

## MATH 6001, Introduction to Graduate Mathematics

*Note: the syllabus and course schedule are subject to change. Any changes to the syllabus and/or course schedule will be relayed to the students in class and through e-mail.*

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**Office hours:** Mondays 1:30-3:00 PM, Tuesdays 12:00-1:30 PM, and by appointment.

Class location and times: Skiles 154, MF 12:20 PM - 1:10 PM. The Friday class will generally be replaced by mandatory attendance to Research Horizons several weeks into the semester.

### Texts and online resources

- 1) [The Not So Short Introduction to L<sup>A</sup>T<sub>E</sub>X](#) by Tobias Oetiker.
- 2) [How to Write a Paper?](#) by Arieh Iserles

### Important Announcement

All doctoral students admitted Fall 2011 or later are required by the GT RCR Academic Policy for Doctoral Students to complete in-person RCR training. Math 6001 fulfills the in-person requirement. There is also an [online CITI RCR training requirement](#).

### Course Description

This course is a professional development course that will ensure students begin their graduate careers effectively and with the tools needed to succeed. We will have short lectures and panels with faculty in the School of Mathematics. It is expected that you do readings as assigned and come prepared with questions to ask panelists. Some topics that are covered in the course are:

- Getting involved in the mathematical community.
- Finding a research advisor.
- Getting the most out of math talks and conferences.
- Building a strong CV, and pursuing career paths in academia and industry.

In addition, the course will fulfill the institute-mandated Responsible Conduct of Research requirements by exploring topics related to ethical and professional issues such as conflicts of interest, the peer review process, research misconduct, the responsibilities of mentors and trainees, and more.

### Learning outcomes

Students completing this course will:

1. Understand the ethical and professional challenges associated with careers in the mathematical sciences.
2. Become familiar with the research being done by faculty in the School of Mathematics.
3. Be able to create a professional website and CV.
4. Be able to write papers and proposals in L<sup>A</sup>T<sub>E</sub>X.
5. Understand the importance of, and how to maximize the benefits gained from, attending seminars and conferences.

### Grades

This course is offered as Pass-Fail. To receive a passing grade in the course a student must do all of the following.

1. Publish your GT website by Monday, August 27. I will post a template on Canvas to make this easy.
2. Get a passing grade on 2 reports (typeset in L<sup>A</sup>T<sub>E</sub>X) on the Research Horizons Seminars or Colloquia. Aim for between 1 and 1.5 pages for each report.
3. Write a grant proposal for an NSF Graduate Research Fellowship (or alternative assignment).
4. Get a passing grade on a case study paper (4 pages in length) on an RCR issue. I will post a list of topics, but feel free to approach me with your own idea. This will serve as our final paper.
5. Attend all classes, read assigned material (posted on Canvas), and participate in class discussions.

Special Statement on attendance: To receive a passing grade, each student must attend the entire course. If a student has to miss a class, the student must contact the instructor prior to the day of the absence (unless the absence is due to illness) so that the instructor can determine whether it will be considered excused. If an absence is considered excused by the instructor, the student must provide proper documentation within one week of returning to class (for example, a physician's note for an illness). Students will have to write make-up paper(s) for any class time that is excused. Missing class time for an unexcused reason will result in a failing grade.

### The Honor Code and Academic Dishonesty

Do not cheat! Abide by the [honor code](#) at all times. See <http://honor.gatech.edu> and [here](#).

### Students with Disabilities and/or in need of Special Accommodations

Georgia Tech complies with the regulations of the Americans with Disabilities Act of 1990 and offers accommodations to students with disabilities. If you are in need of accommodations, please make an appointment with the Office of Disability Services to discuss the appropriate procedures. More information is available on their [website](#). Please make an appointment with me to discuss your accommodation, if necessary.

### Schedule

Monday, Aug. 20: Introduction. Class overview, RCR Compliance (see, [here](#), [here](#), and [here](#), and go [here](#) for the online part). Developing a webpage. [Research Horizons](#) and its [schedule](#). What should be in Research Horizons reports.

Friday, Aug. 24: Attending talks and getting the most out of them, including the “[Three Things](#)” exercise by Ravi Vakil, Stanford. Looking forward: How to attend a conference. See the [AMS blog](#) on organizing seminars. Panelists: Mayya Zhilova, Laura Eslava, He Guo, Trevor Gunn

Monday, Aug. 27: Getting involved. The [math GT site](#) has links for the AMS Grad Student Chapter, the Association for Women in Math Chapter, the GT SIAM Student Chapter, and more. There is also the [High School Math Competition](#), and [Club Math](#).

Panelists: Cvetelina Hill, Adrian Perez Bustamante, Stephen McKean  
**Due Aug. 27: Publish your Georgia Tech website.**

Friday, Aug. 31: Grant writing, funding agencies: NSF, NIH, AMS, MAA, and others. “Broader Impacts,” “intellectual merit,” evaluation. [NSF Graduate Research Fellowships](#) and more [fellowships](#), some for international students. Deadline for NSFGRF proposals is October 26, 2018 (Friday) at 5:00 PM. Also, see [How to win a Fellowship for Graduate Study in Mathematics](#), by Evans Harrell.

Panelists: Michael Lacey, Samantha Petti, Justin Lanier

Monday, Sep. 3: Labor Day: No classes

Friday, Sep. 7: Looking after your health and balancing life in graduate school. Rather than having a panel, we will have special guests: JaPeera Edmonds from Health Initiatives and Janice Harewood from the Counseling Center.

Monday, Sep. 10: **Responsible Conduct of Research (RCR)** overview; professional ethics in general; discussion of online CITI RCR training, and forms for RCR.

Wednesday, Sep. 12: MANDATORY ATTENDANCE AT RESEARCH HORIZONS (12:20-1:10pm, Skiles 005)

Friday, Sep. 14: Writing a CV, and choosing [templates for a CV and thesis](#). Choosing a thesis advisor. Math [arXiv](#), [MathSciNet](#),  $\LaTeX$  (see [Oetiker's book](#)), bibtex, Beamer, and style files. [Structuring](#) and submitting papers. Panelists: Wenjing Liao, Kevin Kordek, Qiqin Xie

Monday, Sep. 17: Conflict resolution. Special guest speaker: Sheila Cranman, GT Diversity and Inclusion Fellow.

Wednesday, Sep. 19: MANDATORY ATTENDANCE AT RESEARCH HORIZONS (12:20-1:10pm, Skiles 005)

Friday, Sep. 21: Job Search: research statement and teaching statement. Getting letters of recommendation, types of jobs, [MathJobs.org](#) and [EIMS](#). See [Jobs on Dan's TSR page](#); jobs in the private sector and elsewhere.

Panelists: Michael Damron, Megan Bernstein, George Kerchev

Monday, Sep. 24: RCR: The peer-review process.

Wednesday, Sep. 26: MANDATORY ATTENDANCE AT RESEARCH HORIZONS (12:20-1:10pm, Skiles 005)

Monday, Oct. 1: RCR: Math in Society; mathematicians as responsible members of society, workplace conduct.

**Due Oct. 1: Research Horizons report 1.**

Wednesday, Oct. 3: MANDATORY ATTENDANCE AT RESEARCH HORIZONS (12:20-1:10pm, Skiles 005)

Monday, Oct. 8 : Fall Break: No classes.

Wednesday, Oct. 10: MANDATORY ATTENDANCE AT RESEARCH HORIZONS (12:20-1:10pm, Skiles 005)

Monday, Oct. 15: RCR: Authorship and publication, Copyright laws.

Wednesday, Oct. 19: MANDATORY ATTENDANCE AT RESEARCH HORIZONS (12:20-1:10pm, Skiles 005)

Monday, Oct. 22: RCR: What is plagiarism? Self-plagiarism, plagiarism-detection software.

Wednesday, Oct. 24: MANDATORY ATTENDANCE AT RESEARCH HORIZONS (12:20-1:10pm, Skiles 005)

Monday, Oct. 29: RCR: Collaborative research.

**Due Oct. 29: Mock grant proposal.**

Wednesday, Oct. 31: MANDATORY ATTENDANCE AT RESEARCH HORIZONS (12:20-1:10pm, Skiles 005)

Monday, Nov. 5: RCR: Data acquisition, management, ownership, and sharing. Posting papers on your website.

**Due Nov. 5: Research Horizons report 2.**

Wednesday, Nov. 7: MANDATORY ATTENDANCE AT RESEARCH HORIZONS (12:20-1:10pm, Skiles 005)

Monday, Nov. 12: RCR: The responsibilities of mentors and trainees.

Wednesday, Nov. 14: MANDATORY ATTENDANCE AT RESEARCH HORIZONS (12:20-1:10pm, Skiles 005)

Monday, Nov. 19: RCR: Research misconduct and policies for handling research misconduct.

Wednesday, Nov. 21 and Friday, Nov. 23: Thanksgiving holiday, no class or Research Horizons

Monday, Nov. 26: RCR: Conflicts of interest.

Wednesday, Nov. 28: MANDATORY ATTENDANCE AT RESEARCH HORIZONS (12:20-1:10pm, Skiles 005)

Friday, Nov. 30: Final Project Paper Due