prerequisites (required) for the MSE program includes mathematics through differential equations and computing skills.
- Up to two AAP ([Advanced Academic Programs](#)) or EP ([Engineering for Professionals](#)) courses can be taken and counted to receive a master’s degree as long as there is sufficient rigor as deemed by the adviser. Students must have written consent from their adviser (an email will suffice) prior to signing up for the course.
- The Whiting School of Engineering strongly discourages Master’s students from using 300-level courses to count towards the required number of Master’s graduation credits. Exceptions to this rule should be reviewed on a case-by-case basis by the department. No more than two 300-level courses can be used to count towards the 30 Master’s-level credits required for graduation. Advisers must provide an email to the academic program administrator to be kept in the student’s file. The email must indicate:
 - The 300-level course has been reviewed and deemed to have acceptable rigor, and
 - Where applicable, identifying the name and course number of the class that the 300-level course will replace

Program Track Course Requirements

Core Courses:

- EN.570.693 Economic Foundations for Environmental Engineering and Policy Design
- EN.570.695 Optimization Foundations for Environmental Engineering and Policy Design
- EN.570.697 Risk and Decision Analysis

Students should select elective courses from the list of recommended electives appropriate for each track. Students may substitute an alternate course for a recommended elective and should seek approval from their faculty adviser before registering for the substituted course.

Recommended electives include:

- At least one course in physical, chemical, or biological processes

- EN.570.618 Multiobjective Programming and Planning
- EN.570.631 Collaborative Modeling for Resolving Water Resources Disputes
- EN.570.676 Stochastic Programming (**Not offered in the Fall 2018 semester)

Note that EN.570.676 Stochastic Programming will not be offered in the Fall 2018 semester. Approved replacements for this course for the Fall 2018-Spring 2019 academic year include:

- EN.570.616 Data Analytics in Environmental Health and Engineering
- EN.560.348 Probability & Statistics for Engineers
- EN.560.442 Equilibrium Models in Systems Engineering
- EN.550.439 Time Series Analysis
- EN.550.453 Mathematical Game Theory
- EN.520.601 Introduction to Linear Systems Theory

MSE in Geography and Environmental Engineering

Track in Water Resources Engineering

The Master of Science in Engineering track in Water Resources Engineering combines a solid grounding in environmental fluid mechanics and hydrology with electives in modeling, water development planning, policy and contaminant fate and transport.

Degree Program Requirements

- A minimum of 30 credits including no more than 1 credit of seminar, 1 credit of intercession course work, 1.5 credits from the Center for Leadership Education (with adviser approval) and 6 credits of independent research counting toward the 30 credits
- At least 50 percent of the 30 credits must come from courses within the department
- Students are permitted to apply up to two classes with a grade of “C” toward their degree. No classes with “D” or “F” can be applied
- Five to six required courses and four to five recommended elective courses depending on track (note: in order to substitute an alternate course for a recommended elective, students must receive written approval from their adviser)
- Prerequisites (required) for the MSE program includes mathematics through differential equations and computing skills.
- Up to two AAP ([Advanced Academic Programs](#)) or EP ([Engineering for Professionals](#)) courses can be taken and counted to receive a master’s degree as long as there is sufficient rigor as deemed by the adviser. Students must have written consent from their adviser (an email will suffice) prior to signing up for the course.
- The Whiting School of Engineering strongly discourages Master’s students from using 300-level courses to count towards the required number of Master’s graduation credits. Exceptions to this rule should be reviewed on a case-by-case basis by the department. No more than two 300-level courses can be used to count towards the 30 Master’s-level credits required for graduation. Advisers must provide an email to the academic program administrator to be kept in the student’s file. The email must indicate:
 - The 300-level course has been reviewed and deemed to have acceptable rigor, and
 - Where applicable, identifying the name and course number of the class that the 300-level course will replace

Program Track Course Requirements

Core Courses:

- EN.570.653 Hydrology
- EN.570.395 Principles of Estuarine Environment: Chesapeake Bay
- AS.270.405 Modeling the Hydrological Cycle

**Note: the approved replacement for AS.270.405 Modeling the Hydrological Cycle is EN.570.412 Landscape Hydrology and Watershed Analysis.

Plus one course in applied mathematics, numerical analysis, or engineering mathematics, such as:

- EN.570.695 Optimization Foundations for Environmental Engineering and Policy Design
- EN.570.697 Risk and Decision Analysis

Additional Requirements: an introductory fluid mechanics course. If this prerequisite is lacking, it can be taken as part of the course of study, but the credits will not be counted toward the 30-credit requirement.

Students should select elective courses from the list of recommended electives appropriate for each track. Students may substitute an alternate course for a recommended elective and should seek approval from their faculty adviser before registering for the substituted course.

Recommended electives include:

- At least one course in Systems Analysis or Economics
- EN.570.631 Collaborative Modeling for Resolving Water Resources Disputes
- EN.570.643 Aquatic and Biofluid Chemistry
- EN.570.644 Physical and Chemical Processes
- EN.570.693 Economic Foundations for Environmental Engineering and Policy Design

Note that EN.570.676 Stochastic Programming will not be offered in the Fall 2018 semester. Approved replacements for this course for the Fall 2018-Spring 2019 academic year include:

- EN.560.348 Probability & Statistics for Engineers
- EN.560.442 Equilibrium Models in Systems Engineering
- EN.550.439 Time Series Analysis
- EN.550.453 Mathematical Game Theory
- EN.520.601 Introduction to Linear Systems Theory

The Master of Science track in Environmental Science provides a broad yet rigorous background for environmental professionals.

Degree Program Requirements

- A minimum of 30 credits including no more than 1 credit of seminar, 1 credit of intercession course work, 1.5 credits from the Center for Leadership Education (with adviser approval) and 6 credits of independent research counting toward the 30 credits
- At least 50 percent of the 30 credits must come from courses within the department
- Students are permitted to apply up to two classes with a grade of “C” toward their degree. No classes with “D” or “F” can be applied
- Up to two AAP ([Advanced Academic Programs](#)) or EP ([Engineering for Professionals](#)) courses can be taken and counted to receive a master’s degree as long as there is sufficient rigor as deemed by the adviser. Students must have written consent from their adviser (an email will suffice) prior to signing up for the course.
- The Whiting School of Engineering strongly discourages Master’s students from using 300-level courses to count towards the required number of Master’s graduation credits. Exceptions to this rule should be reviewed on a case-by-case basis by the department. No more than two 300-level courses can be used to count towards the 30 Master’s-level credits required for graduation. Advisers must provide an email to the academic program administrator to be kept in the student’s file. The email must indicate:
 - The 300-level course has been reviewed and deemed to have acceptable rigor, and
 - Where applicable, identifying the name and course number of the class that the 300-level course will replace

Program Track Course Requirements

Four courses are recommended in environmental science, including the following:

- EN.570.644 Physical and Chemical Processes I
- EN.570.646 Biological Process of Wastewater Treatment
- EN.570.648 Physical and Chemical Processes II

The other environmental science courses should be chosen from the following:

- EN.570.610 Engineering Microbiology
- EN.570.642 Environmental Organic Chemistry
- EN.570.643 Aquatic and Biofluid Chemistry
- EN.570.691 Hazardous Waste Engineering and Management

The Master of Science track in Environmental Science provides a broad yet rigorous background for environmental professionals.

Degree Program Requirements

- A minimum of 30 credits including no more than 1 credit of seminar, 1 credit of intersession course work, 1.5 credits from the Center for Leadership Education (with adviser approval) and 6 credits of independent research counting toward the 30 credits
- At least 50 percent of the 30 credits must come from courses within the department
- Students are permitted to apply up to two classes with a grade of “C” toward their degree. No classes with “D” or “F” can be applied
- Up to two AAP ([Advanced Academic Programs](#)) or EP ([Engineering for Professionals](#)) courses can be taken and counted to receive a master’s degree as long as there is sufficient rigor as deemed by the adviser. Students must have written consent from their adviser (an email will suffice) prior to signing up for the course.
- The Whiting School of Engineering strongly discourages Master’s students from using 300-level courses to count towards the required number of Master’s graduation credits. Exceptions to this rule should be reviewed on a case-by-case basis by the department. No more than two 300-level courses can be used to count towards the 30 Master’s-level credits required for graduation. Advisers must provide an email to the academic program administrator to be kept in the student’s file. The email must indicate:
 - The 300-level course has been reviewed and deemed to have acceptable rigor, and
 - Where applicable, identifying the name and course number of the class that the 300-level course will replace

Program Track Course Requirements

Core courses in environmental policy include:

- EN.570.695 Optimization Foundations for Environmental Engineering and Policy Design
- EN.570.693 Economic Foundations for Environmental Engineering and Policy Design

Choose one of the following:

- EN.570.697 Risk and Decision Analysis
- EN.570.607 Energy Policy and Planning Models
- EN.570.657 Air Pollution
- EN.570.676 Stochastic Programming (**Not offered in the Fall 2018 semester)

The final two courses will be a project or electives in environmental science, engineering, policy, statistics or systems that are appropriate to the student’s goals and approved by a faculty adviser.