**Statistics 303hf**

**The Art and Practice of Teaching Statistics**

**Department of Statistics and Derek Bok Center for Teaching and Learning**

**Harvard University**



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**Class Meetings:**

Meetings will generally be every other non-holiday Tuesday, 10 am – 12 pm; see the schedule for specific dates.

This will be a year-long course, usually meeting in Science Center 706. Some of the practice teaching sessions will be held at the Derek Bok Center, Science Center 316/317.

**Course Related Web Pages:**

For general course information and updates, please refer to the course web page:

<http://courses.fas.harvard.edu/3545>

For teaching-related questions and other useful resources, please refer to:

<http://bokcenter.harvard.edu/>

**Other Teaching Staff:**

**Kevin Rader**, (on leave) Preceptor, Department of Statistics ([krader@fas.harvard.edu](mailto:krader@fas.harvard.edu))

**Virginia Maurer**, Associate Director, Derek Bok Center (vmaurer@fas.harvard.edu)

**Goals and Prerequisites:**

The ultimate goal of this course is to help you to become a good teacher and an effective speaker. There are several by-products of being a good teacher. If you master the art of teaching, and in particular, teaching Statistics, not only will you become successful in your teaching career, but you will also become an excellent presenter, acquiring effective communication skills and easing any stage fright you might have. Good communication skills are essential in your professional life and indeed in your personal life, no matter what career goals you have set.

As some of you have come from different educational and cultural backgrounds, we understand that you may consider teaching in an American classroom a challenge. We are here to supply the necessary tools and techniques to help you meet this challenge. Equipped with what you learn in this course, you will look forward to your first class as a Teaching Fellow.

Over the course, you will be given numerous opportunities to practice teaching. Through suggestions and comments from the teaching staff and peer reviews, you will gradually learn what works well in the classroom (and what doesn’t). If you consciously make an effort to follow these guidelines in the classroom, we are confident that you will be appreciated and recognized as an excellent TF by your students.

All first year Statistics Ph.D. students are required to take this course. Others who are interested in taking the course may talk to the instructors. There is a cap on the number of students allowed to take this course for credit. Therefore, the instructors reserve the right to decide individual enrollments on a case-by-case basis.

**Texts and References:**

For presentation material: ***“Introduction to the Practice of Statistics,”*** by Moore and McCabe, an excellent source of teaching material and problem sets. Those who take the course for credit will be able to borrow a copy of the book from the department.

For interesting examples and activities: “***Teaching Statistics: A Bag of Tricks,”*** by Andrew Gelman and Deborah Nolan, an excellent reference for a Statistics TF. This book will be on reserve in the library.

**Course Requirements:**

• Active participation in every class meeting is expected and encouraged.

• You will complete small writing assignments before and/or after some of the sessions; see the schedule for details.

• You will give three practice presentations during the Practice Teaching sessions in the fall and one in the spring; following this, you will teach a day of an actual section.

• You will be required to visit the session of an experienced TF early in the fall semester and report your observations.

* You will be required to hold one hour of office hours for an intro level class in the fall.
* You will meet individually with Dave occasionally to view and discuss your teaching videos.
* You will be responsible for taking notes during one class each semester.

**Your Comments and Suggestion:**

We always welcome your comments or suggestions. Please feel free to tell us your opinions about any aspect of the course. Email is the most effective way to get in touch with us. You can also write us an anonymous note and drop it in our mailboxes, located on the 7th floor of the Science Center.

FALL

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| Date & Location | Topics | Assignments  (to be completed **prior** to class) |
| 9/4/12  SC 706 | **Introduction & Practice Teaching I**  The teaching staff will present an overview of the course. All participants will be asked to share their past teaching experiences and general ideas about teaching, and will mingle over Chinese catering. Also, each student will give a short presentation, designed to help diagnose potential problems each student may face in teaching. | *Email Dave a brief paragraph describing your concerns about teaching and what you want from the course.* |
| 9/18/12  SC 706 | **The Undergraduate Perspective**  Dave will lead a video-based workshop, viewing and discussing clips of Stat 100 sections. Undergraduates will also view the clips and present their reactions to the teaching. | *View clips in advance (on course website) and email Dave your observations in a format that will be specified.* |
| 10/2/12  SC 706 | **Section Observation Discussion**  Each student will describe examples of good teaching and missed opportunities, reporting back on their experiences from visiting sections. | *Attend a section of a 100-level statistics class, and discuss with the TF afterwards. Take notes on what you think worked well and what did not, and be prepared to discuss your observations.* |
| 10/16/12  SC 316/317 | **Practice Teaching II**  Each student will present for 10 minutes, followed by 10-minute class discussion. | *Choose a topic from the options given and prepare a 10-minute presentation.* |
| 10/30/12  SC 316/317 | **Practice Teaching III**  Each student will present for 10 minutes, followed by 10-minute class discussion. Undergraduates and/or facilitators will attend this session. | *View practice teaching II video with Dave. Prepare a 10-minute presentation on a different topic, building on the feedback and discussions from the previous practice teaching.* |
| 11/13/12  SC 706 | **Office Hours & Effective Teaching Strategies and Dealing With Hard Questions**  We will discuss strategies for conducting office hours and for effectively interpreting and answering students’ impromptu questions, and will practice these strategies with mock office hours. Additionally, Xiao-Li will discuss effective teaching strategies, including layering and multiple explanations. We will practice strategies for handling possibly difficult questions. | *Help at the 104 study network for one hour, and write a paragraph describing the experience.*  *By Sunday, email Dave with a statistics question you are not sure how to answer well or would like answered.* |
| 11/27/12  SC 706 | **Mid-year evaluation**  Review of the semester with discussion and tape-viewing. Discuss lessons learned and any new concerns or suggestions. | *Write a paragraph summarizing what you have taken away from this semester of the course. Also, revisit your paragraph submitted prior to the first class… how have your concerns about teaching changed (or not changed) since then?* |

SPRING

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| Date & Location | Topics | Assignments  (to be completed prior to class) |
| 1/29/13  SC 706 | **How Learning Works**  Virginia and Dave will lead a session discussing seven ways in which students learn. | *Read assigned chapter from How Learning Works and write a half page summary.* |
| 2/12/13  SC 316/317 | **Practice Teaching IV**  In parallel sessions, each student will teach for 30 minutes, including time spent answering questions. | *Prepare a 30-minute presentation. Try to anticipate questions that may be asked.* |
| 2/26/13  SC 706 | **Feedback and Discussion of Practice Teaching IV / Keeping Students Engaged**  As preparation for teaching a real section, we will discuss your experience with Practice Teaching IV and techniques for keeping your students actively involved and “alive” during section. | *Think of a course you’ve taken that has kept you very engaged during class. Write a short paragraph on what the professor/TF did to make you so engaged.* |
| Possible dates:  2/27/13  2/28/13  3/1/13 | **Practice Teaching V: Teach an actual section!**  Immediately after teaching, write what you think were the strengths and weaknesses of your section. |  |
| 3/12/13  SC 706 | **Feedback and Discussion of Practice Teaching V**  Experiences from your section teaching will be shared, and we will view and discuss video highlights for each student. Students will be asked to self-evaluate their performance. | *Be ready to discuss your experience teaching a real section.* |
| 3/26/13  SC 706 | **Grading & Academic Honesty**  Dave will lead a discussion on grading in general. This will be followed by some specific examples of grading exams and projects, and a discussion of academic honesty issues that occasionally arise. | *Write a brief paragraph on what you consider ideal versus problematic grading, from the grader’s as well as the student’s perspective. Also grade two given projects.* |
| 4/9/13  SC 706 | **The Whole TF Experience with Past, Current, and Future TFs**  Experienced TFs will share tidbits of advice on different aspects of being a TF, and will answer any questions you may have. | *Email Dave with one question you still have about being a TF.* |
| 4/23/13  SC 706 | **Grand Finale**  Over Chinese catering, the course closes with a grand finale, and students articulate what they learned from the course. Don’t be surprised if there is a surprise guest speaker! | *Write a paragraph about the most important things you learned in Stat 303, and any concerns you still have.* |