

**INFORMATION FOR PhD STUDENTS
IN ENGINEERING SCIENCES AND APPLIED MATHEMATICS 2015-2016**

September 1, 2015

Dear Graduate Students,

This handbook is prepared to aid you in earning a Ph.D. degree in Applied Mathematics. Please read it carefully and be aware of the requirements and responsibilities described. The information contained in this handbook is more specific than that in the *Graduate School Bulletin*. You should also familiarize yourself with the general regulations of The Graduate School.

Please feel free to come in to see me if you have any questions, problems, or points of concern.

David Chopp, Professor and Chair

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INFORMATION FOR GRADUATE STUDENTS

Welcome to the Engineering Sciences and Applied Mathematics Department. Please keep and refer to this booklet throughout your years as a graduate student. Every effort has been made to anticipate your questions-on-advisor selection through final checkout. You are responsible for knowing this material!

I. FIRST YEAR ADVISOR

During New Student Week, you will meet with your first-year advisor who will assist you in selecting courses for your first quarter of study. The first-year advisor will continue to be your course advisor through the first year of the program until you choose your research advisor at the end of the first year.

II. PhD DEGREE IN ENGINEERING SCIENCES AND APPLIED MATHEMATICS

A. Residency and Course Load

The minimum residence requirement for the PhD degree is eight consecutive quarters, including summer, at Northwestern. **Course and 590 (research) units should total to 3-4 units each quarter to maintain full-time status.**

B. Research

Graduate study should be considered full-time employment. Annual academic progress reports must also be submitted by the student in June of each year following the first year.

C. Course Requirements

1. Students Entering with BS Degree

Students entering with a BS Degree must take at least twenty graded academic courses. P/N grades are not allowed. Full-time students are required to take twelve academic courses during their first three quarters (excluding the summer quarter) of graduate study at Northwestern. Enrollment in the core curriculum is mandatory. In addition to the twelve core courses, five additional 400 level ESAM courses (excluding 499), or 400 level courses in other departments that are taught by ESAM or courtesy faculty, are required. According to University policy, students must maintain a 3.00 average to receive financial assistance.

GPA's are calculated according to the following scale: A = 4, A- = 3.7, B+ = 3.3, B = 3, B- = 2.7, C+ = 2.3, C = 2 and will appear on graduate student transcripts.

a) Core Courses in Engineering Sciences and Applied Mathematics

The following courses comprise the required core units of the graduate curriculum in engineering sciences and applied mathematics:

ES_APPM 411-1,2,3 Differential Equations of Mathematical Physics (3 units)

ES_APPM 412-1 Methods of Nonlinear Analysis (1 units)

ES_APPM 420-1,2,3 Asymptotic and Perturbation Methods in Applied Mathematics (3 units)

ES_APPM 421-1 Models in Applied Mathematics (1 unit)

ES_APPM 446-1 Numerical Solution of Partial Differential Equations (1 units)

ES_APPM 445-0 Iterative Methods for Elliptic Equations (1 unit)

ES_APPM 448-0 Numerical Methods for Random Processes (1 unit)

ES_APPM 444-0 High Performance Scientific Computing (1 unit)

In addition to these core courses, students are required to take a minimum of two mathematical modeling courses for a total of fourteen required courses. The remaining six course requirements are electives.

Full time students are expected to take 411-1,2,3, 420-1,2, 421-1, 446-1 and 448-0 during the first year of study. In addition, during the first year students must take either 412-1 or 420-3, and also either 444-0 or 445-0 depending on which of these are offered. An additional two mathematical modeling courses as determined by the department are also required during the first year. The remaining required courses not taken during the first year are to be taken during the second year of study.

Waiving Core Courses:

Students who are sufficiently prepared in the subject matter of a core course may petition for a waiver from the course requirement. The waiver must be approved both by the first-year advisor and the Department Chair. The instructors may require documentation, e.g. text used, course outline, lecture notes, exams, etc. The signed petition should be given to Beth Siculan to be placed in the student's file. Please note that waiving a core course does not decrease the total number of courses required.

b) Elective Courses

The remaining six courses for the PhD are electives and are to be selected by the student in consultation with his or her advisor. Up to three of the elective courses can be in any department in engineering, mathematics or the physical sciences subject to the approval of the student's advisor and are approved Graduate School courses. The remainder of the elective courses must be taken within the ESAM department unless a request to vary from this requirement is approved by the Department Chair. Any courses taken for the PhD must be an extension of the student's background rather than a repetition of work done as an undergraduate.

c) Responsible Conduct of Research

Responsible Conduct of Research (RCR) training is required by the Graduate School of all first-year graduate students and consists of two parts. The first part is GEN ENG 519: Responsible Conduct of Research for Engineers. The second is a CITI online course. To be considered in good standing within the PhD program **both** of these requirements must be completed by the deadlines indicated below.

- 1) **GEN ENG 519:** This is a five-week course that meets weekly for three hours. The course is offered twice every academic quarter (Fall through Spring). Students should enroll in **GEN ENG 519** through Caesar during the regular course registration periods. A satisfactory grade of "S" is required.

Completion Deadline: End of the Spring Quarter of the first year of study

- 2) **CITI Online Course:** The course consists of 9 common core modules. A passing grade of at least 80% is required on accompanying quizzes. Information on setting up a CITI account can be found at: http://www.esam.northwestern.edu/docs/graduate/setting_CITI_account.pdf. The CITI online completion certificate should also be emailed to Beth Siculan upon completion of the course.

Completion Deadline: December 1st of the first year of study

2. Students Entering with MS Degree from another Department or Institution

Students entering with a MS Degree must take at least eighteen graded academic courses. All other requirements in II.C.1, i.e. the twelve core courses and two modeling courses, must be satisfied.

Permission to count courses taken during MS study against the fourteen required courses may be granted by the Department Chair. Approval may require documentation, e.g. text used, course outline, lecture notes, exams, etc. If an exemption is granted, a signed waiver form should be returned to Beth Siculan to be placed in the student's file. Please note that waived courses do not decrease the total number of courses required.

3. Students Entering with MS Degree from ESAM

Students entering with a MS Degree from the ESAM Department must take at least eight additional graded academic courses, which also must include any core courses that were not taken when earning the MS degree. All other requirements in II.C.1 must be satisfied.

D. Obtaining a MS Degree after the First Year

Students are strongly encouraged to apply to receive a MS degree at the end of the first year. To receive the degree, the student must be in good standing including successful completion of the first year course requirements. Complete an application for a MS degree in Caesar at the beginning of Spring quarter. For the exact deadline for completion of the application, see the [graduate school website](#).

E. Teaching Requirement

All students in the PhD program are required to serve in some instructional capacity for at least one academic quarter. This may include, but is not limited to, serving as a teaching assistant or a grader. Most students complete their teaching requirement during the second year of studies.

Students are required to enroll in GEN ENG 546-0 (Teaching Experience) during any quarters they work as a teaching assistant.

F. English Language Requirement

All international PhD students whose primary language is not English will be required to take the Versant English Test after arriving at Northwestern. Students whose countries of origin are Australia, Canada, New Zealand, or the United Kingdom will be exempt. Students required to take the Versant English Test, must pass the test before they are able to serve as a teaching assistant or grader. For more information about the Versant test as well as English language tutoring resources, see the [Versant testing page](#).

G. The Preliminary Examinations

Within the first two weeks of the Winter quarter of the first year of study, students will be given four preliminary examinations on the topics of advanced calculus, differential equations, linear algebra, and complex variables. These Preliminary Examinations will be on advanced undergraduate material. Sample examinations from previous years as well as a list of textbooks that cover the topics will be e-mailed to each entering PhD student before the start of Fall quarter. The exams will be given as four separate 2-hour exams scheduled so that they do not conflict with the students' courses.

Students who fail one or more exams will be given an opportunity to retake a new exam on the same subject(s) within the first two weeks of the Spring quarter of the first year. To remain in good academic standing in the

PhD program and to continue into the second year of study, students are required to pass all four preliminary examinations. Students who are unable to pass all four exams, but otherwise satisfy all the requirements for an MS degree, will be awarded an MS degree.

H. Permanent Advisors

1. The Selection Process

In the spring of the first year of the program, students in good academic standing need to identify a permanent research advisor. This identification process begins with faculty giving presentations on their research in a series of half-hour sessions. The sessions will include information about the technical work to be completed as well as the options for financial support. Students interested in presented topics are ***strongly*** encouraged to contact the faculty individually to discuss further details about the project. Students should talk with every faculty member whose project is of interest and if appropriate, request to join the faculty's research group. Once a faculty member and student agree to work together, the faculty member becomes the student's permanent advisor for the remainder of the PhD program as long as progress remains satisfactory.

All first-year students in the PhD program must submit to the chair their choice for advisor no later than May 20 in the spring of their first year. Failure to obtain a research advisor by that date will remove the student from good standing and continuation in the program will be at risk. It is the student's responsibility to find a research advisor. Students having difficulty should contact their first year advisor and/or the department chair for guidance.

It is hoped that this processes will provide each student with an advisor who will satisfy the student's research interests. Faculty members in the Department conduct research over a wide spectrum of areas. Please be aware, however, that availability of any particular project is subject to the availability of funds to support that research.

In rare instances, a change of advisor may be necessary due to loss of funding or for other reasons. The Department Chair handles such changes on an individual basis.

2. The Faculty Advisor's Role

The permanent advisor will provide advice concerning your graduate studies and **must** be consulted about course selection. The advisor may, especially in the early stages of your graduate career, provide fairly close direction of your thesis research. The advisor will also serve as chairman of the faculty committee that conducts your qualifying examination and your thesis defense.

Responsibility for meeting published deadlines and degree requirements rests with the student. The Northwestern University Academic Calendar is available at <http://www.registrar.northwestern.edu/calendars/index.html>. The Graduate School deadlines and requirements can be found on their website at <http://www.tgs.northwestern.edu/academics/academicservices/phd/index.html>.

I. The Qualifying Examination

1. Time Requirements:

Students must take the Qualifying Examination by the end of the eighth quarter (including summers). 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.

2. Qualifying Examination Procedure and Committee Makeup

The examination will be wholly or partially oral and may cover courses taken both in and out of the Department, though emphasis is normally on the core required courses taken during the first year. The exam will be conducted by a committee consisting of at least three faculty members of the Department. At least two committee members, including the committee chair, must be listed as members of the graduate faculty of the University. Faculty members with courtesy appointments can be considered as either internal or external members of the committee, provided that the committee has at least two core ESAM faculty members.

Students should:

- a) Personally contact each member of the committee asking if each is willing to serve and to find a date and hour satisfactory to each one. Reserve a conference room for at least 3 hours.
- b) Fill and submit the TGS Prospectus Form on Caesar.

3. Outcome of the Qualifying Examination

One of three possible outcomes will result from the qualifying examination:

- 1) Pass: The student is now recognized by the Graduate School as a candidate for the Ph.D. degree.
- 2) Fail with 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 at a later date. The retaken Qualifying Examination must still be passed by the end of the twelfth quarter in order for the student to continue in the PhD program.
- 3) Fail: The student cannot continue in the Ph.D. program. A student who fails the Qualifying Exam may consult with his/her advisor and the Department Chair to determine the best course of action following this result.

Students failing to pass the Qualifying Examination within the time limits outlined above are generally not eligible to receive financial aid from University sources (Research Assistantships, Fellowships, and Teaching Assistantships).

The Graduate School does not recognize a candidate for the PhD degree until the Qualifying Examination is passed.

J. Annual Reviews

The Graduate School requires programs to conduct annual academic reviews of all students in the program. The preliminary exam serves in this capacity for the first year students. In subsequent years, the student will prepare a one-page annual report of academic progress to be submitted in June. This report will be reviewed by the thesis advisor and chair and feedback provided as necessary.

K. The Thesis Defense/Final Examination

Each PhD candidate must successfully pass a Final Examination based principally on work presented in the dissertation. A faculty committee consisting of at least three faculty members conducts the examination. At least two committee members must be from the faculty of ESAM and at least two committee members of the graduate school including the chair. This examination involves a mandatory open and publicized oral presentation and discussion during the first hour followed by a closed examination with only the committee.

Procedures:

Students should

- a) Apply for a PhD degree in Caesar.
- b) Choose faculty committee members and request their participation. Upon agreement enter the committee on the PhD Final Exam Form in Caesar.
- b) Contact committee members to set date and time. Once the date is set, enter the date on the PhD Final Exam Form in Caesar.
- c) 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.)
- d) Reserve a conference room. Contact the Department office staff to reserve a room and so that a public notice of the presentation can be posted. Supply names of committee members for submission to the Graduate School **at least three weeks** before the exam. Enter information regarding committee members, date and title of thesis on the Caesar website under PhD Final Defense.
- e) 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.
- f) Be reminded that the format of the dissertation must conform to standards established by The Graduate School and available on their website at http://www.tgs.northwestern.edu/documents/academic-services/guidelines_for_students.pdf.
- g) Present each examining committee member with a copy of the dissertation **at least two weeks** before the examination.
- h) After final approval, turn in one unbound copy of the dissertation to the Department office to be bound (at department expense) for the ESAM collection. (Additional copies may be given to the office to be bound at the student's expense.) Also furnish the Department with a copy of the abstract, and the Certificate of Careful Editing, signed by the student and advisor.
- i) 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.
- j) Before final departure, complete the sign-out sheet, return borrowed items (theses, library books, etc.), and be sure to leave a forwarding address with the Engineering Sciences and Applied Mathematics Department office. Upon return of all keys, the key deposit will be returned.

L. Graduate Student Tracking System (GSTS)

Students are expected to maintain their current information in the Graduate Student Tracking System (GSTS)

M. Academic Standing

The Graduate School details procedures for determining Good Academic Standing, Probation, and

Exclusion. See the Graduate School website at:

<http://www.tgs.northwestern.edu/academics/academic-services/satisfactory/index.html> for details.

N. Appeals Process

The faculty make every effort to ensure that each student's progress is carefully reviewed and the resulting feedback is accurate and constructive. There may be, however, instances in which a student feels that a review decision is unjust or is based on incomplete or inaccurate information. If this occurs, there are appeal channels available to the student.

First, the student should discuss his/her concerns with their adviser in order to resolve any misconception or misperception. If the adviser and the student are not able to resolve the concern, an appeal may be directed to the Department Chair. The University policy for academic-related grievances is provided in The Graduate School Catalog. For non-academic matters, such policies are provided in the Northwestern Student Handbook.

III. GENERAL INFORMATION

A. Stipend Checks

All recipients of Research Assistantships or Fellowships must complete Employment Eligibility (I9) forms, the Federal W-4 and IL W-4 forms for the University. International students must also complete the Alien Tax Status and other forms required by the Federal government. These forms are now on the web and the Human Resource Department will assist you. **The I-9 form must be completed electronically by the start of classes in the Fall quarter** (see <https://northwestern.i9servicecenter.com>). In addition, the department will need a copy of your completed Personal Data Form.

All checks must be direct deposit, hard copies are not available. To view check, please use the HRIS Self Service website. **Please note: To avoid financial problems at the beginning of Fall Quarter, all incoming students should be aware that you will not receive your first check until September 30th.**

External Fellows: In order to process supplements and stipends, we *must* have copies of your original award letter and any renewal/adjustment letters in subsequent years.

Avoiding late fees: Tuition bills are online. If anything other than tuition is owed, the bill will be passed on immediately to the student for payment. If you have any questions regarding your tuition bill, see the ESAM office staff.

B. Research Registration

During the first eight quarters of the program, Doctoral candidates enrolled in less than four courses should also enroll in ES_APPM 590 Research to ensure full-time registration to fulfill the residency requirement. After the residency requirement is fulfilled TGS 500 is used in place of ES_APPM 590 for the duration of the program.

Note: Summer registration is mandatory for all students on university support or on F-1 or J-1 visas.

C. Pass/No-Credit Option

Students working toward an MS or a PhD in Engineering Sciences and Applied Mathematics may **not** use courses taken on a P/N basis to satisfy course requirements. Graduate students may, with the approval of their advisor, take courses on a P/N basis *after* satisfying the departmental course requirements.

D. Academic Honesty

Students are strongly advised that originality is essential in all homework, projects, exams, theses, etc. associated with graduate work. Students are required to do their own work. Ideas, data, or word-for-word quotations taken from other sources (**including the work of fellow students and other group members**) must be appropriately referenced; otherwise plagiarism will have been committed. The following statements should help define what is meant by "appropriately referenced":

a. All ideas, data, mathematical expressions, and word quotes taken from the works of others should be clearly and directly referenced to the original author. This is best accomplished by listing a reference number after the material with the numbered references appearing at the end of the manuscript. The following format is also acceptable:

"The equation can be derived following the approach of Jones³³ as follows:..."

b. Word for word quotes **must** have quotation marks at the beginning and end and be referenced in the manner described above.

c. Photocopied figures should be referenced as described in a. above.

d. Redrawn figures or plots made from other people's table of data can be appropriately labeled "after Smith⁴³".

e. Each person should receive proper recognition for contributions made.

Special note: group collaboration on homework assignments is at the discretion of the professor. Unless otherwise stated, students are expected to turn in their own original work.

In accordance with Graduate School regulations, "All cases of alleged academic dishonesty involving students of The Graduate School are to be referred by members of the faculty to the Dean of The Graduate School" as well as the Associate Dean of Graduate Studies of McCormick. A student found guilty of academic dishonesty runs the risk of being dismissed immediately from the graduate program.

On Being a Scientist by the Governing Board of the National Research Council is available at http://www.nap.edu/catalog.php?record_id=12192#toc. Northwestern University's *Guidelines for Investigators in Scientific Research* is available online at <http://www.research.northwestern.edu/ori/misconduct/documents/GuidelinesforInvestigatorsinScientificResearch.pdf>. These two documents discuss ethical standards in the scientific community. Students should be familiar with the contents of these two documents. The Department expects the highest levels of integrity from students and faculty.

E. Work Obligation of Graduate Students and Other Limits on Outside Compensation

First year students fully supported by University Fellowships are expected to concentrate their full effort on their coursework and preparation for the written preliminary examinations. Teaching Assistants are expected to average 20 hours per week on their teaching responsibilities, the remaining workweek shall be dedicated to coursework and research. Students supported by research grants are expected to work on thesis research an average of no less than twenty hours per week while taking courses, and full time otherwise, for the research project from which the stipend, supplement and/or tuition are paid. Since most support monies are derived from government or industry contracts and grants, it is the students' responsibility to perform their assigned research tasks in a timely manner. It should be noted that most contracts require formal progress reports on the research

performed.

Students are not to hold additional part-time jobs, except where there are exceptional extenuating circumstances and with the consent of the advisor and department chair.

F. Vacation Policy for Graduate Students

Students receiving financial aid through the University (Research Assistantships, Fellowships, Teaching Assistantships) are entitled to staff holidays. Please note that the breaks between academic quarters, such as at Christmas and spring break, are not vacation periods. Paid vacation or excused absences must be arranged in advance with the faculty advisor. A paid vacation of two weeks per year is considered normal for a student making satisfactory progress toward a degree. If approval from the advisor is not obtained before taking any time off, loss of financial support may result. Students electing not to take vacation are not entitled to any extra compensation.

G. Student Support and Conflict Resolution

Students should speak with the Department Chair to interact in a confidential manner when concerns arise.

H. 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 laws concerning all controlled substances.**

I. Student's File

Folders are kept in the department offices for each student. They contain application materials, approved study programs, grades for completed courses, records of completed examinations, names of committee members, current address, phone numbers, etc. In accordance with Government regulations a student is allowed access to his file after submitting a written request to the department. Educational records cannot be released to any outside agency without the student's written consent. Students applying for credit cards, etc., which require employment and/or salary verification by the department, must inform the department that such a request may be forthcoming. Verification of employment may also be done through NU's Employment Verification Infoline at <http://theworknumber.com>.

J. Change of Address

The Department Office must be notified of any change of address. Students may change their home address through the HR website <https://nuhr.northwestern.edu> and also in Caesar. Be sure to change your address in both as the two systems are separate.

The US 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. For J-1 and H-1 scholars they will 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 on the USCIS website at: <http://uscis.gov/>. 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)!

K. International Students

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

L. Colloquium Series

The Department organizes the colloquium series that meets on Mondays at 4pm. Its primary purpose is to broaden the education of each graduate student by bringing to campus the leaders in our field. Attendance is recommended for all graduate students, but **required** for all first-year graduate students.

M. Safety

The department has taken a number of steps to help provide a safe environment for your research. In the event of an alarm requiring evacuation of the building, all members of the department are expected to evacuate using preferably the stairwell at the north end of the hall near the main office. Proceed to the ground floor, then go north out the exit at the end of the C or D wing. After exiting the building, go to the department rally point at the entrance of Sargent Hall and report to the Safety Coordinator, Beth Siculan, so we can ensure everyone's safe exit from the building.

N. Keys

Graduate students will receive a key for their office in the Technological Institute. In order to get your keys, you must obtain an application in the Department Office, to be filled out and returned to Beth Siculan with a key deposit of \$15 (cash only). **Keys must not be passed on to anyone else.** Students may not be in the Department Office after normal working hours, generally 8:30 AM to 5:00 PM.

O. Computing Facilities

Linux computers are available for general academic and research use in the student offices. Not all computers in student offices are for general use, but are for specific research projects. Contact the Department computing manager, David Chopp in M448, if you have any questions about which computers are available for general use. New students are assigned a user ID based on their NU net ID that allows them to log in to any of the department Linux computers, and also allots storage space that is on a shared server that can be accessed from any of the Linux computers. The Manager must be consulted prior to addition or deletion of any software or hardware on these systems, or in the event of system malfunctions.

Students may also access the department network via their own personal computer. To obtain access, send an email to the Department computing manager (chopp@northwestern.edu) with: Name, office #, operating system, whether it is a laptop or desktop, and the Ethernet MAC address. An Ethernet connection is required to use the department printers, wireless connections are not on our local subnet, and hence will not allow access to the printers.

P. Student Lounge

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 as 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 Beth Siculan if you do not know the access code. Please do not share the access code with non-ESAM people.

Q. Desk and Research Space Assignment

A desk for personal use will be assigned to each graduate student. The assignment of both desk and research space are 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 of the Department Chair.

R. Telephone, Fax, Mail, Photocopying, and Printing

Telephones. Telephones are provided in all student offices, however, their use should be limited to university business only. **Personal calls should be made on cell phones.** Long distance calls require an access code. Persons who may have occasion to call you for business purposes from outside the University should be given the telephone number of the main Department office (847)-491-3345. **Collect calls are not acceptable, by Northwestern regulations.**

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.

Photocopying, Copy Cards, and Faxing. 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 at Seeley Mudd 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. A fax machine is located in the Department Office. Long distance faxes require an access code. See the department for personal faxes.

Printing. 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.

S. Kitchen, Large Conference Room, and Supply Cabinet

Kitchen. 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 remove them 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 your responsibility to keep the area clean and clear of personal belongings.

Large Conference Room (M416). If you need to enter/exit the conference room, please do so through the Tech hallway, not the department office. The conference room should be left in the condition that it is found. If chairs or other furniture are moved, they should be returned to their original position. Do not leave food in the room; properly dispose of any garbage. This room acts as a classroom and event space, and should be kept tidy at all times.

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.

T. Automobile Regulations

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 A.M. to 4:00 P.M.). Applications are issued upon presenting your University I.D. card, driver's license and payment of a fee. Additional information can be found at www.northwestern.edu/up/parking. For your information, *all students who park cars on campus* are required to register the car with the Parking Office. Bicycles should also be registered.

U. The SIAM Student Group

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 liaison 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.

V. U-Pass

All full-time students will receive a U-Pass, which allows unlimited rides on the CTA. Information about use of the U-Pass and distribution dates is available at <http://www.tgs.northwestern.edu/graduate-life/u-pass/>.

W. Bike Riding and Skateboarding

For obvious safety reasons, bike riding and skate boarding are prohibited in the corridors of Tech. **In addition, bikes may not be stored in public spaces in the building, in particular the stairwells where they can pose an evacuation hazard.**