

Spring 2007
ChBE 8803: Teaching Practicum for Graduate Students

Course coordinator: Prof. Victor Breedveld
Lectures: Prof. Farrokh Mistree (ME 7757)

Background:

The School of Chemical & Biomolecular Engineering has approved a new course for graduate students on the PhD track, ChBE 8803 "Teaching Practicum".

This course aims to provide a structured teaching mentoring program for graduate students with a strong interest in an academic career. It will consist of two major parts:

- 1) series of weekly lectures (joint with ME 7757, see attached syllabus)
- 2) practical teaching experience in one of the undergraduate ChBE core courses under the guidance of a ChBE faculty mentor.

Starting in Spring 2007, the course will be taught annually; due to the limited availability of faculty mentors and suitable courses, the course enrollment will be limited to 4-5 students per year.

Course Outline:

The outline of the course will be as follows:

- Students participate in the lectures of ME/ChBE 7757 taught by Prof. Mistree; the practicum aspects will be coordinated by the ChBE course coordinator (Prof. Breedveld).
- Participating students are matched by the ChBE course coordinator and Undergraduate Coordinator with faculty teaching mentors of undergraduate ChBE core courses (2100, 2110, 2120, 3110, 3200, 3210, 3225, 4300, 4400) during the Fall semester that precedes the teaching practicum; in order to increase the impact of the teaching practicum, the faculty instructor cannot be the thesis (co-)advisor of the student.
- The faculty-student pairings develop a teaching plan which involves:
 - Schedule of lectures to be prepared and taught by the graduate student; target is 15-20% of the total lectures distributed across the semester.
 - Schedule of homework assignments to be coordinated by the graduate student, incl. the office hours that correspond to these assignments.
 - Exam (last midterm or final exam) for which the graduate student will design and grade a question.

The schedule of lectures and homework sets must be listed on the course syllabus, so that undergraduate students know in advance which lectures will be taught by the graduate student. The teaching plan must be certified by the course coordinator and the graduate student's thesis advisor.

- During the semester, the graduate students will attend at least 67% of the lectures taught by the faculty mentor to observe the class dynamics and to ensure that his/her own lectures will be a seamless part of the course. Additionally, the

faculty instructor will be present at all lectures taught by the graduate student in order to provide useful feedback.

- Faculty/student pairs are expected to informally discuss classroom developments at least once per week.
- A midterm survey (to be provided by the ChBE course coordinator) will be conducted to request input from undergraduate students on the teaching style of the graduate student.
- Halfway through the semester, one of the lectures taught by the graduate student will be videotaped and analyzed with the help of a third party to provide additional feedback about teaching style and effectiveness.
- In addition to the classroom activities, a series of 6 lunch meetings will be organized for the participating ChBE graduate students and faculty mentors. The objective of these meetings is to stimulate peer-to-peer discussion about the experiences during the teaching practicum and to initiate discussion of specific topics.
- The teaching practicum relieves participating graduate students from their TA duties for the academic year during which the teaching practicum is taken.

Requirements:

The proposed course will be offered one time per year (Spring semester) and is open to graduate students who:

- are enrolled in the PhD program of the School of Chemical & Biomolecular Engineering
- have successfully defended their PhD proposal
- have fulfilled at least two TA assignments
- are at least two semesters away from graduation at the start of the semester in which the course is offered
- are approved by the Graduate Coordinator and course coordinator in response to an application letter in which their desire for participation is expressed and motivated
- have formal permission from their thesis advisor

Please contact Prof. Breedveld (ES&T 1222; victor.breedveld@chbe.gatech.edu) if you are interested in the course and discuss the topic with your faculty advisor.

APPENDIX: Syllabus ME7757 Spring 2006

GEORGIA INSTITUTE OF TECHNOLOGY
THE GEORGE W. WOODRUFF SCHOOL OF MECHANICAL ENGINEERING
HP/ME/NRE 7757: Teaching Practicum
SPRING 2006
Information

CATALOG DESCRIPTION: Supervised teaching for doctoral students. Teaching techniques, course and curriculum design, student evaluation methods and criteria. Students prepare and present lectures.

GRADING SCHEME – SATISFACTORY / UNSATISFACTORY

Attendance Requirement ... maximum of three absences from the lecture portion of this course.
Practicum Requirement ... you give three lectures / demonstrations with your Teaching Mentor present.
Note: It is your responsibility to ensure that you get feedback from your faculty mentor / someone who is NOT a student in the course you are teaching AND feedback from students who are taking the course (you may use the forms included in this handout).

Required Assignments

Assignment 0 ... Setting your goals and learning objectives. **Due January 17, 2006. Noon.**

Assignment 1 ... Querying your teaching mentor ... Why did you decide to become a professor?
What are the responsibilities of a professor? What do I wish to learn from this experience?

What will I be doing to achieve what I wish to learn? **Due.. January 20, 2006.**

Midterm Progress ... Assignment 2. **Target date .. February 17, 2006.**

Show and Tell ... Assignment 3. **Due .. March 8, 2006**

End of Semester Learning Essay ... Survey and learning. **Target date ... May 3, 2006**

NOTE ON THE PRACTICUM (PLEASE SEE PAGE 18.)

Teaching mentors have the freedom to organize the practicum aspect of this course. Hence, there is no one model that is endorsed – all are valuable in their own way to the extent that they enhance your learning experience. Students have undertaken the following activities in consultation with their mentor:

- Prepared and given three or more lectures
- Set and graded one or more homework sets
- Set and graded one or more exam questions
- Attended a significant number (if not all) of the lectures
- Counsel students wrt the course material
- Created demonstrations that could be used in class

To ensure that you invest your time productively it is important for you to establish your learning objectives soon. It is critical that you, in consultation, with your Teaching mentor work out what activities you will be undertaking as part of the practicum portion of this course. I have asked you to clearly identify these in Assignment 1.

MATERIAL

Wankat, P.C., Oreovicz, F.S., “Teaching Engineering”, McGraw-Hill, Inc. 1993.

You can download the book from the following website

https://engineering.purdue.edu/ChE/News_and_Events/Publications/teaching_engineering/index.html

TEACHING PRACTICUM EXPECTATION - STUDENT / PROFESSOR

Each of you is working with a professor in offering a course. Discuss what you wish to learn from the Teaching Practicum with your professor. Aside: You are expected to offer at least three lectures

during the semester with the professor present and it is expected that the professor will help you prepare these lectures and also offer you constructive feedback. At the end of the semester I will be asking you to complete an end-of-semester survey.

SYLLABUS

Based on the suggestions of people who have taken this course before you I have added two new items, namely, a lecture on career planning (March 30, 2006) and a panel discussion (April 6, 2006). I am also going to solicit a midterm report and a commentary vis a vis your learning from the practicum portion at the end of the semester from your teaching mentors.

1. January 12, 2006. Course Overview.
2. January 19, 2006. Teaching Tips - *Wayne Whiteman*
See text. Chapter 1 - Teaching Engineering. Chapter 3 - Designing your First Class. Chapter 6 - Lectures.
3. January 26, 2006. Goal setting and learning objectives. The Observe Reflect and Articulate Construct, See text. Chapter 15 - Learning Theories.
4. February 2, 2006. Dealing with large classes. *Tom Sanders*.
5. February 9, 2006. Town Hall Meeting - Questions and Answers.
6. February 16, 2006. Setting and grading exams.
See text. Chapter 11 - Testing, Homework and Grading
7. February 23, 2006. How to succeed in academia - *Ward Winer*
See text. Chapter 17. Professional Concerns
8. March 2, 2006. Preparing your resume for academia and industry.
See text. Appendix A - Obtaining an Academic Position.
9. **March 9, 2006. Experiences of a novice instructor ... sharing experiences ... donuts in the park ☺**
10. March 16, 2006. How to be successful in industry and academia... different drivers underlying success in academia and industry - *Richard Salant*
11. March 30, 2006. Career planning: Taking charge of your own career.
See text. Chapter 17 - Professional Concerns
12. April 6, 2006. The impact of globalization on your careers - *Jon Colton*.
13. April 13, 2006. Writing proposals and getting funded ... academia and industry ...
14. April 20, 2006. Break-out groups ... mentoring, motivating and inspiring: selecting people to work with, motivating people, dealing with difficult situations and ethics ... break-out groups ...
See text. Chapter 12 - Student Cheating, Discipline and Ethics. Chapter 10 - One-to-One Teaching and Advising
15. April 27, 2006. Summary and End of Semester Submission.

CONTACT INFORMATION

I want to help you succeed. I love to talk ... please feel to stop by, call, email, etc.

Farrokh Mistree.

MARC 262.

404-894-8412 (W). 404-325-3300 (H) (up to midnight). 404-894-8412 (Work)

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