



Biology 260

Teaching Biology: Pedagogy and Practice

Fall 2011

Instructors:

Dr. Mitch McVey Office: Dana 024A Office Hours: M 3:30-4:30 PM Th 12-1 PM E-mail: mitch.mcvey@tufts.edu	Dr. Kelly McLaughlin Office: Dana 017A Office Hours: T 12-1 PM W 10:30-11:30 AM E-mail: kelly.mclaughlin@tufts.edu	Dr. Michelle Gaudette Office: Barnum 211 Office Hours: W 1:30-2:30 PM F 2:30-3:30 PM E-mail: michelle.gaudette@tufts.edu
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When and Where:

Thursdays, 5:45-8:30 PM, Barnum 200

(Bio260-02, Bio13 lab prep)

Fridays, 10:30-11:45 AM, Barnum 113

(Bio260-01, for those who have not previously taken Bio260)

Course Description:

What defines 'effective' teaching in a biology class? What characteristics do 'good' teachers share? Why do some students prefer taking multiple choice exams while others would rather work in a group to complete a semester-long project? These questions represent a sampling of the questions that we will address in Bio 260.

The overall goal of this course is to provide you with a collection of "tools" that you can use while teaching biology in both lecture and laboratory settings. To do this, we will discuss a variety of topics, including course design and development, learning styles, diversity in the classroom, mentoring, conflict resolution, effective ways to lead discussions, active learning techniques, assessment (both formative and summative), and course evaluations.

In this class, you will: 1) learn about pedagogy, 2) be mentored by a team of faculty members and by your peers, and 3) gain practical teaching experience. Throughout the semester, you will also reflect upon your own teaching and learning experiences and apply metacognitive skills to improve your effectiveness as an educator.

Course objectives:

By the end of this course, you should be able to:

1. Orchestrate effective class discussions that engage students in critical thinking.
2. Identify various learning styles and adapt your teaching/mentoring to address as many styles as possible.
3. Create learning goals and write student learning outcomes for a classroom topic/activity.
4. Distinguish between formative and summative assessment and apply each in your teaching.
5. Write effective exam questions and determine what skills they are testing using Bloom's taxonomy.
6. Evaluate student writing fairly and consistently using rubrics.
7. Describe pedagogical innovations that promote active learning, including cooperative learning groups, inquiry-based exercises, and student-centered activities.
8. Assess techniques that can be used to deal with conflict in the classroom.
9. Identify diversity issues in the classroom and implement teaching strategies to address these.
10. Create an effective teaching evaluation and utilize it to enhance your teaching.
11. Use metacognitive skills to enhance your teaching effectiveness.

BIO260 Course Topics

Week #	Date & Day	Topic	Assignment due	Bio13 lab and lecture activities
Week 1	Sept.8 (Th)	Introduction to Bio260-02, Prep for lab week 1		No BIO13L lab
	Sept.9 (F)	Introduction to BIO260-01, Engaging students in class discussions	None	
Week 2	Sept.15 (Th)	Prep for lab week 2, Enzymes 1		Lab 1- Paraphrasing, enzyme background
	Sept.16 (F)	Effective course design: learning goals and outcomes	Reading and short response assignment	
Week 3	Sept.22 (Th)	Prep for lab week 3 Writing workshop		Lab 2 - Enzymes 1
	Sept.23 (F)	Teaching scientific writing and peer review	Reading and peer review assignment	
Week 4	Sept.29 (Th)	Prep for lab week 4, Enzymes lab 2		Lab 3- Writing workshop for lab reports
	Sept.30 (F)	Types of assessment (formative vs. summative), Grading rubrics	Reading and short response assignment	EXAM 1 on Sept. 27
Week 5	Oct.6 (Th)	No prep		Lab 4- Enzymes 2
	Oct.7 (F)	Using Bloom's taxonomy to write exam questions	Reading assignment and Bloom's taxonomy survey	
Week 6	Oct.13 (Th)	Prep for lab week 5, DNA diagnostics		No lab this week
	Oct.14 (F)	Learning styles: how to teach a diverse group of students	Complete learning styles survey	
Week 7	Oct.20 (Th)	Prep for lab week 6, Sex determination case study		Lab 5 – DNA Diagnostics
	Oct.21 (F)	Using hooks to engage students	Create your own hook	EXAM 2 on Oct. 18 Lab report 1 due this week

Week 8	Oct.27 (Th)	Prep for lab week 7, Virtual Genetics		Lab 6 – Sex determination case study
	Oct.28 (F)	Active learning techniques, group dynamics	Preparation for jigsaw activity	
Week 9	Nov.3 (Th)	Brainstorming for the lab practical		Lab 7- Virtual Genetics
	Nov.4 (F)	Dealing with difficult situations in the classroom	Submit by e-mail a difficult classroom situation	
Week 10	Nov.8 (T)	Theories of teaching and learning; metacognition	Reading and short response assignment	No lab this week
	Nov.10 (Th)	Prep for lab week 8, Drosophila genetics		EXAM 3 on Nov. 10
Week 11	Nov.17 (Th)	Prep for lab week 9, transformation and antibiotic resistance		Lab 8 – Drosophila genetics
	Nov.18 (F)	Education research: Using the literature to enhance your teaching	Find and summarize an education research article	
Week 12	THANKSGIVING BREAK			
Week 13	Dec. 1 (Th)	Pizza prep		Lab 9 – Transformation and antibiotic resistance
	Dec.2 (F)	Teaching evaluations and what to do with them	Survey about teaching evaluations	Lab report 2 due this week
Week 14	Dec.8 (Th)	No prep		Lab practical
	Dec.9 (F)	Bio 260 Wrap-Up		EXAM 4 on Dec. 8 FINAL EXAM on 12/15

We will do our best to follow the course syllabus – however, we reserve the right to make modifications as needed during the semester.

NEED ASSISTANCE? A few important resources:

1) **Trunk website** (<http://trunk.tufts.edu>). Go here to view course announcements, lecture slides, reading assignments, the discussion board, and more. You should check the BIO260 site frequently for announcements and helpful suggestions.

2) **Weekly office hours** (times are posted on the BIO260 site). We encourage you to stop by if you have questions or just want to chat.

3) **Classroom observations**. At least once during the semester, one of the Bio260 instructors will observe your lab section. Whenever possible, you will be able to choose which lab(s) you want observed. We will use these observations to initiate a dialogue about successes and challenges that you are encountering in your teaching. During the week following each observation, we will conduct a follow-up discussion with you to talk about what we saw and heard. These observations will serve to promote better dissemination of effective teaching practices between you and your colleagues.

Course Requirements, Policies & Assessments

Grading:	Attendance	25%
	Class participation	25%
	Short homework assignments	40%
	Leading discussion activity	10%

Evaluation for this course will be based on a combination of attendance, class participation, and short homework assignments. **All written assignments are due at the beginning of class (10:30 a.m.) in hardcopy unless otherwise specified.** No late assignments will be accepted. Since substantive contribution to classroom discussions will be a valuable component of this course, you should complete all readings prior to coming to class and be prepared to reflect upon the readings.

As mandated by Tufts policy on academic integrity, plagiarism or any form of academic dishonesty will not be tolerated.

General Course Requirements:

Class Participation/Attendance: In this type of class, participation during class discussions is imperative and therefore, class attendance is required. You should come to class prepared, ask thoughtful questions, and contribute to the class discussions. As a matter of courtesy, if you have to miss a class we kindly request that you please send us an e-mail (a.k.a. “drop-a-note”) to let us know that you will not be joining us. You are allowed to “drop-a-note” once during the semester without a penalty. Remember that if you “drop-a-note”, you are still required to turn-in any assignments that are due that day. After you have used your one “drop-a-note,” each additional unexcused absence will result in 3% deducted from your final grade.

Please be considerate of your professors and fellow classmates – plan to arrive on time. Arrivals after 10:45 a.m. will be counted as a missed class.



Reading Assignments: We will assign reading material in the form of review articles, primary literature and other handouts that will be posted on the course Trunk site for you to download or read online. It is your responsibility to obtain copies of the assigned material and read it prior to class. In addition, copies of various helpful books, including Tools for Teaching, by Barbara Gross Davis, will be available for you to check out from the course instructors.

Short homework assignments: Each week, there will be a short homework assignment designed to help set the stage for a particular class topic. Generally, you will be asked to write a short response to the reading or complete an activity that will prepare you for the class discussions.

Leading Discussion Activity: The best way to become an effective discussion leader is to practice. During the semester, you will be asked to lead a 10 minute discussion on a topic of your choosing related to biology and/or pedagogy. Details about these discussions will be provided on the first day of class.