

Teaching Assistant Guidebook  
Department of Mathematics  
University of Texas at San Antonio

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## 1. Welcome

Congratulations on your appointment as a Teaching Assistant in the Department of Mathematics at UTSA. The Department takes pride in its Teaching Assistants and welcomes you to the team. This guidebook is here to help you get started and answer some of the many questions you may have. If at any time you are unclear as to what you should do, then contact Dr. Dmitry Gokhman, the TA supervisor. Here are some helpful names, numbers, and emails.

Dr. Dmitry Gokhman (TA Supervisor)	210-458-5697	<a href="mailto:gokhman@math.utsa.edu">gokhman@math.utsa.edu</a>
Dr. Sandy Norman (Interim Chair)	210-458-7254	<a href="mailto:sandy.norman@utsa.edu">sandy.norman@utsa.edu</a>
Department office (Apryl Harris)	210-458-5735	<a href="mailto:apryl.harris@utsa.edu">apryl.harris@utsa.edu</a>

You can contact the department office if you need desk supplies, textbooks, passwords, or codes. Contact the TA supervisor about deadlines, rules, exams, quizzes, homework, lesson plans, ideas, hints, strategies, and questions about student conduct or academic dishonesty.

## 2. Types of TA Assignments: Lecture, Calculus I lab, Tutoring, Assignment to a Professor

### Lecture

UTSA has two Developmental Mathematics courses: MAT 0203 Basic Mathematics and MAT 0213 Intermediate Algebra. The courses are designed to give students who enter college below THEA standards a chance to develop their skills. Most of the students in these courses are required by law to be in the course. That means they **MUST** attend class and successfully complete the course before they can begin College Algebra. Your duty will be to teach one or both of these courses. You will have control over the class and design and implement your own course structure. You will be responsible for creating, administering, and grading all homework, quizzes, and exams. If you need help with this, check with our ‘seasoned’ TAs and/or the TA supervisor.

### Calculus I lab (Recitation)

Students enrolled in Calculus I attend a 50-minute lab once a week. As a TA you may be assigned to run this lab. Your first duty is to contact the instructor who teaches the class and see exactly what he or she wants done in the lab. Normally, you might work examples on the board, answers questions on homework, and/or administer and grade quizzes.

### Tutoring

Tutoring is an important role of the TA. If assigned to work in the Math Tutoring Lab, you must first contact the Tutoring Lab Leader, \_\_\_\_\_, and set up a schedule of when you can work. Once in the tutoring lab, you are expected to assist walk-in students in all areas of mathematics. This can be challenging but also very rewarding. If you’re looking to fine-tune your skills, then spend a lot of time in the lab.

### Assignment to a Professor

Occasionally, we assign a TA to assist a Professor with other classes and/or special projects. Contact the Professor for your duties and responsibilities.

### **3. Before you Teach: A Checklist**

- Find your classroom.
- Check to see that the room has chalk and erasers.
- Get your phone extension, office number, office hours, and email address for your syllabus.
- Get the locations and hours of service for all the Tutoring Labs on campus.
- Get the textbook and all supplementary materials you might need.
- Check on the availability of the Xerox room and mail room after office hours.
- Check with the office about getting a roster of your students.
- Find out where you'll get your paycheck!

### **4. The First Day of Class**

- Call roll and try to match names with faces.
- Hand out, read, and answer questions about the syllabus.
- Explain how you intend to handle the class.
- Discuss the nuts and bolts of homework, exams, and grading.
- Offer an overview of the course.
- If time, begin to lecture. The first day is too important to throw away.

### **5. Running a Calculus Lab**

One typical format for a recitation is this: The TA begins by asking if there are any questions on the assigned homework problems. A student then asks to see 'section 6.2, number 17'. Other students chime in with "I couldn't do number 29." And "how about number 5?" Others ask for some problems from section 6.3. Another student asked if you could do an old problem, from a previous homework assignment. Another may try and ask questions from the next set of homework problems, so she can see how they are worked.

You, as the person in charge, can field questions in the order in which they occur. Or, you can ask for a list of all the problems at the start of class, collect them on the board, and do them in the order in which they occur in the textbook. You might first work the current problems, in the order in which they occur, and then, time permitting, work the problem from the previous assignment. Finally, if there is time, you can suggest a hint to get students' started on the next set of problems. In this way, you emphasize current material of most interest to the majority of the class, while at the same time showing that you are willing to deal with 'old and new business' as time permits. And, by giving just a hint as to how to do the new

problem, you allow the entire class the opportunity to find out more about that particular problem.

It should be clear by now that, since recitation consists mainly of discussing homework problems, you should show up on time and be prepared to discuss past and current assigned problems. A shocking number of TAs and instructors try to ‘wing it’, often with unpleasant consequences for themselves, their students, and for their end of term evaluations. Therefore, an important rule is this:

*A TA assigned as a Calculus I lab instructor must show up on time prepared to discuss past and current homework problems. No excuses are acceptable; this is part of your job.*

You need to meet with the Calculus course professor as soon as possible to learn the details of your assignment!

## **6. The Syllabus**

You will want to individualize your syllabus, with the number, section, and name of the course. Also, write the days, times, and room number on the syllabus, such as MWF 10-10:50, 3.02.04 HSS. Include your name, office hours, phone number, and email address as well as the date of the final exam, the Drop Date, grading criteria (including class participation), make-up test policies, and attendance policies. If not already included on the department syllabus, include the name of the required textbook, including edition numbers. If you know when your exams will be scheduled, put that in your syllabus as well. (See Appendix A)

Remember that you will be teaching first-time Freshmen and they will need guidance on everything. Go over the syllabus in class, giving basic information. Answer questions such as: Will you collect and grade homework each class? How will homework be graded? Should I bring the textbook to class? How about attendance? Is the final exam cumulative?

Regardless of what you put into your syllabus, you need to remember that this document takes on the character of a contract with the students. You are telling them what you plan to do, and in turn what you expect from them. Thus, it behooves you to take care with what you write. NEVER allow the students to vote to change the syllabus.

Courses often require unplanned or unexpected changes in midstream. Most of these are acceptable to students. On occasion, however, some adjustments you understand to be minimal or benign will elicit an unexpected outburst “Why are you canceling exam three? I was counting on that one to boost my grade!” No one can avoid all difficulties or see all the possible problems about to appear. However, you need to think carefully about your syllabus before you start the semester. Getting input from colleagues is another strategy that will make for a more coordinated course. The

outcome of such planning will then be better for you and for the students, and will make your course less work in the long run.

## **7. Lesson Plans**

The lesson plan is your approach to conveying the material to the class. Before the class, start by finding out what today's topic is supposed to be. Peruse the text to see how the author approaches the topic. This helps you preserve the same notation as the text, among other things. Prepare an intuitive explanation as to why the topic is important, useful, and relevant. Next, prepare a few homework-style problems of increasing difficulty to illustrate to the students the main concepts of the section of the text. Allot remaining class time to answering questions or doing old homework problems.

One of the most often heard complaints by TAs and the textbook is: "I don't like the way the author does this section. Why should I encourage bad mathematics?" Fair enough. But, even though we may not have had a choice in the textbook, the students will be using it for explanations, exercises, and homework. We can offer alternative explanations or better methods, but if the students are getting their homework from the text, they would rather not have to keep 'translating' from our language and symbolism to the author's. Thus, we owe it to the students at least to say: "Here's how the author approaches ... An easier [more common, better, more useful, more sophisticated] way is as follows. On the homework and tests, use whichever method you like best. I don't care as long as you get the right answer and can explain your method."

Although you must use your allotted class time for introducing new topics, leave time for student questions. Otherwise, how do you know whether students are absorbing the material you are teaching to them? The best way to find out if students understand is give them a chance to tell you what is still bothering them.

## **8. Grading and Assessment**

Grading is best treated as a learning situation for all concerned. The instructor learns how well he or she has taught the material and designed the exam, while the student learns how well he or she has absorbed the course information and studied for the exam. Most students feel as if they start the class with a 100 average and instructors must justify the subtraction of each point. Of course, faculty has the opposite view.

You'll be grading homework, quizzes, and exams. There are several options for you to use for grading.

Credit or no credit basis. If the work is completely attempted and the student appears to have grasped the main concepts, then credit is given. If it appears that the student jotted the solutions down 10 minutes before class with no work shown, then

you should consider no credit. You just need to tell the students your policy on credit and no credit.

Another common technique for grading homework or quizzes is to assign each problem a fixed number of points. Some graders use 0, 1, and 2. “1” is for OK, but not completely correct. “2” is for fully correct. Some graders prefer more options and use 0 – 5.

“0” – didn’t even try the problem

“1” – tried, but not even close

“2” and “3” various levels of somewhat valid but mistaken attempts

“4” – correct answer but with some minor errors

“5” – correct answer with details written out

Comment for “5”: Only the correct answer with details merits full credit. There will be students who will ask you to reconsider grades because they “got the right answer” without showing any supporting evidence as to how they did so. You can use this as an opportunity to instill good habits into the students. Explain to the student that he has lost one point on this particular problem for not describing the way he went about solving the problems.

**Or:** Have students keep a homework notebook that is turned in when they take tests. Grade three or four problems while they are testing and have them pick up their notebooks when they turn in their test.

**Or:** Give a homework quiz, with the problems taken directly from the homework. Don’t write the problem on the board, just state: “Work problem 13 on page 67 from your homework assignment.” Allow them to use their homework papers.

**Or:** Give a certain number of quizzes that don’t count. Students must turn in the quiz so you can see who understands the material but let each student decide if he or she wants it counted as a quiz grade by writing “Count” or “Don’t Count” on the paper. Remind them that a certain number of quizzes MUST count.

**Or:** Give a one-minute quiz at the end of class. Have students describe the main concept they learned in class that day or what gave them trouble. Instructors quickly perceive what material they need to reinforce and students listen to lectures more attentively and critically. You can discuss these the next class.

Homework should be used to instill good habits. For the student, this means writing correct, clear, and complete solutions. For the instructor, look to make uniform, defensible grading with good comments. You might also consider grading homework harder than tests. Most instructors do the opposite. You can use the homework to show students what you expect on tests.

There are at least two ways to reduce the amount of commenting you need to do on homework and quizzes. One way is to simply put an “X” mark at the place where the first error occurs and then, after all the papers have been graded, write up solution sets of the most commonly misunderstood problems for all the students. A second way is to start or finish the next class with a couple of homework problems lots of students seemed to have difficulty with.

Exam grading is similar, although in this case careful preparation before grading can save time. Uniformity with fairness and speed are keys to grading exams. If you are grading 100 papers, carefully doing the problems yourself before grading any papers is central to uniformity. After you work out all the problems, make up a credit scheme before you grade any papers. Or, the first time you come across an error, assign it a value, write down that value and use it for all other occurrences of that error. The point is that you need to find a grading scheme that you are comfortable with, one you can defend. As you grade the first few papers, occasionally review your scheme to see if it still seems to fit what the students actually knew and did.

Uniformity and fairness are related to one another. You may be a harder grader than your officemate, but if you can defend your methodology to other TAs and students, they will generally accept it.

Other pointers for grading:

- Grade problems backwards. If the answer is correct, you can scan the earlier parts to see if the details are there.
- If a few students have a unique, strange way of solving a problem (and this happens!), put these papers aside for a while until you can let your subconscious work on where the unique solutions may have come from.
- You don't have to write long comments on the exams. Have students re-work the problems (perhaps for extra credit) so that they have an accurate, completely worked out exam to study for the final.
- Make an answer sheet to hand out to students. Go over the answer sheet on the day you hand back the exams. If students feel that you did not grade their papers correctly, take the papers back to your office and re-grade. Don't argue about grades in class or immediately after class. Ask the students to come to your office and discuss the problems. NEVER change the grade at the end of a class, when surrounded by other students who are all in a hurry. Carefully review the paper in your office.

When grading the exams, grade problem #1 for each student, then go on to problem #2, etc. In this way, you will ensure more uniformity. Also, try to grade each individual problem in one sitting; take a break only after you have seen all the unique ways that students have to solve problems. Uniformity makes for more defensible scores, so that students consider the grading (and the grader) fair.

## 9. Exams

Some suggestions for test construction:

Make about 40%-50% do-able by anyone who stayed awake long enough to watch you do some examples on the board; maybe 30%-40% more challenging problems but similar to examples and homework problems that make students think; and 10%-20% more challenging questions or set of questions.

Be guided by this: “What is the essence of the material I have been teaching for the last several weeks, and how can I let students demonstrate whether they have absorbed that essence?”

General Rule (for Developmental Math classes): If it takes you about 15 minutes (or less) to work the test, then your students should be able to work it in 60-75 minutes.

What about curving test grades? You might consider making students work for their extra credit. Have them re-work the problems they missed, in complete detail, to be re-graded for extra credit to be added to their test grade. The corrected test then becomes a good study guide for their final exam.

What about partial credit? If you want to give partial credit, then develop a policy that students must sign and agree to respect. Have them sign a paper at the beginning of the semester indicating either (1) they do not want partial credit; or (2) they want partial credit and will accept any points given to them for an incorrect answer.

## 10. Be Professional

The first time you step in front of a class, you cross an invisible line. You don't see it, but the students do. You are no longer one of them. That's why they look at you quizzically when you ask: What should we do today? They also don't appreciate your little jokes about exam grades. And, when you write a cute comment on their homework about how this work is more like elementary school or junior high, they see the comment as acerbic and will complain.

A professional is one who speaks for and has responsibilities to the discipline he or she is teaching and to the other practitioners of that discipline. There is more to being a professional than speaking courteously to an officemate, as important as that is. You have responsibilities to students:

- Don't discuss their individual grades in public, and don't compare the students to each other. It is one thing to say: “You're a very strong student”, but quite another to say: “I thought that Joe would be better than you, but ...”
- We have all met people who are very likable, but favoring them with hints or extra help that others don't get is not fair.

- Socializing can lead to difficulties, even in the most benign situation. The best advice is: Don't fraternize with students.
- Be careful the kinds of jokes and comments you make in front of students.

You also have responsibilities to the faculty and to other TAs:

- Do not insult or belittle others' teaching styles. When discussing methodology with colleagues (or professors!), say "Here's how I teach word problems" rather than "Students tell me they don't like the way you do that topic." This is clearly more tactful and better received. Be careful when discussing faculty and other TAs. Word gets around.
- If you have an honest disagreement with a colleague, keep it on a professional level. "I really think that problem might be too hard for these students" said directly to Professor Gokhman is a professional comment. You may be right, you may be wrong, but at least you have had your say. The alternative of going to your officemate to gripe is not a professional alternative.
- Pitting your class against other classes is not professional. The fact that your class average was 74% while Joe's was 67% does not make you a better instructor. You may have overlooked the fact that your class met at 11 am while Joe's was right after lunch. Then there was also the fact that you asked two students with low averages to switch out of your section after the first exam.

Most importantly, you have responsibilities to mathematics itself. Prepare the material. You should be ready to make an honest reply to "Why do we need to know this?"

## 11. How to Lose Your Job

- Act as if you don't have a 'real' job. You're just a TA.
- Don't show up for class. Several times. Without an excuse.
- Be insolent to faculty (especially your advisor), the students, and the staff.
- Call in sick every Monday and leave early to go out of town every Thursday afternoon.
- Never plan what you are going to do in class; this stuff is too easy, anyway.
- Make clear that research is everything. You are going to solve a great problem and join one of the top departments where you only teach one graduate course a semester.
- Skip office hours. Your officemate or other TAs can take care of any students who come by.
- Make it clear from the start that you don't intend to do anything extra. In fact, you won't do anything that you don't get a salary for. And, you only do that under duress.
- End all your classes early. Are students asking too many questions? Simple to solve – just belittle the students who ask them and that will stop the questions so you can leave early.

- Leave for vacations, breaks, and end of term early. South Padre awaits!
- Offer ‘grades for favors’ – only jokingly, of course.
- Show up at undergraduate student parties. Drink a lot. Leave at 2 am with one of your students.
- Make the TA supervisor mad.

## 12. Troublesome Behavior in the Classroom

Troublesome behavior may be classified as anything that disturbs you or your students during the class period. A few examples of troublesome behavior include: using cell phones, challenges to your authority demanding special treatment (“I paid for this class...”), eating or drinking in the classroom, excessive tardiness/leaving the lecture early, making offensive remarks, missing deadlines, prolonged chattering, reading newspapers or emails during class, sleeping, talking out of turn, dominating discussions, shuffling backpacks and notebooks, and overt inattentiveness.

You are encouraged to include a statement in your course syllabus related to classroom behavior, such as:

*Students are expected to assist in maintaining a classroom environment that is conducive to learning. To assure all students have the opportunity to gain from time spent in class, students are prohibited from engaging in any form of distraction. Inappropriate behavior in the classroom shall result, minimally, in a request to leave class.*

Suggested procedures for troublesome behavior:

1<sup>st</sup> incident: Address the behavior immediately and follow up after class or with a scheduled meeting as soon as possible. Document everything. Include the TA Supervisor in the meeting, if you wish, but notify the supervisor of everything.

2<sup>nd</sup> incident: Refer the student immediately to the Department Chair.

## 13. Summary of Effective Teaching

While most of the following will appear ‘obvious’, you should consider these ideas as essential to becoming an effective teacher:

- ...study the materials carefully and understand the objectives for each class meeting. No matter how much we think we know about a course, we cannot enter a classroom without careful preparation and expect to teach a good and effective lesson.
- ...enter into the program and into each day’s teaching with both enthusiasm and a positive expectation. Motivation requires enthusiasm and without

enthusiasm we appear bored and uninteresting. Your students are going to reflect directly the enthusiasm and interest you bring to each class meeting.

- ...discuss your teaching, grading, and any problems with your colleagues and faculty members. Feel free to draw on the experiences of your TA supervisor, fellow TAs, other faculty, and the Department Chair. Teaching the course is a group effort and reflects upon us as a department, so use all the resources within the department.
- ...teaching at this level is important to UTSA and the Mathematics Department. While these students may not come to us as the best prepared, they are our responsibility this semester and we are attempting to prepare them to succeed in subsequent mathematics courses and leave with a better appreciation and understanding of mathematics.

The following are some suggestions that are the products of experience and many mistakes:

### **Preparation for class**

- Practice talking your way through the material. Listen to yourself or work with a fellow TA. Check your vocabulary, your organization, your “ah’s and um’s”, etc.
- Work the assigned homework before class.
- Ask for help when you need it. We’ve all been there.

### **Classroom**

- Be careful using ‘always’ and ‘never’ in mathematical statements. These can come back to haunt you.
- If asked a question for which you do not know the answer, say “Let me think about this and I’ll tell you the next time.” Then find the answer and TELL THEM THE NEXT TIME.
- Do not waste time working non-assigned problems. Tell the student that you will help her/him in your office hours.
- Always organize your board work. Write out important work.
- Remain calm. If a student is disruptive, ask if he/she has a question. If the student is a chronic disturber, tell him/her to see you in your office and there explain the disturbance must stop or he/she will have to be removed from the class.
- Do not try to teach while others are talking. Explain that they are wasting valuable time (yours and theirs).
- Be professional. Treat your students as adults and expect good work.
- Attitude makes a big difference. “Convince” your students that they can succeed and are successful. Be enthusiastic and show that you care about their learning.
- Keep on schedule.
- Do not try to impress your students with what you know. Impress them with being a good teacher.

- Do not get off the subject. (Don't get led off either.)
- Begin and end classes on time. If students are failing, 'short classes' are a great excuse.

### **Office Hours**

- Encourage students to organize their work before they come. It will make you more efficient and effective.
- Do not work homework problems for the student who has not done something on the problem. Leading questions are far more helpful.

### **Questions for the student who is failing:**

- Do you attend regularly?
- Do you seek help during office hours or at the math lab?
- Do you re-work (not re-read) the class notes before attempting the homework?
- Do you read the text and try the example problems?
- Do you study at least 1 to 1.5 hours outside of class for every hour of class?
- Do you have an outside job? If so, how many hours are you working and what kind of schedule do you have?

**Regardless of the responses to the above questions, you must be sympathetic and supportive. While much of what the student is experiencing is self-inflicted, your job is to responsibly counsel and help the student.**

## **14. Characteristics of Outstanding Teachers**

- Is sensitive and attuned to the students' learning styles; picks up cues from the students.
- Can intuitively understand 'when' and even 'what' the students don't understand; can even anticipate their misunderstandings.
- Has a natural ability to explain things really well and can adapt explanations to various audiences and student levels.
- Helps students see the 'whole' picture of the subject he or she is teaching.
- Relates new material to something the student already understands.

## **15. FAQ's**

- Where do I get supplies/copies/text, etc? *The Department office.*
- Where do I find old exams, syllabi, sample finals, etc? *From veteran TAs, just ask them.*
- Do I make up my grading scale and weights for the course? *Yes, but the final must be at least 40% of the grade and must be cumulative.*
- Do I keep attendance? *Yes. Since students are required to attend your class, you need to keep track of those students who miss more than two weeks worth of classes.*

- Are my exams supposed to be scantron? *Not necessarily. You can make them free response, but the final will be multiple choice and will be common across all sections of the course.*
- How do I assign final grades? *You go online to ASAP.*
- What do I do if I suspect academic dishonesty? *Write down all the particulars of the incident and notify the TA supervisor immediately. **DO NOT ACCUSE THE STUDENT OF CHEATING BEFORE FOLLOWING UNIVERSITY PROTOCOL.***
- If I'm totally confused, where do I go for help???? *See the TA Supervisor.*

**16. Good luck and have a great semester!**