Johns Hopkins University

Department of Mathematics

Graduate Student Handbook

Welcome to the Johns Hopkins Mathematics Department. In these pages, we will present an introductory description of the academic side of your stay at Hopkins.

Virtually all of our graduate students have been admitted to the Ph.D. program, and most of you have full support (full tuition waiver and Teaching Assistantship). You are expected to be a full-time graduate student in mathematics, engaging in a period of study and research that will culminate in the Ph.D.

The level of the mathematical material that you must learn to control will inevitably rise. Even the way you regard the subject will likely change, perhaps several times. In the end, your research level will be assessed more by what you do, and can be predicted to do, than by what you know. However, you will need to attain a suitably high level of understanding in order to function at the frontiers of mathematics. It is best to view the initial phases of your studies (course work, preparation for qualifying exams) as preliminary to research. In particular, you should aim to acquire an active understanding of, and facility with, the material at hand.

The ability to do research in mathematics is imperfectly correlated with the ability to understand known mathematics. The only way to find out what you are capable of accomplishing is to get started on it. In general, even for established mathematicians, research proceeds rather slowly, and often one wonders in the end why it took so long to figure out something so "obvious". It is for this reason that we recommend that you get your qualifying exams and language exam out of the way as soon as is reasonably possible.

We consider 5 years to be the normal amount of time needed to complete the degree. We guarantee that a student who is progressing reasonably and performing the T.A. duties faithfully will have his or her support continued through the end of the fifth year.

The graduate program is designed primarily to prepare students for research and teaching in mathematics. It is naturally centered on the research areas of the faculty, which include algebraic geometry, differential geometry, global analysis, harmonic analysis, number theory, partial differential equations, topology, several complex variables, and representation theory. The program may be supplemented (with departmental approval) in applied directions by courses in theoretical physics, computer science, mechanics, probability and statistics, offered in other departments of the School of Arts and Sciences and the School of Engineering.

Department Directory

Faculty Directory

Name	**Email** alias@math.jhu.edu	**Office**	**Phone Extension**
Blair, Matthew	mblair - LOA Fall	220	67725
Boardman, John	jmb	408-B	67401
Brown, Rich	brown	403	68179
Ching, Michael	mching	208	67688
Consani, Caterina	consani	216	65116
DeSilva, Daniela	desilva - LOA Fall	212	65128
Faber, Carel	faber - LOA Spring	222	65132
Goldberg, Michael	goldberg	206	67406
Ha, Eugene	eha	204	64978
Kong, Jian	jkong	407	65115
Mese, Chikako	cmese	214	64518
Meyer, Jean Pierre	jpm	419	67412
Minicozzi, Bill	minicozz	408	66656
Morava, Jack	jack	218	67409
Ono, Takashi	ono	414	67408
Paupert, Julien	Paupert	222	65132
Shalika, Joseph	shalika	314	67729
Shiffman, Bernard	shiffman	410	67404
Shokurov, Vyacheslav	shokurov	410-A	67410
Sogge, Christopher	sogge - LOA	410-B	443-996-7290
Song, Jian	jsong	301	64977
Spinu, Florin	fspinu	312	64047
Spruck, Joel	js - LOA Spring	408-B	65118
Wentworth, Richard	raw	402/303	67398
Wilkin, Graeme	Graeme	311	67402
Wilson, W. Stephen	wsw - LOA Spring	421	67413
Zelditch, Steven	zelditch	406	67686
Zhang, Qiao	qzhang	412	66014
Zucker, Steven	sz - LOA Spring	210	67403

Graduate Student Directory

Name	**Alias** alias@math.jhu.edu	**OFFICE**
Agarwala, Susama	agarwala	105
Baber, John	jbaber	221
Banerjee, Abhishek	abanerje	415
Banerjee, Romie	banerjee	221
Baugher, Ben	bbaugher	201
Breiner, Christine	cbreiner	105
Chen, Yifei	yichen	201
Choi, Sung Rak	schoi	201
Cutrone, Joseph	jcutrone	415
Dahl, Jonathan	jdahl	201
Feng, Renjie	rfeng	415
Hezari, Hamid	hhezari	105
Hussey, Caleb	chussey	415
Jiang, Jin-Cheng	jiang	200
Khan, Siddique	skhan	105
Kleene, Stephen	skleene	415
Kramer, Joel	jkramer	219
Limarzi, Michael	mlimarzi	105
Lin, Longzhi	lzlin	415
Lyzinski, Vince	lyzinski	201
Macdonald, Brian	bmac@jhu.edu	411
Marshburn, Nicholas	marshbur	415
McGowan, Michael	mcgowan	411
Seyyedali, Reza	seyyedali	200
Sinclair Duncan	sinclair	200
Tavakol, Mehdi	mtavakol	201
Tucker, Matthew	mtucker	411
Wang, Shuai	swang	221
Wright, Thomas	wright	219
Yu, Xin	xyu	411
Zhong, Qi	qzhong	201
Zrebiec, Scott	szrebiec	201
Zulkowski, Patrick	pzulkows	411

Staff Directory

Name	**Alias** @math.jhu.edu	**Office #**	**Ext**	**Title**
Stanger, Tina	cstanger@jhu.edu	400	68232	Administrative Manager
Buckner, Linda	math	404	67397	Administrative Assistant
Poole, Charlene	budget	404	67399	Budget Assistant
Raymond, Sabrina	course or grad sraymond@jhu.edu	405	64178	Academic Program Coordinator II

Responsibilities:

Tina Stanger, Administrative Manager
- Staff Supervision
- Budget & Grant Management
- Payroll
- Annual Publications/Communications
- Statistical Data

Sabrina Raymond, Academic Program Coordinator II
- All course/teaching issues
- Undergraduate & Graduate Programs
- Future Scholars Program
- Grad Budgets & Statistical Data
- Student Events

Charlene Poole, Budget Assistant
-Budget receipt reconciling and reporting
-Student payroll
-Seminar coordination
-Key coordination
-Dept special events
-Library coordination
-Effort Forms
-Maintenance requests
-Library room reservations
-Processing faculty recommendation letters
-Administrative support to the Chair
- Visiting scholar appointments

Linda Buckner, Administrative Assistant
- Web page updates
- JAMI program
- Purchasing
- Faculty hiring
- Reimbursements
- Petty cash custodian
- Key coordinator (back-up)
- Faculty editing letter coordination
- Copier accounts
- Cash deposits
- Updating building directories

Program Information

Requirements for the Ph.D.

The departmental requirements for the Ph.D. degree are:

1. Candidates must have shown satisfactory work in algebra and analysis; (Algebra (110.601-602) and Real Variables (110.605) & Complex Variables (110.607). Enrollment in these two sequences is mandatory for all first year graduate students, unless they have received advanced placement by passing the corresponding written qualifying exams. These exams are offered twice a year, usually in September and again in May.

2. Candidates must have passed written qualifying exams in Analysis (Real and Complex) and Algebra by September of their 2nd year. Exams are scheduled for September and May of each academic year. More information as well as old exams and syllabi can be found at: http://www.mathematics.jhu.edu/new/exams/.

3. Candidates must have completed satisfactory work in at least 3 other 600-level courses in the 2nd year of study.

4. Candidates must show a reading knowledge of French, German, or Russian, to be demonstrated by passing an examination given in the Department of Mathematics. This exam must be passed before taking the oral qualifying examination.

5. Candidates must pass an oral qualifying examination in the student's chosen area of research by the end of the 3rd year. The topic of the exam is chosen in consultation with a faculty member (normally the student's future thesis advisor).

6. Candidates will have teaching experience in mathematics at the undergraduate level as a teaching assistant for a course. The student will be under the supervision of both the faculty member teaching the course and the Director of Undergraduate Studies.

7. Candidates must produce a written dissertation based upon independent and original research.

8. After completion of the thesis research the student will defend their dissertation by means of the Graduate Board Oral exam. The exam must be held at least three weeks before the Graduate Board deadline which the candidate wishes to meet. Click here to view the Graduate Board's calendar.

Further Information and Advice

1. There will be a new grad student orientation on Friday, September 2, 2005 at 12:30 in Krieger 211. Upon arrival, first year graduate students will be guided in their studies in the department by the Department Chair, Richard Wentworth, and the Graduate Program Director, Bernard Shiffman.

2. Students should aim to become actively involved in research as early as possible. During

the second year the student should find a potential thesis advisor from among the full-time faculty in the department. The advisor will help prepare the student for research in her/his area, and test this in the oral exam. The advisor then helps to find a reasonable research project, guides the student through the relevant literature, and checks on the student's progress.

3. Students are expected to contribute to the intellectual life of the department. This includes participating in and attending the department seminars.

Evaluation of Student Progress, and Continuation of Support

Each year the faculty of the department meets to discuss the continuation of financial support for graduate students. Progress is gauged in the following way:

Pre-Thesis Requirements:

The student must pass written and oral qualifying exams according to the schedule. Course requirements are: satisfactory work, which is likely to include problem sets or exams, in at least two graduate Mathematics courses each semester in the first year; three semester graduate Mathematics courses in the second year and until the oral is passed; one graduate Mathematics course each semester after passing the oral exam.

Research Requirements:

For 4th-year support: sufficient involvement in research.

For 5th-year support: satisfactory progress in research.

For 6th-year support (if warranted): clear expectation of finishing the thesis by the end of the 6th year.

The M.A. Degree

Students are generally not admitted solely to achieve a Master's Degree. However, the Department will award a Master's degree in Mathematics once a Ph.D. candidate has fulfilled the following requirements:

1. Student must complete of one of the basic graduate sequences, Algebra (110.601-602), Analysis (110.605 and 110.607).

2. Student must pass one qualifying examination (from the sequence you selected above).

3. Student must pass a language exam (French, German or Russian) given by a senior faculty member within the department.

Graduate Board Oral

Graduate Board Oral Examinations may be held at any time during the year. The examination committee is approved by the chair of the department/program and forwarded to the Graduate Board Office for approval of the committee and selection of the chair of the committee. Alternates to the five members must be designated before the department chair approves the committee. These alternates may be used in the event one of the five approved members cannot participate in the exam.

The Guidelines for the Preparation of Dissertations and These are available from the

Graduate Board website, http://www.jhu.edu/~gradbd/, the department, and the Commercial Binding Office of the Milton S. Eisenhower Library. Dissertations not conforming to the Johns Hopkins University guidelines will not be accepted in fulfillment of the University requirements. Dissertations must be submitted before the deadlines published in the Graduate Board Calendar. If the department requires a final Graduate Board Oral Examination, the dissertation should be distributed to members of the Graduate Board Oral Committee, two weeks before the exam date. All dissertations must be in the library by the deadline dates on the schedule.

The Graduate Board Oral Examination for candidates for the Ph.D. degree has three major objectives:

1. To assess a candidate's proficiency in the discipline.

2. To give a student the benefit of a critical examination of his or her work by scholars outside the department or program committee.

3. To provide a means for extra-departmental monitoring of the academic quality of departments and committees sponsoring candidates.

Further information regarding the policies and procedures of the Graduate Board Oral Exam can be found at the Graduate Board website;
http://www.jhu.edu/gradbd/ProceduresFinalWeb.html#GBOExam.

Job Market

When applying for positions in academia, the student must recognize that in the U.S. mathematics job market, the decisions to hire at some universities start in November. You could lose out on opportunities if you wait too long to apply.

Also, you should keep in mind that a recommender may well need time to assess your work; allow at least one month for that. Inquire with your thesis advisor and the graduate chair about proper procedure for submitting job applications. In deciding when, and even whether, to apply, it is not expected that you have satisfied all requirements for the Ph.D. at the time of application, only that it be clear that you will finish (even by the end of the summer). It is best to wait until you have sufficient solid results that the final content of the dissertation can be envisioned by the advisor.

As the academic job market has grown more difficult, mathematics departments have become more demanding of job candidates. Teaching ability has been emphasized, far more than in the past, even by many research-oriented institutions. It may no longer be enough to have produced a very good thesis to get a good job; a solid teaching record is essential. Since teaching is, in part, judged by undergraduate students, international students should be aware that their perceived command of English can influence the decision whether or not to hire.

Fortunately, the restriction of academic horizons has been simultaneous with the broadening of possibilities in other sectors. This matter has been discussed at some length in past issues of the Notices of the American Mathematical Society, and we recommend that our students read these articles. Mathematical training, of itself, is valued by certain companies. Some additional skills that the student may wish to acquire are facility with computers and some background in applied fields.

Teaching Information

Teaching Responsibilities

The most important responsibility of the teaching assistant is conducting section meetings. This includes preparation for the meetings and conducting the sections in a professional manner. The main purpose of the sections is to answer students' questions about the course material. (You should not work out in section homework problems that are still due.)

Teaching Assistants may ask the department to reserve a room for activities relevant to the course(s) they are assisting with. Because of the number of requests, a room request for exams must be given one week in advance. A room request for a review session is also needed one week before the session. All other requests must be submitted in writing (emails are preferred) as early as possible to the Academic Program Coordinator. You may not use the department lounge (Krieger 211) for such purpose.

Every effort will be made so that your TA section assignments will not conflict with mathematics courses being offered. This is primarily done by not assigning math courses during the parts of Thursdays and Fridays that discussion sections are held. On the other hand, we can not schedule around courses that other departments offer. If you have conflicts with such courses, it is *your* responsibility to find a suitable TA who will trade sections with you. This change of scheduling must be approved by the professors involved and by the Chair and Director of Undergraduate Studies. If you cannot find a suitable substitute, you will not be allowed to take the outside course and must TA the section that you have been assigned.

Preparation

Since the main purpose of the section is to answer students' questions, it is essential that teaching assistants know how to do and explain all assigned homework exercises. It is therefore necessary that all teaching assistants prepare solutions to all assigned exercises in detail before section meetings, and have a plan as to how to explain these solutions to the student. It is inexcusable for a teaching assistant to be asked a homework question and not know how to solve it, or to waste time fumbling through calculations, which should have been worked out during preparation.

Professional Conduct

A teaching assistant cannot be effective in the classroom if he or she appears to regard his or her duties lightly. We expect you to act as dedicated professionals. This includes arriving at your assigned sections a few minutes before your scheduled time, and keeping the students occupied for the full scheduled time. In your preparation for your section you should also prepare extra examples and activities for the class in the event that they do not have enough questions to fill the time.

Lack of preparation and unprofessional conduct damage the reputation of the entire department. We are working hard to maintain the image of our teaching staff as being capable

and professional. There simply is no room for poor teaching due to lack of preparation or unprofessional conduct. The Director of Undergraduate Studies and the Chair will investigate reports and complaints by students of lateness, rudeness, or being unprepared. Substantiated neglect of duty can, as in the past, result in full or partial rescinding of the teaching assistantship.

Grading Responsibilities

The other main responsibility of the teaching assistant is to grade work done by the students, and to record and keep those grades. This includes being available to help proctor and grade exams for the course that you are assisting. We expect teaching assistants to be on time for all grading sessions, proctoring assignments, and other meetings scheduled by the instructors, If for some reason you are unable to attend a grading session you must find a suitable replacement. Check your mailbox and e-mail regularly so as to stay in contact with the instructor, including before a section.

When English is a Second Language

An international student with a Teaching Assistantship is usually assigned to be a full-time grader during her or his first year in the Department. Such students must enroll in the course 370.601 "Communication Strategies in the American Classroom" in the fall. Students must demonstrate communication skills sufficient to conduct sections in the fall of the 2nd year. This will be judged at the end of the 370.601 course. Failure to meet this requirement will affect the student's status in the department.

Students, who are judged to need to elevate their level of spoken English, before they can benefit from 370.601, are advised to take 370.600 "Oral Skills" in the fall instead, and take 370.601 in the spring.

Emergencies

If an emergency prevents you from meeting any of your scheduled obligations, you must find a substitute who is a TA in the Mathematics Department; or if that is not possible, notify the department (516-4178 or 516-7397) as soon as possible, but no later than 30 minutes before the scheduled time.

TA Handbook

An online copy of Making the Difference: Becoming an Effective Teaching Assistant at Johns Hopkins University can be found at http://www.jhu.edu/gro/TAmanual/.

Department Information

Department Web Pages

The URL for the Department home page is:

http://www.math.jhu.edu

Please check the web pages for general information. Information can also be found on the bulletin boards located along the fourth floor hallway, both mail rooms (209 and 409), the second floor hallway (undergraduate & graduate information) and the third floor hallway (math news).

Computers and E-mail

All students are assigned a default email address on the University's email server, JHEM. The Department's staff and faculty will use email to communicate with students, and students are responsible for checking their email on JHEM on a regular basis.

The Department also has a LINUX server, called "chow", and an NT server. Please contact Sabrina Raymond or Jian Kong if you wish to have an account on these servers. (Continuing students can use their existing chow email account for departmental communications, but should also check their JHEM mail for university notices.)

The department computer room is Krieger 207. The computers are intended for the use of students, staff, faculty and persons authorized by the department ONLY! If you need to request an exception to this rule, please contact Tina Stanger. Anyone who allows unauthorized users or visitors into the department computer rooms may lose their own privileges.

Copying and Printing

Copiers are located in Krieger 409 and 207. Please see the department staff to obtain access to these machines. We ask for your assistance in keeping these areas neat and organized. If you experience a problem with either machine, please inform the department staff immediately so that a service call may be made. Samples of bad copies prompting a service call should be left on top of the copiers to aide the repair technician. Please see a staff member if the copier is jammed. Do not attempt to clear the jam yourself.

Fax Machine

A fax machine is available in the department mailroom, Krieger 409, for receiving and transmitting work-related faxes. See the staff if you have questions regarding the use of the department fax machine. The fax number is 410-516-5549.

Keys

Charlene Poole issues keys to offices and common rooms. In order to be issued keys,

all recipients must sign for receipt of keys and agree not to have them duplicated and not to lend them to persons outside of the department. All keys must be returned upon departure from the Department. There is a $15 replacement fee for each lost or missing key ($30 for Inteli-keys).

If anyone requests that you open a door for him or her because "they've forgotten their keys", they should be referred to the department office. If you lose your keys, please report it as soon as possible.

Kitchen Areas

The kitchen areas (including refrigerators) should be kept clean and neat at all times. In the past, the department has had problems with bugs in these areas because of the lack of care taken to clean up. The department expects everyone to clean up after himself or herself when using these areas. Be certain to mark containers of food with your name; the refrigerators are cleaned out at the end of each week. If your name is not on your food, the food and container could be thrown away. Please wipe up all spills, wash your dishes, and dry off counter tops.

Coffee and tea are available in Krieger 209 during office hours. Afternoon teas are scheduled for Mondays, Tuesdays, and Wednesdays at 3:30pm in 211 Krieger Hall. After many seminars, a group of department members accompanies the invited speaker to dinner. You are welcome to join them.

Library

The University's primary mathematics collection is housed in the Milton S. Eisenhower Library on level C. You may borrow books with your JCard.

The Department's library is located in Krieger 413. You may borrow books from this library at any time using this simple procedure:

Write your name, book title, call number, and date on one of the special cards in the room; place the card you filled out in place of the book you are borrowing; when you return the book, re-shelve it in the proper place, remove the card from the shelf, and cross out your name.

Mail Room

A mailbox has been provided for each member of the department. Faculty and staff mailboxes are located in Krieger 409; graduate student mailboxes are located in Krieger 209. Stamps for personal use may be purchased from the Post Office in Gilman Hall. Mailrooms should be kept closed and the door locked at all times! We have had instances of theft in the past. Personal mail should be sent to your home address. The department cannot be responsible for personal mail. TA's must not tell students to place homework papers or any other papers in TA mailboxes; rather, students should be told to write their TA's name on the papers, and then put the papers through the mail slot in the door of Krieger 209. The combination for unlocking the homework box is 404.

Offices

The department assigns offices to graduate students on a yearly basis. Usually, at the end of an academic year, students whose advisors are based on the 4th floor may be moved to Krieger 411 or 415 depending upon the availability of space. You are expected to treat your office with the care you would take when using another person's property. Please keep floor

areas clear of debris and books and papers in order. If you find that your office is not conducive to your studies, you may apply to be moved to a different office at the end of that academic year. No students will be permitted to move their office during the semester. If your office assignment changes, please be reminded that you need to clear out your desk *completely* and that any old exams or other student papers need to be transferred to the Department Office. You may also request a temporary study area in the MSE Library from the Charlene Poole. These studies are to be used by the graduate student requesting the space only and may be utilized for up to one month depending upon availability.

Payroll

Paychecks are issued semi-monthly, on the 15th and last day of the month. Look for them in your mailbox sometime after 11am on payday. If payday falls on a weekend, checks will be issued the Friday before. If payday falls on a holiday, checks will be issued before the holiday. Direct deposit forms are available for any participating bank. You will not receive a paycheck unless the Form I-9 (Employment Eligibility) has been received by the Student Payroll office. Please see Charlene for the completion of the I-9 and withholding forms. (Foreign students must visit the Office of International and Visa Services, 3103 N. Charles St. to complete the Form I-9.) Questions concerning taxes should be directed to the tax manager at 443-997-8442. Information may also be found at the Tax Office web site: http://www.controller.jhu.edu/tax/home.html

Returning After a Break

In the past, some graduate students leaving Baltimore during a break have returned to the department late for classes and/or teaching. It has become department policy that graduate students return to the department at least one day prior to the beginning of a new semester. The student is responsible for obtaining plane/train/bus tickets and for renewing your visa for return.
Failure to adhere to this policy may result in a penalty.

Upon your arrival, you first need to meet with the professor/s for whom you will TA/grade. They will have plans and information to give you prior to the beginning of class. You will also need to meet with the professors with whom you have signed up to take classes. Most class meeting times and days will be pre-set (before the beginning of the semester). However, there is always the possibility that a professor will change the day/time at the last minute.

Security

Please keep offices locked when not occupied and keep your personal valuables locked up. (There have been quite a few problems in the past with larceny.) Please make certain that the doors to the common rooms are completely closed when leaving them. Computer rooms and mailrooms should be kept locked and the doors closed at all times!

The Security Department phone numbers follow:

Emergency - x 6-7777
Non-Emergency - x 6-4600
Escort Service - x 6-8700

Telephones

Telephones for mathematics graduate student use are located in the department's computer room (Krieger 207). The extension is 6-7572. Outgoing calls are limited to campus and local calls. Out of consideration for other students, we ask that you limit calls to five minutes.

University Information

Registration

You are required to register for courses each semester. Auditing a course does not count. Support in terms of stipend, fellowships, or tuition assistantships is contingent on this. Registration material will be mailed directly to you by the Registrar's office. Please make an appointment with your advisor prior to registration each semester to discuss your schedule. Your advisor or the Department Chair must sign the registration form. If signed by the Department Chair, the advisor's initials must appear next to each course listing. Please leave the pink copy with the Academic Program Coordinator. Students may also register on-line and this information will be provided by the Registrar's Office in a mailing. Students should check their mailboxes on a regular basis. A printout of your registration information should be given to the Academic Program Coordinator. The student's advisor will be able to sign off on the registration form as well. A late fee will be applied to registrations if forms are not submitted by announced deadlines.

Financial Aid

Financial aid situations will vary to the degree that the student situations vary. Specific question concerning student loans should be directed to the financial aid office. Copies of the Graduate Student Financial Assistance Brochure may be obtained from the Student Financial Services Office. You may call them at x68724 to discuss individual needs.

Additional Helpful Information

The University Book Store, Credit Union, Post Office, and M&T Bank are all located on the basement level of Gilman Hall. (The clock tower building on the upper quad.)

- Office of International and Visa Service, 3103 N. Charles St. x6-1013
- Financial Aid, Garland 146, x6-8028
- Student Employment and Payroll, Garland 72, x6-5411
- Tax Office, 33rd St., x7-8442
- Office of the Registrar, Garland 75, x6-8080
- Counseling and Student Development Center, Garland, x6-8278
- Security Office:
  - Emergency, x6- 7777
  - Non-Emergency, x6-4600
  - Escort Service, x6-8700

A good link for University Phone Numbers is found in the online Grad Handbook:

http://www.jhu.edu/gro/TAmanual/page3.html