

Supplemental Material

CBE—Life Sciences Education

Lee

BIOL 301: Teaching of Biology at the College Level

Welcome to Biol 301. The focus of this course is on research-based pedagogical methods. The goal of this course is to help you become an effective teacher. There is no textbook for the course; readings will be from distributed articles via iLearn.

Learning Objectives

- Reflect on and develop views on teaching and learning.
- Try out a variety of strategies with your students and revise these according to your experiences.
- Develop awareness of the intellectual, social, cultural diversity of students and begin thinking about differentiated instruction.
- Discuss your roles and experiences working with students and faculty.
- Use classroom experiences related by other Teaching Assistants to broaden their understanding of science education

Course Expectations and Grading

1. Class Discussion/Participation (50% of final grade)
Everyone is expected to attend and participate in each class. Students will be asked to share their classroom experiences and provide feedback to others regarding classroom management or teaching strategies. Students will be asked to contribute to class discussions regarding the readings and make connections to their experiences in the classroom.
2. Written Teaching Reflections (50% of final grade)
Everyone is expected to write a biweekly reflection on their classroom experiences and readings. Reflection prompts will be provided and students are expected to reflect on how concepts or teaching strategies discussed in the readings are applicable to their classroom. The expected length is 1-2 pages.

Course Schedule

Week / Date	Topic	Reading (to have read by this day)
Week 1 Reading: 4/3	Introduction to Teaching	Feldon, D. et al. (2011). Graduate students' teaching experiences improve their methodological research skills. <i>Science</i> , 333(6045), 1037-1039. Chapter 1, How People Learn – Read Key Findings section (pages 14-21) Concept map activity
Week 2 Reading: 4/10 Reflection: 4/15	Classroom Management	No reading

<p>Week 3 Reading: 4/17</p>	<p>How to Lead a Discussion: Univocal vs. Dialogic Discourse</p>	<p>Knuth, E. and Peressini, D. (2001). Unpacking the nature of discourse in mathematics classrooms. <i>Mathematics Teaching in the Middle School</i>, 6(5), 320-325.</p> <p>Bybee, R.W., Powell, J.C., and Trowbridge, L.W. (2008). Teaching Secondary School Science, 9th Edition, Chapter 17.</p> <p>Assign active learning paper</p>
<p>Week 4 Reading: 4/24 Reflection: 4/29</p>	<p>Introduction to Active Learning</p>	<p>Jigsaw of active learning papers activity</p>
<p>Week 5 Reading: 5/1</p>	<p>Metacognition</p>	<p>Schoenfeld, A. (1987). What's all the fuss about metacognition? In A. Schoenfeld (Ed.) <i>Cognitive Science and Mathematics Education</i> (pages 189-215). Hillsdale, NJ: Lawrence Erlbaum Associates.</p>
<p>Week 6 Reading: 5/8 Reflection: 5/13</p>	<p>Inclusivity in the Classroom</p>	<p>Killpack, T. and Melon, L.C. (2016). Toward inclusive STEM classrooms: what personal role do faculty play? <i>CBE Life Sciences Education</i>, 15(3), es3, 1-9.</p>
<p>Week 7 Reading: 5/15</p>	<p>Present your own active learning activity</p>	<p>No reading</p>
<p>Week 8 Reading: 5/22 Reflection: 5/27</p>	<p>Formative Assessment</p>	<p>Moss, C. and Brookhart, S. (2009). The lay of the land: Essential elements of the formative assessment process. In <i>Advancing formative assessment in every classroom: A guide for instructional leaders</i>. Alexandria, VA: ASCD.</p>
<p>Week 9 Reading: 5/29</p>	<p>Cooperative Learning</p>	<p>Tanner, K., Chatman, L.S., and Allen, D. (2003). Approaches to Cell Biology Teaching: Cooperative Learning in the Science Classroom – Beyond Students Working in Groups. <i>Cell Biology Education</i>, 2(1), 1-5.</p>
<p>Week 10 Reading: 6/5 Reflection: 6/10</p>	<p>Summary of course</p>	<p>Wood, W.B. (2009). Innovations in Teaching Undergraduate Biology and Why We Need Them. <i>Annual Review of Cell and Developmental Biology</i>, 25, 93-112.</p> <p>Concept map activity</p>

Active Learning Activity

1. What do you want your students to learn? What do you want students to be able to do after the activity?

2. Why did you choose this topic for your activity? Why is it worth the time investment during class?

3. What background knowledge do the students already have? How will you know what they know about the topic?

4. Briefly describe your activity, including time frame, supplies, setting, target audience.

5. Why did you choose this type of activity? Why is your type of activity effective in teaching about this topic?

6. How will you assess student learning?