

# Information for Teaching Tutorials

Based on the Tutorial Info Session held on April 5, 2019 \*

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## 1 General Introduction

### Term-time Tutorials

Description from Harvard Website

- <http://math.harvard.edu/pamphlets/index.html>
- <https://handbook.fas.harvard.edu/book/mathematics>

Tutorials (Math 99r) are a great way to learn a topic not usually covered in the curriculum. They are taught in small groups by a graduate student, and **require a final paper which can count as the “junior paper” requirement** for math concentrators. Take advantage of this opportunity to learn differently! Tutorials are also presented by the graduate students teaching them at a special Math Table event, so you can meet the instructors in advance. Ordinarily only one Math 99r can count towards the concentration requirements.

### Summer Tutorials

Description from Harvard Website <http://math.harvard.edu/tutorials/index.html>

The summer tutorial program offers some interesting mathematics to those of you who will be in the Boston area during July and August. The tutorials will run for **six weeks**, meeting **twice or three times per week in the evenings** (so as not to interfere with day time jobs). The tutorial will start **early in July or late in June, and run to mid August**. The precise starting dates and meeting times will be arranged for the convenience of the participants once the tutorial roster is set. The format will be much like that of the term-time tutorials, with the tutorial leader lecturing in the first few meetings and students presenting later on. Unlike the term-time tutorials, **the summer tutorials have no official Harvard status**: you will not receive either Harvard or concentration credit for them. Moreover, enrollment in the tutorial does not qualify you for any Harvard-related perks (such as a place to live). However, the Math Department will **pay each Harvard College student participant a stipend**, and you **can hand in your final paper from the tutorial for your junior paper requirement** for the Math Concentration.

### Junior paper requirement for Math Concentration

Description from Harvard Website <http://www.math.harvard.edu/pamphlets/brochure.pdf>.

A 5-page expository paper in mathematics, written in sophomore year or before the end of the junior year reading period, under the supervision of a professor or tutor in a tutorial (Math 99r), a reading course (Math 91r), or a 100- or 200- level course the student is enrolled in. Students enrolled in a tutorial satisfy this requirement as part of the tutorial.

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## 2 Things to know about teaching tutorials

### Teaching Requirement

- Teaching a term-time tutorial is equivalent to teaching a calculus class, and hence counts toward one-year of teaching requirement.
- Teaching a summer tutorial does not count toward teaching requirement. Instead you will receive a salary of roughly \$8,000-\$10,000.

### Number of students

- For summer tutorials, even if a tutorial is approved, it seems that there should be at least 3 students enrolling for the tutorial to actually happen.
- For term-time tutorials, there should be at least 1-2 students.
- It is expected that there should be no more than 8 students in a tutorial.

### Meeting frequency

- For summer tutorials, meeting is 2-3 times a week, with a total of 6 hours a week, lasting for 6 weeks.
- For term-time tutorials, meeting is 2-3 times a week, with a total of 3 hours a week.

### Before you can teach a tutorial, you need to ...

- Submit a proposal: You need to submit a proposal to the Director of Undergraduate Studies, Prof. Taubes, for the upcoming Summer/Fall/Spring Tutorial before April 15. You can propose which term you would like to teach. Things that can be included in the proposal include the topic, an outline of the tutorial, prerequisites, references, lesson plans for each week, possible topics for students' final papers or presentations. Since Fall/Spring tutorials are farther from the Proposal Deadline April 15, they can be vague and possibly only contain the topic and outline. (The proposals for Spring tutorials can be pretty sketchy. Details can be added in the Fall.) A suggested length is 1-1.5 page. On the other hand, writing the proposal is really a chance to start thinking about the organization of the tutorial, so it is never bad to write more details. Past topics, outline, and prerequisites (which form a big part of the proposal) can be found on the [Department Website](#). The topics of tutorials are expected to be at the 100- level, and one possible topic is with the goal to prove a big theorem, cover different materials needed in the proof. Submit more than one proposal if you have multiple ideas for tutorials.
- Have your proposal approved: The Math Department hopes for at least 2 tutorials for each of Summer/Fall/Spring. Approval will largely depend on how suitable and accessible the topic is. (The Director of Undergraduate Studies, Prof. Taubes, may suggest changes to your tutorial plans to make it more accessible if it appears that it will only attract one or two students.) The department hopes to tell you if your summer tutorial proposal is approved (pending sufficient enrollment) by the beginning of May. Likewise for Fall or Spring tutorial proposal.

### Once your tutorial is approved, you need to:

- (Term-time tutorial only) Present at Math Table at the beginning of the term you are teaching to promote your tutorial.
- Schedule class meeting time with the students who sign up: This is usually late afternoon to the evening, because students might have other classes during the academic year, and day time jobs such as internship during summer.

## When you begin to teach tutorial, you need to:

- Assign some homework to students: This is not a requirement, but for pedagogical purpose, it is good to assign homework to students. You can make sure students have enough background by providing homework on background materials. Having homework can also make students think more seriously about tutorials, which is what you want to do.
- Assign final papers to students: For term-time tutorials, students will need to write a final paper and use it toward their junior paper requirement of Math Concentration. For summer tutorials, students need to either write a final paper, which they can use toward the junior paper requirement, or to give an oral presentation, to receive stipends for participation.
- Assign grades at the end of the semester: This only applies to term-time tutorials, which is under course number Math 99r. Hence you will also receive a Q-score for course evaluation. On the other hand, summer tutorials do not count toward course credits, so you do not need to assign grades or receive course evaluation.

## 3 Miscellaneous

- About the tutorial topic: Don't expect students to know a lot of things. For example, it seems that students at Harvard are more algebra inclined, so a very advanced course in analysis might not be a good idea. Also the pool of students for summer tutorials and term-time tutorials are different because many students might want to do REU (Research Experience for Undergraduates) in summer.
- About recruiting students: It is important to sell your tutorials. Before the term starts, some interested undergraduate students might send emails to you inquiring about details of the tutorial.
- About teaching style: Graduate students who have taught tutorials before indicate that they lecture for most of the time. However, students come to tutorials to learn in a way that is different from traditional classes, so it is more important to be interactive than aiming at perfect lectures. It is OK, sometimes even preferable, to get stuck on something when lecturing and show students your way of thinking on the spot. You can also spend the later classes for student presentations.
- About flexible schedule: Schedule is more flexible when teaching Tutorials than teaching usual calculus classes. It is possible to have some travel even if you are teaching tutorials, as long as you can find some ways to make up for the missing classes. It is OK to consider weekends for make-up classes. Finding someone else to cover for the class you are absent is also one possible way.
- How many hours do you spend a week on preparing teaching tutorial? Roughly 20 hours at the beginning and 15 hours at the end. However, this is about summer tutorials. And it varies from person to person.
- Do students drop tutorials? For summer tutorials, there are many people in the first class, even including some who are not students. And students sometimes gradually stop coming to class. For term time tutorials, not all students who sign up for the tutorial respond to the email asking about scheduling class time. And not all students who reply to the email show up in the first class. But usually those who come to the first class will keep coming until the end of the semester.