Applied Mathematics
PhD Student Guide

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Introduction and Purpose

Welcome to the PhD Program in Applied Mathematics, your home for the next five years or so. We hope it will be a successful, intellectually engaging, and fulfilling experience.

The policies described in this guide, in addition to those set by both The Graduate School and McCormick, are the official requirements for completion of your doctoral degree. In addition to reading and understanding this document, it is your responsibility to familiarize yourself with the McCormick policies, as laid out in the McCormick Engineering PhD Handbook, and policies of TGS and Northwestern University policies, which also apply.. TGS maintains useful information for new students on its New Student Orientation website.

For any questions about the Program or TGS policies, never hesitate to ask your research advisor, the Department Chair, the Program Assistant, or the Director of Graduate Studies (DGS). Please familiarize yourself with the Department homepage, particularly to learn about the duties of the Department staff and how they can assist you.

We look forward to getting to know you and helping you achieve your goals!

Program Contacts

This section provides a general description of who has responsibility for curricular, admission, financial, and other matters in the program. The most up-to-date list of personnel can be found on the ESAM website.

Director of Graduate Studies (DGS): Alvin Bayliss (a-bayliss@northwestern.edu). The DGS oversees the graduate program, advising students on academic matters and assisting with advisor selection and changes. The DGS also monitors academic progress and participates in decisions concerning academic probation and exclusion.

Department Chair: Hermann Riecke (h-riecke@northwestern.edu). The Department Chair is responsible for providing academic leadership, managing faculty affairs, overseeing curriculum and instruction, supporting student success along with the DGS, handling budgeting and resource allocation, coordinating departmental operations, and representing the department externally.

Graduate Program Assistant / Coordinator: Natalie Masini, Program Assistant (natalie.masini@northwestern.edu). This staff member aids with administrative aspects of the program, including procedures, paperwork for milestones, registration issues, and other day-to-day operations.

Financial Assistant: Elisa Lindstrom, Senior Accounting Specialist (elisa.lindstrom@northwestern.edu). This staff member handles financial aspects such as stipends and tuition payments.

Business Administrator: Noor Kaur (noor.kaur@northwestern.edu). She oversees the overall departmental administration and finances.

Learning Outcomes

The PhD program is designed to provide graduate students with a broad skill set in mathematical modeling and analytical and computational solution methods that will enable them to do original research culminating in a thesis that contributes novel mathematical techniques and/or novel applications of mathematics to current problems of interest to the research community.

Program-Specific Academic Requirements & Policies

Coursework Requirements

The Graduate School requires PhD students to successfully complete at least nine quality letter-graded course units (ABC, not P/NP or S/U) authorized for graduate credit. You can view the full policy here: https://www.tgs.northwestern.edu/academic-policies-procedures/policies/phd-degree-requirements.html

Important: In contrast to the requirement specified by the Graduate School, PhD students in the Applied Mathematics program must maintain at least a 3.5 cumulative GPA.

The PhD program in Applied Mathematics requires successful completion of the following coursework:

Four core ESAM courses
- ES_APPM 405-1 Data Science and Statistics
- ES_APPM 414 Differential Equations of Mathematical Physics[1]
- ES_APPM 420-1 Asymptotic and Perturbation Methods in Applied Mathematics
- ES_APPM 446-1 Numerical Solutions of Partial Differential Equation

Two Research Rotation courses
- ES_APPM 499

Seven approved elective 3XX or 4XX courses
- At least four (4) ESAM courses
- At most three (3) of the 7 (seven) electives can be taken outside ESAM.

[1] During New Student Orientation week, students must meet with the DGS to determine whether they have a sufficiently strong background to enroll in ES_APPM 414 or whether they are required to enroll in ES_APPM 314 in the Fall.

These course requirements have to be satisfied before the qualifying exam.

Minimum Grade & GPA Requirements

For all graded courses, students must obtain at least a C for the course to count towards the curriculum requirements.

To remain in satisfactory academic standing, students have to maintain a GPA of 3.5 across all courses presented for the degree, including the Research Rotations.

STUDENTS WITH GRADUATE CREDITS & WAIVING COURSE REQUIREMENTS

Students entering with an MS degree in Applied Mathematics must complete at least eleven (11) graded academic courses at Northwestern. They can petition to have the courses they have taken during their MS study counted against the core courses or other subjects. These petitions are to be directed to the DGS and the Department Chair; their approval will be based on the presented supporting documentation, e.g., text books used, course outlines, lecture notes, exams, etc. In some cases, students may be asked to take an exam to demonstrate they have mastered the course material.

If an exemption is granted, a signed waiver form should be returned to the program assistant to be placed in the student's file. Should a waiver be granted, the student must choose an approved replacement course.

Students entering with an MS degree from ESAM must take any core courses that were not taken when earning the MS degree. **Notice that all other requirements must be satisfied** (in particular, the completion of 11 full-credit courses and two research rotations)**.**

Teaching Requirement

All PhD students in ESAM are required to complete 1 quarter of duties as a full-time teaching assistant (TA). Full-time teaching assistants are expected to work 20 hours per week.

Other Coursework and Activities

Students are required to attend the following events or participate in these activities:

- During their first year, PhD students are required to register for ES_APPM 498 and attend the weekly colloquium.
- After their first year, PhD students are strongly urged to attend the weekly colloquium to acquire the broad perspective of mathematical methods and areas of application that is expected of a professional applied mathematician.

Milestones towards Applied Mathematics PhD

Quarter	Milestone	Objective	Assessment
End of 2nd quarter	Preliminary Exam	Demonstrate mastery of core mathematical concepts	**Strategy:** Faculty design written exams to evaluate skills in advanced calculus, linear algebra, differential equations, and complex variables. **Criteria:** Receives a passing score on each exam topic.
By the end of the 3rd quarter	For many international students: Versant or SPEAK test	Demonstrate English proficiency (international students only)	**Strategy:** Administration of Versant and/or SPEAK test. **Criteria:** Receives a passing score sufficient to TA for an undergraduate discussion section.
By the end of the 8th quarter	Qualifying Exam	Demonstrate readiness to pursue thesis research and design original research project	**Strategy:** Oral presentation of a proposed thesis research topic to the student's thesis committee. **Criteria:** Research topic is consistent with the Program's mission. Demonstrates mastery of the scientific background of the chosen research topic as well as the mathematical approaches required to complete the proposed research.
11-12 15-16	Annual Review	Demonstrate progress in the research project and the ability to communicate it	**Strategy:** Oral reporting on progress on thesis work. **Criteria:** Demonstrate adequate research progress.

Typical Applied Mathematics PhD Timeline

Year 1	Fall	Winter	Spring	Summer
	Statistics and Data Science	Differential Equations of Mathematical Physics	High-Performance Scientific Computing	
	Asymptotics and Perturbation Methods in Applied Mathematics	Numerical Methods for Stochastic Processes	Elective Course	
	Numerical Solution of Partial Differential Equations	Elective Course	Elective Course	
	Research Rotation	Research Rotation	Elective Course	Research
	Applied Mathematics Colloquium	Applied Mathematics Colloquium	Applied Mathematics Colloquium	
	Apply for Fellowships (NSF, DOE,...)	Preliminary Exam: Demonstrate mastery of core mathematical concepts:	Select Thesis Advisor	

Year 2	Fall	Winter	Spring	Summer
	Elective Course	Optional Courses (if desired)	Optional Courses (if desired)	
	Research	Research	Research	Research
	Applied Mathematics Colloquium	Applied Mathematics Colloquium	Applied Mathematics Colloquium	Qualifying Exam: Demonstrate readiness to pursue thesis research and design original research project

Year 3	Fall	Winter	Spring	Summer
	Research	Research	Research	Research
	Applied Mathematics Colloquium	Applied Mathematics Colloquium	Applied Mathematics Colloquium	Annual Review

Year 4	Fall	Winter	Spring	Summer
	Research	Research	Research	Research
	Applied Mathematics Colloquium	Applied Mathematics Colloquium	Applied Mathematics Colloquium	Annual Review
	Present Results at Conferences			

Year 5	Fall	Winter	Spring	Summer
	Research	Research	Research	
	Applied Mathematics Colloquium	Applied Mathematics Colloquium	Applied Mathematics Colloquium	
	Present Results at Conferences			
	Apply for jobs	Write Thesis	Write Thesis	Write Thesis
				Defend Thesis

Legend:	Required Courses	Elective Courses (highly recommended)	Elective Courses

Students achieve PhD candidacy by passing the qualifying exam.

Conferral of MS Degree

Once a PhD student satisfies all requirements for the MS degree they can apply to be awarded that degree. Typically, this would be after finishing their first year or shortly thereafter. In GSP, the form for this request can be found under the TGS Forms tab. This form is specifically used to request a master's degree along the way to the PhD in the same program. Completing this form is a necessary step before submitting other required forms for degree conferral, such as the Application for Degree and Master's Degree Completion forms, also submitted via GSP.

Program-Specific Milestone Policies

Preliminary Examination

Student preparation for the PhD Program in Applied Mathematics is likely to vary across undergraduate institutions and program focus. Thus, students may differ in their preparedness in the core mathematical fields necessary for the PhD program. To demonstrate sufficient mastery in these areas, students need to pass four Preliminary Examinations on advanced undergraduate material successfully.

To give students time to fill in possible gaps in their background, these examinations are offered at the beginning of Winter quarter. Thus, to remain in good academic standing in the PhD program and to continue into their second year of study, a student must demonstrate mastery in

- advanced calculus
- linear algebra
- ordinary differential equations
- complex variables.

As an alternative to taking the exam on complex variables, students can also opt for taking an approved course in complex variables (either ES_APPM 312 or Math 325), in which they must earn a grade of B or better.

Students who do not pass the exams in calculus, linear algebra, or ordinary differential equations in the first round can retake the exam at the beginning of Spring quarter. No retake of the complex variable exam is offered.

Students who are unable to complete all four examinations successfully but otherwise satisfy all the requirements for an MS degree, can be awarded an MS degree at the end of Spring quarter, but are not permitted to continue in the PhD program beyond the Spring quarter.

The exams will be given as four separate 2-hour closed-book exams, scheduled so that they do not conflict with first-year courses offered by the Department. Sample exams from previous years as well as a list of textbooks that cover the topics will be emailed to each entering PhD student before the start of the Fall quarter. Sample exams are also kept in the department office.

Students who require additional time should contact the AccessibleNU office as early as possible, preferably before the start of the Fall quarter.

Advisor

One of the most important milestones of a student's first year is the selection of a thesis advisor. The advisor is responsible for helping a student develop an academic plan, identify a research project, and create a research plan. The advisor is also primarily responsible for funding a student's studies. The advisor will also play a significant role in helping a student find the best possible career options following completion of the degree.

The Research Rotations (see below) are a key component of the advisor selection process. In addition, to help students choose advisors wisely, the Program organizes a series of presentations by core and courtesy faculty who have projects to offer that year. In some years, members of other programs may be invited to give presentations as well. All students are required to attend the presentations. Core and courtesy faculty members are listed on the Department website. Some projects may be part of a larger center or structured as a co-advising relationship.

As students identify interesting research projects, **it is their responsibility to meet with the professor** (or professors), attend group meetings, and otherwise get to know the professor's research group, and to discuss advisor selection with their peers. Students are encouraged to look broadly at all projects on offer. Being actively engaged in the process will help them find a "good home" for the next five or so years and ensure that students are well-known to the professors when it comes time for advisor matching.

To maintain satisfactory academic standing within the ESAM department, students must be matched with an advisor by the end of the Spring quarter of their first year.

Qualifying Exam / Candidacy

Students entering the Program with a BS degree or an MS degree from outside ESAM must pass the Qualifying Examination by the end of their 8th quarter in the Program. Students entering with an MS degree from ESAM must take the exam by the end of their 4th quarter in the Program. Students are encouraged to take the examination earlier, if possible. Exceptions for extenuating circumstances must be made by petition to the Chair and signed by the student's advisor.

THESIS COMMITTEE SELECTION

The Qualifying Examination and the Doctoral Thesis are evaluated by a group of faculty members known as the thesis committee. The thesis committee is made up of the Chair, who is the thesis advisor or one of the co-advisors, and at least two additional members. At least one member must have a core appointment in the Department. Note that it is possible to have committee members who are not part of the Northwestern University community, such as collaborators at other universities, national laboratories, or in industry.

Students should consult with their advisor(s) about who should serve on the committee. Committee members become more familiar with the student and the research than other faculty in the Department, and they may be able to provide scientific and career advice as well as letters of recommendation. Once the student develops a list of potential committee members, the student should secure their participation by email or in person, then fill out the relevant Section in GSTS and the corresponding form in the Student Enterprise System (CAESAR).

EXAMINATION PROCEDURE

The precise nature of the examination is decided by the research advisor in consultation with the other members of the committee. The examination will be oral and will be conducted by the student's approved thesis committee. It can include a brief presentation of the proposed thesis research project, along with questions drawn from course material relevant to the project. The student must identify, in consultation with the research advisor(s), at least three graduate-level ESAM courses that are most relevant to the proposed project. The list of courses must be approved by the committee prior to the examination, and the student is expected to be able to answer questions based on those courses.

Students are responsible for:

- Personally contact each member of the committee to find a date and time satisfactory to each one. Reserve a conference room for at least 3 hours.
- Complete and submit both the PhD Prospectus form and the PhD Qualifying Exam form on GSTS.

- Enter the names of the committee members in GSTS under the Committee tab and identify their role as Qualifying Exam Members.

The possible outcomes for the qualifying examination are:

- **PASS:** The student is now recognized by the Graduate School as a candidate for the Ph.D. degree.
- **FAIL with the option to retake**: The Qualifying Examination Committee determines the student has not performed satisfactorily on the exam, but well enough to have an opportunity to retake the Qualifying Examination later. The retaken Qualifying Examination must still be successfully completed by the end of the twelfth quarter for the student to continue in the PhD program.
- **FAIL:** The student cannot continue in the Ph.D. program and will be excluded. A student who fails the Qualifying Exam may consult with their advisor and the Department Chair to determine the best course of action following this result.

A PhD student who fails the qualifying exam but satisfies all requirements for the MS degree can apply and receive an MS degree.

Annual Review

The Graduate School requires doctoral programs to conduct annual academic reviews of all students enrolled in their Program. As part of this review, PhD candidates must schedule an annual meeting, during the Spring or Summer quarter, with their thesis committee to discuss and receive feedback about their research progress. The annual review after the second year is replaced by the qualifying exam.

In preparation for this review, the student must provide all the information requested under the **Academic Progress** tab in GSTS, which constitutes their progress report. During the review meeting, the student presents to the thesis committee:

- a narrative description of their progress over the year and of their project as a whole,
- an update of awards, presentations, publications, and other work products,
- a plan for the following year.

As a guide, the presentation should last approximately 20 minutes, followed by questions and discussion.

The progress report and plan must be approved by the research advisor prior to the annual review. This progress report is required for all TGS programs and is akin to an ‘individual development plan’, as required by many NIH programs. Advisors may use additional methods of progress review at their discretion, and students are encouraged to discuss progress with their advisors frequently.

After the meeting, in the box labeled Annual Meeting, students must state the date of the meeting and give a summary of the feedback received from the committee. Once the summary is reviewed by the advisor(s) and given their approval in GSTS, the Director of Graduate Studies will do a final review and submit your report to the Graduate School. Annual reports must be completed by the beginning of Fall quarter.

If a student is expected to graduate by the end of December in a given year, the annual report for that year must still be completed by the end of August. In that case, it may consist of a simple acknowledgement by the student and advisor that the thesis will be completed within the next quarter. However, should the thesis not be completed in time for December graduation, then a full annual report must be completed by

the end of January. **Failure to complete an annual report will result in the student being considered not in good standing and can result in loss of funding and/or dismissal from the Program.**

In addition to the annual review, there are two additional tasks to be completed in GSTS. First, students must also complete/update the information in the Research Project tab in GSTS, ensuring it is current and reflects any changes from the previous year. Second, students must sort the courses listed in the Unassigned list into the correct categories under the Plan of Study Tab.

INSUFFICIENT PROGRESS
An annual report showing insufficient progress is grounds for a student being placed on Probation. The student has then two quarters to show 'satisfactory academic progress,' and if adequate progress is not made, the student may be Excluded. In rare instances, the Department will reserve the right to Exclude a student immediately following an annual report that demonstrates completely inadequate progress. Note, a student ceases to be in good standing if they fail to schedule their annual meeting before Fall quarter.

Dissertation & Thesis Defense

Peer review is one of the essential mechanisms by which relevance to the research field is determined. Thus, as part of demonstrating a student's independent contribution to the field, it is expected that the students will have published one or more items in the peer-reviewed literature before the date of the thesis defense. The committee may have additional expectations.

A student's dissertation is the document detailing the work they have completed for their thesis. In their dissertation, a student must demonstrate the relevance of their work to the greater scientific enterprise, place their work in the context of both its narrow and broader fields, and describe their results and demonstrate their technical validity. Finally, a student must detail the conclusions they draw from their results, and how those conclusions advance the field.

The exact structure of the dissertation, including length, citation format, use of figures, etc., is field-dependent. The student must find out what is accepted practice from their advisor and from prior students in their research group and in related groups. Some specific formatting guidelines are given by TGS and must be followed (title page, margins, pagination, etc.).

The defense is the final presentation given to the thesis committee. Students should prepare a presentation that would last about 45 minutes if no questions were asked. Depending on the committee's preferences, they may either interrupt the student during the presentation or reserve all questions for the end. The faculty will ask broad and specific questions related to the student's research, and the student should typically schedule a two-hour block with the committee for the defense, unless otherwise directed by the Chair. During the dissertation defense, questions may be asked about anything in the presentation, thesis, or entire body of work. The committee seeks to understand each student's unique, substantive contribution to new scientific understanding, which is the purpose of the PhD. The typical defense will include both a public and a closed period.

After the defense, the committee will meet privately to evaluate and collectively decide whether to award the PhD. It is important to remember that the decision is made collectively by the committee, and not solely by the advisor(s).

Graduation Deadlines

The Graduate School offers quarterly graduation for graduate students. Students working towards an MS or PhD degree may be awarded the degree in Fall, Winter, Spring, or Summer, assuming all work is completed before the published deadlines. It is imperative that students abide by these deadlines, as they are set by TGS and cannot be moved. Deadlines for graduation and for participation in the ceremonies are posted on TGS's main calendar.

Students must be continuously enrolled until all graduation requirements are met. In some cases of off-cycle graduation or missed deadlines, a student may need to register for TGS 512 'continuous registration' at their own cost (currently ~$100), even after they have completed all degree requirements and are not drawing a stipend. Graduate program staff work with students in such a situation.

Departing students must fill out the PhD exit survey and the Survey of Earned Doctorates from the TGS website, return all keys, and, depending on circumstances, cancel Northwestern health insurance or reconcile items with payroll. **Many research groups will have specific exit protocols that must be followed, including sample archiving and data management.**

Students are directed to consult their advisor and the Program Assistant to make sure that all exit requirements have been met.

Appendix

Research Rotations

Overview: Each student conducts independent research in the form of a Research Rotation with at least two dfferent approved faculty members before the selection of a thesis advisor. This research complements the formal coursework taken during the first year and exposes students to various research areas within applied mathematics. These Rotations also provide the advisors with an opportunity to evaluate the performance and research potential of each student. These evaluations will constitute a major factor - along with the student's performance in the classes and the prelims - in the department's decision whether the student will continue in the PhD program after their first year.

TIMELINE

- August: Students are informed which faculty members are likely to take on a student.
- Students should explore faculty research and contact faculty to discuss potential rotation opportunities.
- A brief introduction to faculty research will be provided during orientation, the week before classes start.
- Students submit their preferences for Fall quarter by a specified date during the first week of classes.
- Matching of students and faculty by the end of the first week of classes

- During Fall quarter: longer faculty presentations (~30 min per faculty) to inform about Winter Rotations.
- Students should reach out to faculty to discuss potential Rotations for Winter quarter before the end of Fall quarter.
- Student reports for Fall quarter due on the Friday of finals week
- Students submit their preferences for Winter quarter by the end of finals week.
- Matching of students and faculty during the week after finals week.
- Student reports for Winter quarter due on the Friday of finals week.
- Spring quarter: advisor selection or optional third Research Rotation.

TOPIC SELECTION

The faculty member and student discuss potential research topics and decide on a short-term research project. The projects may involve any aspect of research, including literature review, development of mathematical frameworks, data analysis, method implementation, analytic investigations, and numerical development. Given the short-term nature of the project, it is not necessary or expected for the student to produce publishable results. Projects also do not need to form the basis for a thesis, but should provide a valuable research experience.

STUDENT EVALUATION

The advising faculty will ultimately determine evaluation criteria of the rotation, and students and faculty should discuss rotation expectations at the start of the rotation.

- Written report: At the end of each rotation, all students will produce a short report (1-2 pages), which will be uploaded to GSP and made available to all faculty members.
- Oral presentation: In addition, students will have the option to participate in an oral research presentation session. The presentations will be 10 minutes long and allow an additional 5 minutes for questions. The session is intended for students and interested faculty. Faculty may require the oral presentation as part of their evaluation. This session may also be useful for faculty who did not have the opportunity to work with the student to learn about their interests.
- Faculty evaluation: At the end of each Research Rotation the advising faculty will fill out a short form evaluating the student. They will rate the student in several categories, including those below, and provide a brief written evaluation (~1 paragraph).

EVALUATION OF SUITABLE MATCH

Evaluation of suitable match: A key function of the Research Rotation is to facilitate establishing successful and mutually agreeable student-thesis advisor partnerships between students and faculty. By participating in the daily work of research, students can gauge how comfortable they feel working with a potential advisor. Faculty use several criteria to assess whether a student will be a good fit for their research program. Among them are:

1. Commitment. Students should take each Research Rotation seriously and show effort and commitment to the project.
2. Progress. The activities of the students during the Research Rotation and their final report should demonstrate clear progress. The progress could be comprised of reproducing or implementing

previously published results and possibly slightly extending them, demonstrating sufficient understanding of the topic, or providing a suitable literature review.
3. Documentation of work. A research career depends on the clear communication of results such that others may reproduce them.
4. Interest. A hallmark of independent investigators is that they are motivated by curiosity, driven by the “need to know.” Students are encouraged to seek out published information relating to their projects and to think critically about how their project relates to the overall scientific enterprise.
5. Maturity. Scientific research depends on effective communication among researchers. Common sense, cooperation, and courtesy are essential qualities for a good mentor-mentee relationship.

LOGISTICS
Students receive credit and a letter grade for the Research Rotation through ESAM 499 Independent Study.

Checklist for Thesis Defense

This list aims to help students navigate their thesis defense and graduation. Notice that instructions provided by TGS supersede any conflicting information below.

1. Apply for a PhD degree in GSTS under the TGS Forms tab and create a new Application for a Degree form.
2. After finalizing your thesis committee, enter the committee on the PhD Final Exam Form in GSTS, and also enter their names under the Committee tab in GSTS and mark their role as Final-Thesis Member.
3. Contact committee members to set date and time. Once the date is set, enter the date on the PhD Final Exam Form.
4. Receive the advisor’s approval that the dissertation is in final form and ready to be presented to the committee for review. (``Final form'' means fully proofread. Faculty members should not be expected to serve as proofreaders.)
5. Reserve a conference room. Contact the Department office staff to reserve a room, so that a public notice of the presentation can be posted.
6. Note that the deadline for taking the exam and submitting the dissertation to the Graduate School varies each quarter. Consult the timetable on the Graduate School website for exact dates each year.
7. Be reminded that the format of the dissertation must conform to the standards established by The Graduate School at Dissertation Formatting Requirements.
8. At the latest, two weeks before the examination, present each examining committee member with a copy of the dissertation.
9. After the defense, complete the PhD Final Exam form under the TGS Forms tab and create a new TGS PhD Final Exam form. Each committee member must approve the form they receive via email, generated by this form.
10. After final approval, turn in the final PDF version of your dissertation to the Department office to have it bound. The Department covers the cost of one copy for the student, one for the advisor, and one for the department archives. Additional copies may be requested at the student’s expense.
11. Submit the dissertation to the ProQuest website. Once the dissertation is submitted to ProQuest, a Student Services representative will review the formatting and confirm by email that it is acceptable or notify you of any necessary changes.

12. Provide the Department with a 1-2 paragraph summary of your dissertation in a form that is written for a general audience and could be posted on the department website.
13. Check with the Program Assistant to ensure that all X, Y, K, and NR grades on your transcript have been changed and submitted to TGS.
14. Before final departure, complete the sign-out sheet provided by the front office, return borrowed items (office keys, theses, library books, etc.), and be sure to leave a forwarding address with the office of the Department of Engineering Sciences and Applied Mathematics.

Student Organizations and Activities

The **Northwestern Student chapter of SIAM** (Society for Industrial and Applied Mathematics) was established in 2011. Each year (usually at the end of the Spring Quarter), an election is held to fill the offices of President, Vice President, Secretary/Treasurer, Activities Chairman, and Faculty Representative. The Officers serve as liaisons to the Faculty and Department administration in representing the students' interests. They also organize various social and professional activities throughout the year. Students are automatically members and are encouraged to participate. For international students, the club provides valuable interaction for the development of English proficiency.

The Women of Engineering Sciences and Applied Mathematics (WESAM) Group brings together students, postdocs, and faculty to promote equal opportunity for women in the mathematical sciences. The WESAM group organizes events aimed at science outreach, professional development, and community building. It meets monthly to discuss articles, plan events, and plan fun events for the group. Contact **Prof. Mangan** for more information.

The students organize a weekly tea, where they mingle, exchange ideas, or present topics of interest to the student community.

Miscellaneous

CHANGE OF ADDRESS

The Department Office must be notified of any change of address. Students must change their home address through **both** the HR website and in Caesar. Be sure to change your address in both systems, as they are separate.

The U.S. Citizenship & Immigration Services (USCIS) requires every international student and scholar to report a change of address within 10 days of their move. It is critical for F-1 and J-1 students to update their address in CAESAR immediately upon their relocation.

J-1 and H-1 scholars will also need to inform the international office as soon as possible.

All F-1 students, J-1 students and scholars, and H-1B scholars will also need to complete a change of address form (AR-11) available here. **Failure to do so will be a violation of their F-1 or J-1 status and could result in severe consequences for them and their dependent(s)!**

CONSUMPTION OF ALCOHOLIC BEVERAGES

Consumption of alcoholic beverages in the Technological Institute, except at official departmental functions and such recognized events as post-defense celebrations, is incompatible with sound safety and work-place practices and is therefore unacceptable. **We expect our students to abide by Illinois and applicable federal laws concerning all controlled substances**.

DEPARTMENT OFFICE, STUDENT DESK & RESEARCH SPACE ASSIGNMENT

Every graduate student is assigned a desk for personal use. The assignment of both desk and research space is handled by the Department on an annual basis. Office assignments may change each year, usually over the summer. No changes should be made without authorization by the Department Chair. When not in use, please unplug any appliances (e.g., coffee makers, water heaters) to reduce the risk of fires and environmental impacts.

A black-and-white printer is provided in the Student Lounge, M443. A color printer is provided in the main office, M426. The black-and-white printer should be used, with duplexing turned on to save paper, unless color is **absolutely necessary**. Use of the printers is for academic and research purposes only, and not for personal use. Information about accessing the printers from the department-provided computers or your personal computer can be found on the Department website under student resources.

A photocopying machine for research and teaching-related copying is available in the Department Office. Copy cards for use in copying machines at the library are available through the Wildcard Office or the Main Library. Photocopying services are also located at Norris Center and 2020 Ridge for large orders. Personal copying should be kept to a minimum on the department machine.

Keys. Graduate students will receive a key for their office in the Technological Institute. To obtain your keys, you must visit the Department Office to request a key from the program assistant. Keys are not transferable. Students may not be in the Department Office outside regular working hours, generally 8:30 AM to 5:00 PM.

Postal Service. Mail is delivered once a day to the Department Office. The student mailboxes are in M426; you will find your mail and messages in your assigned box above your name label. It is advisable to check your mailbox daily. Use of the University mailing address for personal mail is not allowed by NU regulations.

Supply Cabinet (M426). Limited supplies (pens, notebooks, etc.) are available for research purposes. These supplies are not for personal or class use. Please only take one of each item at a time.

INTERNATIONAL STUDENTS

Upon arrival, all international students must register immediately with the International Student Office, 630 Dartmouth Place, Evanston Campus, which will act as advisor on all matters concerning employment practice, visa renewals, etc.

PARKING

The University Police Parking Division controls the NU parking lots. Students requiring a sticker that will enable them to park in the various University parking lots should obtain an application from the Parking

Office located at 1841 Sheridan Road, Evanston (open Monday through Friday, 8:00 AM to 4:00 PM). Applications are issued upon presenting your University I.D. card, driver's license, and payment of a fee. Additional information can be found here.

STUDENT LOUNGE & KITCHEN

The graduate student lounge is located in room M443. It is managed by the ESAM graduate student leadership. All students are expected to comply with the rules set by the graduate student leadership to keep the lounge a pleasant place for students to gather. Access to the student lounge is by an access code for a numeric pad on the door. Contact the program assistant if you do not know the access code. Please do not share the access code with non-ESAM people. Use of the lounge is intended only for students and postdocs in ESAM or in ESAM research groups.

Kitchen use is restricted to ESAM department members. Please comply with the kitchen rules that are posted. Do not leave personal items in the kitchen. After washing your dishes, be sure to dry them and put them away promptly. The microwave and toaster oven should not be left unattended while in use. Clean up any food that splatters, drips, or spills. Remember, it is easier to clean up the mess when it is still fresh. As a courtesy to other department members, please only take tea and other supplies on a single-use basis. Finally, to prevent flooding, make sure the hot water dispenser is completely turned off after use. There is no janitorial service to clean up this space, so it is each user's responsibility to keep the area clean and clear of personal belongings.