

## Syllabus for Math 500, Teaching Assistant Training, Fall 2019

**Course:** The course meets Thursdays, 1 – 2 PM, in APM B402A. There may be some optional sessions on Tuesdays, 11 AM – noon, in APM 5402. The course counts for 2 units, with S/U grading. First class meeting will be September 26. No meeting on November 28 (Thanksgiving holiday). Passing the class requires that you miss no more than one of the class sessions, and complete all the homework assignments. Contact an instructor in advance or as soon as possible if circumstances beyond your control force you to miss a class meeting. Students *must* pass this course in order to serve as Math Department TAs during the 2019-20 academic year. The course covers the duties and responsibilities of a mathematics TA at UCSD, campus resources that can assist you, appropriate interaction with faculty and students, and research-based teaching methods and strategies. In addition to making you a more successful TA, the skills you learn will help you in future teaching as well as conference presentations and posters.

**Instructors:** Jeffrey Rabin (Math Department TA Training Coordinator), Eric Lybrand (Senior TA), Jacqueline Warren (Senior TA), Daniel Kroes (Junior TA), Samir Canning (Junior TA). We will not have scheduled office hours for this class, but do not hesitate to contact us.

**Other Campus TA Training:** The Teaching and Learning Commons has workshops throughout the quarter, especially during the first few weeks. Information is on their website.

**Teaching Observations:** During the Fall quarter, you will have the opportunity to observe each other teaching discussion sections, and to observe experienced TAs doing the same. Your own section will also be observed at least once by one of the course instructors who will then provide written feedback. This is an opportunity to fine-tune those aspects of your teaching that are working well, and to correct any more serious problems. We expect that you will be comfortable in section and teaching effectively by the end of the quarter, but in exceptional cases observations may continue into the Winter. Uncorrected serious teaching problems may have consequences for your continued employment as a TA.

**Academic Integrity:** You should familiarize yourself with the *UCSD Policy on Integrity of Scholarship*. This applies both to your own behavior and to the students in your sections. Regarding your own conduct in Math 500, doing homework for another student or signing an attendance card for another student will be treated as violations of the Academic Integrity policy.

### Tentative Schedule

Week 0 (Sept. 26): Getting started. Expected TA duties. Respectful interaction with faculty, graders, and students. Instructor's authority and yours. What to do in section. Good blackboard technique. Sources of help.

Week 1 (Oct. 3): More first steps as a TA. Ways to welcome and engage students in section. What you can expect UCSD students to know. Helpful campus resources. Homework: write a teaching statement.

Week 2 (Oct. 10): Speaker from Academic Integrity Office. Academic integrity policy. How students cheat. Preventing and detecting academic dishonesty. What to do if you observe violations. How violations are investigated. Responsibilities of TAs and instructors.

Week 3 (Oct. 17): Preparation for midterm exams. Consistent grading, effective feedback. Partial credit. Practice grading using rubrics. Conducting review sessions. Teaching observations by Senior/Junior TAs begin. Homework: read an article on teaching mathematics.

Week 4 (Oct. 24): Language issues in teaching mathematics. Mathematical vocabulary and reasoning. Helping English-language learners. Handling difficult situations involving students. Homework: begin observations of more experienced TAs.

Week 5 (Oct. 31): Teaching problem-solving. Active learning techniques, how people learn. Presentation by Professor Todd Kemp (or another faculty member) Homework: create and distribute a mid-quarter survey for your section(s).

Week 6 (Nov. 7): Panel presentation and Q&A with experienced TAs. Homework: begin observations of other 1<sup>st</sup> year TAs.

Week 7 (Nov. 12/14): Useful ideas and findings from mathematics education research (Prof. Rabin, or Prof. Harel).

Week 8 (Nov. 21): Debrief on TA observations. Role-playing: helping students during office hour and in section.

Week 10 (Dec. 5): Review sessions, final exams, end-of-quarter duties. Homework: revise teaching statement.

### **Resources for Teaching Mathematics**

M. Carlson and C. Rasmussen, *Making the Connection: Research and Teaching in Undergraduate Mathematics Education*, Mathematical Association of America 2008.

S. Krantz, *How to Teach Mathematics*, 3<sup>rd</sup> Edition, American Mathematical Society 2015.

A. Schoenfeld, *Mathematical Problem Solving*, Academic Press 1985.

G. Polya, *How to Solve It*, Princeton University Press, 1945 (originally – still a classic!)

K. Bain, *What the Best College Teachers Do*, Harvard University Press 2004.

*A Handbook for Mathematics Teaching Assistants*, Mathematical Association of America, online.

*Instructional Practices Guide*, Mathematical Association of America, online.

B.S. Edwards and M.B. Ward, Surprises from Mathematics Education Research: Student (Mis)Use of Mathematical Definitions, *American Mathematical Monthly*, May 2004 (pp. 411-424).

D. Tall and S. Vinner, Concept Image and Concept Definition in Mathematics with Particular Reference to Limits and Continuity, *Educational Studies in Mathematics* 12 (1981) 151-169.