



Learning Assistant Program
UNIVERSITY OF COLORADO DENVER



University of Colorado
Denver

School of Education
& Human Development

Introduction to Science Teaching and Learning

SCED 4050/5050

Fall 2018

Instructor: Robert (Bud) Talbot, PhD

Location: Lawrence Street Center room 648

Time: Fridays 12:30-2:15

Credit Hours: 2

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Office: LSC 727

Office Hours: by appointment

COURSE DESCRIPTION

In this course, we will touch on theoretical issues such as conceptual development, conceptual change, collaborative learning, and students' conceptions of various topics in science, as well as practical issues encountered in facilitating learning, managing the classroom, formative and summative assessment, and differentiating instruction in a collaborative environment. This is a seminar course where students are responsible for weekly readings, in-class discussions, materials development, and reflection papers all based on the Learning Assistant (LA) experience.

REQUIRED MATERIALS

Textbook: There is no required text for this course. Readings or links to web-based readings will be shared in Canvas

Bring a connected device (laptop, tablet, phone- something you can read and compose on) to class each week.

The course will rely heavily on Canvas. In addition, we will communicate using Slack (<http://slack.com>) which is an advanced and flexible messaging system that works on multiple platforms (Windows, Mac, Android, iOS, etc). You will receive an email (at your UCD address) inviting you to join our Slack team

(<https://ucd-la-program.slack.com>). Other than that initial email, THIS WILL BE AN EMAIL FREE COURSE. Expect to engage in discussions about assignments, activities, readings, etc, and to stay in touch frequently throughout the course using Slack. You should communicate with me using Slack direct messages (DMs) instead of via email. It is imperative that we build a community online so we can all stay engaged. Course assignments will be submitted through Canvas using Google docs formats (preferred) or as pdf files.

COURSE ORGANIZATION AND ASSIGNMENTS

This course is a seminar, and its success will depend on the active participation of all members in helping to shape its ultimate content and relevance. Our primary activity will be in-depth discussions of course topics, readings, and your experiences as a Learning Assistant. Requirements include the following:

1. **Class discussion/participation/Journals (30% of course grade)**. Class members are expected to contribute to class discussions and engage in Slack discussions. The purpose of these discussions is to help us as individuals, and as a group, develop meaningful interpretations of the ideas conveyed by the readings and to make connections to the Learning Assistant experience. To help prepare for discussion, I encourage you to talk in your course teams about questions or issues you have about the readings. Additionally, at the end of each class period you are expected to write a paragraph or two to reflect on the discussions that took place that day. You will be given 5-10 minutes at the end of each class period to do this. We will do this in Canvas each week. You are allowed one “free” absence for any reason. Absences beyond that (for reasons other than medical) will negatively impact your final course grade- 3% will be deducted from your final course grade for each absence beyond the first.
2. **Weekly assignments (60% of course grade)**. Most weeks you will have an assignment that you will submit in Canvas. Assignments are due every Friday at 12:30pm starting on Jan 27. You will be expected to complete some assignments individually and others as part of a group. You cannot pass the course if you do not complete your weekly assignments. Assignments will be described in detail in class the week before they are due. Assignments will take one of the following forms:
 - a. *Reflections on being an LA* - Prompts will be provided for you to reflect on different aspects of your teaching and on student learning. For reflections, assessment criteria for students in 5050 are different than those for students in 4050.
 - b. *Product development* - You will develop question sets, worksheets, user manuals, and assessments. Students enrolled in the graduate section of the course (SCED 5050) will lead the implementation of these products.
 - c. *Reflections on product development and implementation* - Prompts will be provided for you to reflect on different aspects of your development and implementation of the products you developed.
 - d. *Short paper on a reading* - Write a reflective paper on the readings for the week that includes the following a summary of the central issue(s) or argument(s) contained in the readings and a discussion of the relationship of the issues/topics and your teaching experiences as a Learning Assistant.
3. Weekly meetings with Lead Faculty to plan each week. You are responsible for meeting with

your Lead Faculty member and the other Learning Assistants in your course team to plan and reflect on instruction and to discuss student achievement. You cannot pass the course if you fail to meet with your lead instructor each week (with allowances for necessary absences).

4. **Short poster presentation (10% of course grade).** On the last day of class your activity development team will present a poster on your work. Details forthcoming.

GRADING

NOTE: In order to receive a course grade as indicated relative to the point distribution, all required activities and projects must be completed.

A	A-	B+	B	B-	C	F
94-100	90-93	87-89	83-86	80-82	75-79	≤ 74

COURSE OUTLINE

List the schedule of topics/requirements in this area

Week	Date	Topics/Assignments Due	Readings
1	8/24	Course introduction, Group work, Reflection	
2	8/31	Questioning Unit: Part I DUE: Assignment 1 - Reflection (First week as an LA) DUE: Bios for website	Elstgeest, J. (2001). The right question at the right time. In <i>Primary Science: Taking the Plunge</i> . Portsmouth, NH, Heinemann. Johnson, D.W., Johnson, R.T., Smith, K.A. (1998), Cooperative learning returns to college; What evidence is there that it works? <i>Change</i> (98)
3	9/7	Questioning Unit: Part II DUE: Assignment 2 - Question set with reasoning	Knuth & Peressini (2001). Unpacking the Nature of Discourse in Mathematics Classrooms. <i>Mathematics Teaching in the Middle School</i> , 6(5) pp. 320-325.
4	9/14	Activity development: Part I DUE: Assignment 3 - Reflection on	N/A

		the development and implementation of your question set	
5	9/21	Activity development: Part II DUE: Topic that you will develop material around DUE: Assignment 4 - Coding and Modifying an activity	Lotan (2003). Group-worthy tasks. <i>Educational Leadership</i> , 60(6)
6	9/28	Activity development: Part III DUE: Assignment 5 - Activity Development Draft	Tutorial from McDermott, Lillian C., and Peter S. Shaffer. <i>Tutorials in introductory physics</i> . Prentice Hall, 1998.
7	10/5	Metacognition: Part I	Tanner, K.D. (2012). <i>Promoting Student Metacognition</i> . <i>CBE Life Science Education</i> 11 (2) 113-120.
8	10/12	Metacognition: Part II	
9	10/19	Assessment: Part I DUE: Assignment 6 - User manual for your developed activity	Moss, C., Brookhart, S., (2009). <i>The Lay of the Land: Essential Elements of the Formative Assessment Process</i> . In <i>Advancing Formative Assessment in Every Classroom: A Guide for Instructional Leaders</i> . Alexandria, VA: ASCD. [available to read online at http://goo.gl/r8JLj] Black, P., & Wiliam, D. (1998). <i>Inside the black box; Raising standards through classroom assessment</i> . Phi Delta Kappan, online publication.
10	10/26	Assessment: Part II	
11	11/2	Learning Theory and Cognitive Science in Mathematics and Science Education DUE: Assignment 7 - Reflection on the development and implementation of your activity	Posner, G.J., Strike, K.A., Hewson, P.W., & Gertzog, W.A. (1982). <i>Accommodation of a scientific conception: Toward a theory of conceptual change</i> . <i>Science Education</i> , 66(2), 211-227.

			Redish, E. (1994), Implications of cognitive studies for teaching physics; <i>American Journal of Physics</i> , (62) 9.
12	11/9	Nature of Science	Lederman, N.G. (1998), The state of science education: Subject matter without context; <i>Electronic Journal of Science</i> , (3) 2 [available online at http://wolfweb.unr.edu/homepage/jcannon/ejse/lederman.html]
13	11/16	Qualities of an Effective Teacher	Stronge, J.H., (2002), <i>Qualities of Effective Teachers</i> . Chapter 2: The Teacher as a person. Washington D.C., ASCD.
	11/23	No class- Thanksgiving Break	
14	11/30	Summarizing your LA Experience and Moving Forward	
15	12/7	DUE: Final poster presentation DUE: Assignment 8 - Reflection on LA experience	

COURSE READINGS

The course readings cited above will be shared with you in Canvas

ACADEMIC HONESTY

Plagiarism is the use of another person's words or ideas without crediting that person. Plagiarism and cheating will not be tolerated and may lead to failure on an assignment, in the class, and dismissal from the University. (Refer to School/College guidelines.)

You are responsible for being attentive to or observant of campus policies about academic honesty and all other aspects of student conduct as stated in the University's Student Conduct Code, located at <http://www.ucdenver.edu/life/services/standards/Documents/UCD%20Code%202008-2009.pdf>

ACCESSIBILITY, DISABILITY, AND COMMUNICATION

The University of Colorado Denver is committed to providing reasonable accommodation and access to

programs and services to persons with disabilities. Students with disabilities who want academic accommodations must register with the Office of Disability Resources and Services (DRS), North Classroom 2514, Phone: [\(303\) 556-3450](tel:3035563450) TTY: [\(303\) 556-4766](tel:3035564766) Fax: [\(303\) 556-4771](tel:3035564771) E-mail DisabilityResources@ucdenver.edu I will be happy to provide approved accommodations, once you provide me with a copy of DRS's letter.

SCHOOL OF EDUCATION AND HUMAN DEVELOPMENT INCOMPLETE POLICY

Incomplete grades (I) are not given to replace low grades. To be eligible for an incomplete grade, students must (1) successfully completed at least 75% of the course requirements, (2) have special circumstances (verification required) that preclude the student from attending classes and/or completing graded assignments, and (3) make arrangements to complete missing assignments with the original instructor before more than one year has elapsed since the end of the semester in which the course was taken.

SEHD Incomplete Process

1. Students must be in close communication with the instructor PRIOR to the end of the semester regarding special circumstances precluding them from successfully completing the remainder of the course. Faculty may assign students an incomplete grade of "I" to signify that special circumstances beyond the student's control prevented the student from completing a small portion of the course (no more than 25%) and that a final grade cannot yet be assigned.
2. IT IS THE STUDENT'S RESPONSIBILITY TO COLLABORATE WITH THE INSTRUCTOR TO COMPLETE AN INCOMPLETE AGREEMENT FORM (found at www.ucdenver.edu/education under Current Students/Current Student Resources) prior to the end of the semester for which the incomplete is given. A copy of the form, signed by both the student and the instructor should be submitted to the SEHD Student Services Center (LSC 701). Both the student and instructor should also keep a copy. The instructor sets the conditions under which the course work can be completed and the time limit for completion. The student is expected to complete the requirements within the established deadline. If the missing assignments are not completed within the allotted time, the "I" converts to an F on the student's transcript. Students making up an incomplete should not re-register for the course.
3. Upon completion of the missing course work, a Change of Record Form is completed by the original instructor to change the "I" to a letter grade. Faculty should work with the Faculty Services Center to complete the Change of Record Form.