

SCIENTIFIC TEACHING (BIOL 4395/5301) – SPRING 2019

Instructor: Jeffrey T. Olimpo, Ph.D.

Office: B226A Biology Building (Tues. & Thurs. 4:00 – 5:00pm)*

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*These are hours when I am **guaranteed** to be in my office. If these times do not work for you, please send me an e-mail, and we can arrange another time to meet. I'm here to help! ☺

AN IMPORTANT NOTE: For several of you, this might be your first foray into the field of science education. As such, you will likely have many questions and thoughts: What is there to know about science education? Will I do well in this course? *But I don't know ANYTHING about science education in the first place!* **No worries!** This course is designed to provide you with an open and relaxed environment in which to begin exploring issues in science education as well as the opportunity to apply that knowledge in a practical sense. **Throughout this journey, it is your willingness to engage in the experience that is of value.**

COURSE DESCRIPTION

Welcome to BIOL 4395/5301! This course is intended to provide you with a theoretical and practical foundation in scientific teaching and education research. Given the broad scope of the course, we will explore topics found in multiple areas of the literature including (but not limited to): assessment, curriculum development, theories of learning, pedagogical approaches, and course reform in laboratory contexts. You will have the opportunity to apply this knowledge through development of a teaching portfolio, an essential compendium in the profession.

COURSE OBJECTIVES

This course is designed to provide students with a broad introduction to the field of science education. Upon completion of the course, students will have:

- Developed an appreciation for the vast array of primary literature available in the field of science education as well as the ability to thoughtfully interpret such research
- Utilized the principle of backward design to create learning objectives, assessments, and curricular materials that are aligned and that are focused on a relevant topic in the domain
- Acquired an understanding of how methodological and pedagogical practices influence the K-16 science classroom, including classroom culture and classroom management
- Expanded their ability to convey knowledge to the professional community both through personal reflections as well as the synthesis of a teaching portfolio

COURSE TEXTBOOK & MATERIALS

1. Course readings can be found on our Blackboard site (under the “Reading Series” link)
 2. Composition notebook (one should be sufficient)
 3. 1” or 2” binder, which will be used to store teaching portfolio materials
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ACADEMIC INTEGRITY

As members of a scholarly community dedicated to healthy intellectual development, students and faculty are expected to share the responsibility of maintaining high standards of honesty and integrity in their academic work. All material for this course must be your work and no one else’s. **Cheating or plagiarism in any form will not be tolerated.** This includes, but is not limited to, copying someone else’s work on an assignment. Please note that all suspected instances of plagiarism or academic dishonesty will be referred to the Dean of Students’ Office, in accordance with UTEP policies and procedures.

The honor code also states that all members of the UTEP community are entrusted with the responsibility to uphold and promote five fundamental values: Honesty, Trust, Respect, Fairness, and Responsibility. These core elements foster an atmosphere, inside and outside of the classroom, which serves as a foundation and guides the UTEP community’s academic, professional, and personal growth. Endorsement of these core elements by students, faculty, staff, administration, and trustees strengthens the integrity and value of our academic climate.

COMMUNICATIONS

When you e-mail me, please include a proper subject, any message you are responding to, the course name and CRN, as well as your name. Please use your UTEP account to ensure the e-mail is not blocked by the university's spam filter. If you e-mail me directly via Blackboard, essential information like the course name and section will automatically be included. I will do my best to respond to your e-mail within 24-48 hours. If you do not get a response in this timeframe, I ask that you please re-send your e-mail. Ensure that you regularly check the e-mail account listed for you in Blackboard, as this is where I will send all communications.

CENTER FOR ACCOMMODATIONS AND SUPPORT SERVICES

Students who wish to request accommodations must be registered with the Center for Accommodations and Support Services (CASS) Office in Room 106 of the Union East Bldg. You may contact them at (915) 747-5148 or cass@utep.edu for more information. Once you are registered with the CASS Office, you will need to please see me as soon as possible so that we may have a private conversation to discuss accommodations, as recommended by CASS.

TECHNICAL SUPPORT

The IT Support Team can assist with Blackboard, password resets, and student e-mail accounts. Hours and other helpful information can be found at <http://www.helpdesk.utep.edu>.

COURSE GRADING & EXPECTATIONS

COURSE GRADING:

- Discussion/Participation 25%
- Reflective Journaling 10%
- Teaching and Mentoring Philosophies 10%
- Teaching Portfolio 25%
- Curriculum Presentation 30%

A = 90 - 100%	D = 60 - 69%
B = 80 - 89%	F = <60%
C = 70 - 79%	

Please note that the "+/-" grading system will not be used in this course as per departmental and university policies.

ATTENDANCE

Your attendance is **required** for all seminar meetings. Class will begin promptly at **5:30pm** and will run no later than 6:50pm. If, for whatever reason, you cannot make it to class on time, please do your best to enter quietly when you do arrive. Please keep in mind that your overall grade in the course will be negatively impacted if you are not in class because you will not be able to participate in our weekly discussions!

SEMINAR CONDUCT

Please make every effort to be courteous to your fellow students and myself. Disruptions will not be tolerated – this means no cell phones on ring mode, no iPods, and no side conversations with neighbors. If it is an emergency and you must make/take a call, please exit the classroom quietly, complete your call, and return quietly once you are finished.

BLACKBOARD

This class makes extensive use of Blackboard® (<https://adminapps.utep.edu/blackboardlearn>). You will use Blackboard to download readings, access assignments, download or print additional course materials, and check your grades. Please note that your login and password are the same as

you would use to access your UTEP e-mail account.

DISCUSSION/PARTICIPATION

This course is designed as a seminar; therefore, your participation is essential to maintaining an engaging and constructive discussion. Please come to class **on time and prepared**, having completed all assigned reading and activities, with questions, comments, and/or opinions to share. Please note that reading assignments/activities for each week can be found under the “Reading Series” link on our Blackboard site.

REFLECTIVE JOURNALING

Reflexivity is an important skill that educators should, arguably, possess. In classroom contexts, reflective practices allow educators to understand what “works” and what does not. In addition, evaluating one’s pedagogical style and beliefs allows one to continuously develop as a professional in the field and to be responsive to dynamism in their classroom. This semester, I will pose several questions or prompts at the start of most (if not all) sessions that are related to scientific teaching and learning, and you will have ~15 min. to generate a free-form response to these items. *There are no right or wrong answers to these prompts!* This exercise is designed both to generate initial discussion as well as to allow you to more deeply explore the real-world connections of content conveyed in the course. I will collect your journals at three times throughout the term to provide feedback: **Tuesday, Feb. 26th; Tuesday, Apr. 2nd; and Thursday, May 2nd**. Notebooks will be due at the beginning of class and will be returned the following session.

TEACHING AND MENTORING PHILOSOPHIES

The teaching philosophy is viewed as a critical component of many application packages for K-12, non-tenure, and tenure-track appointments in academia. Importantly, the teaching philosophy provides a snapshot of *you* as an educator and learner and is often the first impression that a potential employer receives about you as a teacher. More information regarding development of the teaching philosophy will be provided on **Thursday, Feb. 7th**, and you will have multiple opportunities throughout the term to revise your initial draft based on feedback.

In addition to the teaching philosophy, numerous education positions (particularly those with a curriculum development or research focus) now require direct mentorship of students and/or fellow educators. With this in mind, we will devote one workshop session (**Thursday, Apr. 25th**) to the creation of a mentoring philosophy. Both philosophies will be included in the teaching portfolio that you will submit at the end of the semester.

TEACHING PORTFOLIO

As you peruse the seminar schedule below, you will notice that several sessions adopt a workshop-based approach. In essence, these sessions are designed to connect the theoretical

concepts discussed in class to the practical development of several items that will be included in the final product for this course: the teaching portfolio. Specifically, these items are:

Workshop No.	Product(s) Generated
1 (held on 2/7/19)	Teaching Philosophy
2 (held on 2/26/19)	Learning Objectives for Mini-Lesson
3 (held on 4/2/19)	Formative/Summative Assess. for Mini-Lesson
4 (held on 4/11/19)	Curricular Materials for Mini-Lesson I
5 (held on 4/16/19)	Curricular Materials for Mini-Lesson II
6 (held on 4/25/19)	Mentoring Philosophy

I ask that you please bring a laptop/tablet to each workshop session. Additional details regarding each workshop will be provided in class.

CURRICULUM PRESENTATION

In addition to including the curricular materials and assessments you develop within your teaching portfolio, you will be asked to present your mini-lesson to the rest of the class at the end of the term. Each mini-lesson will be created in teams of 4-5 individuals and will focus on a topic of relevance to that team (focus of lesson theme will *not* be specified). Each presentation will be **30 min.** in length, and you should prepare to teach the lesson as if you were actually doing so in the classroom. With your permission, I will videotape each presentation, creating a record of your teaching that will be available for your use in the future. At the conclusion of the lesson, we, as a class, will deconstruct the unit and provide formative feedback. This will allow you to modify the lesson accordingly prior to including the final version in your teaching portfolio. A rubric detailing the assignment and grading scheme will be distributed on **Tuesday, Feb. 26th**.

SEMINAR SCHEDULE

Wk.		Date	Seminar Topics	Assign.
1	T	Jan. 22	Introduction to Scientific Teaching	Surveys
	R	Jan. 24	<i>I, Educator</i> Video Introduction	-
2	T	Jan. 29	Learning Styles and Instruction	RS 1, Video
	R	Jan. 31	What Constitutes "Good" Teaching?	RS 2
3	T	Feb. 5	Epistemics: The Nature of Knowledge	RS 3
	R	Feb. 7	<i>Teaching Philosophy Workshop</i>	
4	T	Feb. 12	Metacognition and Reflexivity	RS 4
	R	Feb. 14	Students' Perceptions of (School) Sci.	RS 5
5	T	Feb. 19	Overview: Toward a Better Curriculum	RS 6
	R	Feb. 21	Teaching for Mastery	-

6	T	Feb. 26	<i>Backward Design Workshop #1</i>	Journal
	R	Feb. 28	Active Learning in the K-16 Classroom	RS 7
7	T	Mar. 5	CUREs and Inquiry-based Laboratories	RS 8
	R	Mar. 7	The “T” in STEM	RS 9
8	T	Mar. 12	Assessment: Purpose and Outcomes	RS 10
	R	Mar. 14	Constructing Diverse Assessments	-
9	T	Mar. 19	== SPRING BREAK ==	-
	R	Mar. 21	== SPRING BREAK ==	-
10	T	Mar. 26	Action Research I	RS 11
	R	Mar. 28	Action Research II (SoTL)	-
11	T	Apr. 2	<i>Backward Design Workshop #2</i>	Journal
	R	Apr. 4	Culturally Responsive Teaching	RS 12
12	T	Apr. 9	Differentiated Instruction	RS 13
	R	Apr. 11	<i>Backward Design Workshop #3</i>	-
13	T	Apr. 16	<i>Backward Design Workshop #4</i>	-
	R	Apr. 18	Strategies for Successful Mentoring	RS 14
14	T	Apr. 23	Informal Science Education (Mentor)	RS 15
	R	Apr. 25	<i>Mentoring Philosophy Workshop</i>	-
15	T	Apr. 30	“Science of the Future” Exercise	-
	R	May 2	Curriculum Presentations	Journal
16	T	May 7	Curriculum Presentations	-
	R	May 9	Curriculum Presentations	Portfolio

* **Please note that the course drop date is Apr. 5th.**

** *Disclaimer: I reserve the right to change the contents of this syllabus due to unforeseen circumstances. Students will be given notice of relevant changes through Blackboard and e-mail.*

WELCOME TO BIOL 4395/5301!!! ☺