

Teaching Opportunities in the Math Department

Most math graduate students work as teaching assistants for some or all of their time at the UW. This document contains information about being a TA and the types of jobs available in the math department.

Responsibilities

General Many TAs in the math department, and virtually all first-time TAs, work in conjunction with a faculty member, teaching in a lecture-discussion format. Generally the faculty member will lecture to a large class (often over 200 students), while TAs meet with their students in small groups (less than 25). The basic duties of a TA include answering students' questions, giving quizzes, collecting and grading homework, and holding office hours to answer questions and provide general assistance. If you teach in a lecture-discussion format, *your job also includes going to the lecture*. While this might seem like a waste of your time, it's important for you as a TA to know what went on in lecture so you can anticipate and better answer students' questions. Also, many of your students will take the opportunity before and after lecture to come and ask you questions. Many TAs will use this time to grade or prepare their sections while listening to the lecture.

As a TA you will usually have a lot of flexibility in terms of how you want to run your classes. Find things that work for you and your students--whether it's working problems at the board, having students work and discuss problems, or something else. Many graduate students in the department are willing, even eager, to talk about ways they've run their classes, and some will gladly let you visit their class for inspiration. It's important that you foster an atmosphere where the students feel safe to ask questions and participate, without making them totally dependent on your assistance.

Finally, remember that for the most part, your students won't be like you. Most of them are not intending to major in math, and many of them are math phobic. Keep in mind that things that may have seemed easy for you will be anything but easy for them. Some students will be afraid of you, or will feel intimidated to ask questions, so try to make an effort to dispel these fears.

Some Teaching Assistant Duties

Each TA gets instructions applying to his/her specific teaching situation from the faculty supervisor in charge of his/her courses. These details vary considerably from course to course and from faculty member to faculty member. Grading policies, use of homework, and division of work between lectures and discussions are leading examples of this class of items.

Math Department TAs are understood to have intelligence, judgment and experience of how mathematics is taught and they are expected to use those qualities in their work. Most of the time, these native qualities will suffice to produce the necessary answers, and where there is any doubt, TAs should consult their supervisor or coordinator. The matters covered here are not these specific but issues which are common to all Math Department TAs.

1. All TAs, except first year TAs, those teaching Math 113, 210 and WES sections, are required to participate in the Math Lab for six (6) hours during the semester. Information concerning the Math Lab will be forthcoming at the beginning of the semester.
2. TAs are expected to keep a record of their students' grades on the grade sheet issued to them; to keep this record available for their supervisor or department chair on request; and to file the grade sheet (and final exams) in room 205 VV at the end of the semester. The Receptionist has grade sheets in 213 VV or you can print the spreadsheet that you used for the class.
3. TAs are to keep an up-to-date roster of students attending their sections. The rosters are available online at my.wisc.edu.
4. For TAs in lecture - discussion courses (Math 114, 171, 210, 211, 221, 222, 234, 275, 276, 375, 376, 319, 320, 321, 340) the supervisor is the appropriate lecturer in the course. For TAs and FAs (Faculty Associates) teaching Math 112, the supervisor is TBA. For TAs teaching Math 113, the supervisor is TBA.
5. TAs can borrow a copy of the text for their course and should return it at the end of the semester. See the Receptionist (213 VV) to check out books.
6. A number of facilities--building keys and passes, desk space, use of the copy room, telephones (but not for long distance calls)--are made available to TAs while they are engaged in teaching, but these do not carry over after teaching stops. Consumable items, such as copy room supplies, are for use only in connection with a TA's teaching assignment.
7. Each TA is expected to keep scheduled and announced office hours each week (see the Mathematics TA Workloads schedule), to meet the needs of most students and to be prepared to make reasonable efforts to see a student who can not make the scheduled office hours. Note that scheduled office hours can be used for preparation, grading, etc. if students do not fill the time.

Appointments

Most graduate students in the math department have a guarantee of four or five years of financial support, provided they pass the initial semester-long probationary period. Typically graduate students who are making significant progress toward the PhD and have satisfactory teaching evaluations can get support in the sixth or even seventh year, at least in the fall semester. In the spring, there are far fewer teaching positions and the graduate students who have guaranteed support may fill all of them. If you have finished your guaranteed support period and there are not enough positions to go around, priority will be given based on (a) teaching performance, judged by student evaluations, (b) your academic progress, as viewed by your advisor, and (c) how long you have been a graduate student in the department, with preference to those who have been here a shorter time.

Appointments (teaching assignments) for the fall semester are generally made in August, and those for the spring semester are made in December. Around the beginning of the semester, you should receive a formal letter of appointment describing your exact TA appointment, the amount you will be paid, and other relevant information. Check this letter to make sure it fits with your expectations. The acceptance form must be signed and returned to the department.

Teaching Opportunities

TAs and Project Assistants (Pas) are paid based on the number of hours they are expected to work. Many jobs in the math department are 50% appointments, which translates to 20 hours per week over the 18 week semester. Other appointments are determined proportionally.

There are a wide variety of teaching assignments open to graduate students, especially after you have a couple of years of experience and good teaching evaluations. Some of these jobs are quite competitive, so it pays to find out who hires for each job and express interest early and often. For many but not all positions, announcements come out via email. Here is a description of the positions generally available for TAs to teach. There are so many variables that we have broken the description into three dimensions: courses, special programs, and special assignments.

Courses

Undergraduates place into math courses based primarily on a placement test given by the UW system. In this description, "class" generally refers to a section of 20 - 25 students while "lecture" implies an enrollment of 80 - 250. Unless otherwise noted, what is called a "typical" TA assignment corresponds to a 50% appointment. Approximately in order of increasing performance on placement tests the beginning courses are:

Math 095

This is viewed by the campus as "remedial": Any student who is accepted as a student at UW-Madison should have learned this material long ago. It is arithmetic and algebra, roughly 7th - 9th grade mathematics. It is taught in classes that meet three hours per week. It counts as three credits toward a student's load but does not count toward graduation. This course is not normally taught by TAs but has been occasionally.

Math 101

Intermediate Algebra, for students who did not do too well or do not remember what they had in high school algebra classes. Classes meet three hours per week. A typical TA assignment would be two such classes.

Math 112

College Algebra, viewed (along with trigonometry) as essential material for success in calculus. Some students, however, are not calculus-bound but are taking this course to meet a requirement for their major. Three class hours per week. A typical TA assignment is two classes: This is a 56% appointment and so may conflict with some TA's visa restrictions.

Math 113

Trigonometry, classes meeting two hours per week. Again primarily viewed as preparation for calculus, but some students are taking the course to meet other requirements. Typical assignment: Three sections.

Math 114

Essentially a combination of 112 and 113, for students whose placement scores indicate they need this material to succeed in calculus but are at the high end of that group and can

absorb it in a different format. The students attend a lecture, taught by faculty, three hours a week and discussion classes, taught by a TA, two hours a week. The typical TA assignment is two discussion sections: You attend the lecture and you teach one group of students twice a week at one time and another group twice a week at another time.

Math 171 & Math 217

This course is for those who just miss placing directly into calculus. They are somewhat weak on their algebra and trigonometry skills. In the two semesters (171 in fall, 217 in spring) they will reach the same level as those who have taken the mainstream calculus course 221, with algebra and trigonometry material brought in where it is needed during the course. A student finishing 217 would proceed to 222. The format is lecture/discussion, like 114.

Math 221

This is the main entry point into the calculus sequence, for students who enter with good preparation or take pre-calculus courses to prepare them. Traditionally it has emphasized the physical sciences in its examples, but it is taken by all students going on in mathematics or science and it has evolved to include more connections to biological and social sciences. The material is differential and integral calculus of functions of a single variable. The format is lecture/discussion, like 114.

Math 210

Math 210, 211, 213 are a separate set of courses, not in the main sequence based on 221 and 222. Math 210 requires preparation almost equivalent to 221 but without demanding trigonometry. The topics in 210 include elementary set counting and probability, some matrix calculations and Markov processes, and mathematics of finance. Math 210 students meet in a lecture three hours per week but only one hour in a discussion class. The typical TA assignment is four discussion sections.

Math 211

Calculus for students not in the traditional sciences. The preparation required is the same as for 221. In one semester this gives a very broad but not deep treatment of calculus. While 221 will have done differential and integral calculus of one variable with a few applications, 211 will include some multi-variable material. The examples will be more oriented toward the social sciences. The format is lecture / discussion, like 114.

Math 213

This is a second semester of calculus for students who have had 211 (or a similar course elsewhere) as their first semester rather than a more traditional science-oriented calculus course like 221. It is taught with one discussion per week, like 210.

Math 222

Math 222 is the second semester in the main sequence for students in the sciences or mathematics. It assumes the background provided by 221. The material covered includes techniques of integration, infinite sequences and series, introductory differential equations, analytic geometry, and vector algebra and geometry in the plane and 3-space. The format is the same as for 114.

Math 234

This is the third and last semester in the standard sequence. Assuming the material from 221 and 222, it does calculus for functions of several variables and some vector calculus. It is required for most upper level math courses. It is taught in the same format as 210.

Math 275, 276, 375, 376

Registration in this honors calculus sequence requires special permission from the department. The sequence covers essentially the same material as Math 221, Math 222, Math 234, Math 319, and Math 340, but with much more emphasis on understanding mathematical ideas, and less emphasis on computation. For more information contact one of the department's Honors advisors, Dr. Gloria Mari-Beffa (maribeff@math.wisc.edu) or Dr. Andreas Seeger (seeqer@math.wisc.edu).

Math 319, 320, 321, 340

These are courses in differential equations, linear algebra, applied vector calculus and complex variables. These courses are sometimes taught with TA discussion sections.

Special Programs

There are several special programs that cut across the course distinctions:

WES

The Wisconsin Emerging Scholars program selects students who seem mathematically able but who might not succeed in math courses for some other reason such as cultural expectations. A WES section in 221, for example, would take part in the same lecture as other 221 sections but in addition would have a class meeting more hours per week and emphasize students working in groups to solve problems. Details vary according to what course the WES section is a part of. The WES director is Shirin Malekpour, malekpou@math.wisc.edu.

Residence Halls Sections

In several courses there will be sections designated for, and mostly populated by, students from a particular dormitory floor or other residence grouping. The students are expected to form study groups in their residential setting. In some cases the residence hall has a classroom which could be used for some or all meetings of the discussion section. The TA may also choose to hold some office hours in the residence hall. A residence hall section is just like any other section so far as the typical assignment goes.

FIG/SCI

UW-Madison is making a special effort to offer more small classes and special sections for beginning students. First-year Interest Group (FIG) and Small Class Initiative (SCI) sections can be organized by faculty within almost any course.

Other

A few sections have some space within them reserved for special groups, such as the Academic Advancement Program, but are not entirely devoted to that group. If you are interested in working with particular student groups, this may offer you the opportunity.

Special Assignments

In addition to the multitude of courses and special sections, sometimes a TA has a special assignment in an otherwise typical class.

Calculus Coordinators

A calculus coordinator is a mentor to a group of new TAs. The standard assignment for a new TA is to teach two sections of Math 221 or 222. They will be assigned to the same lecture as an experienced TA. The coordinator will take part in pre-semester training of new TAs, will mentor the new TAs as the semester proceeds, provide additional informal training, and will assist the lecturer in operation of the course. A calculus coordinator will typically teach two classes of his/her own, and is paid an additional 8% for mentoring. Since there are significant numbers of new TAs only in the fall semester, these positions only exist then.

Algebra Coordinators

In some semesters a TA will be hired to assist the faculty member in charge of Math 101 or Math 112. Duties include organizing exams and other course activities. The TA typically teaches one section but gets paid as if he/she were teaching two.