

**EDPS 5564/6564: Teaching 3D Science through Environmental & Social Issues: Preparing students for a changing world (3.0 credits)**  
Department of Educational Psychology

**Fall 2024**  
**In-person**  
**Tuesdays 12:25-3:20**  
**SAEC 3147**

Instructor	Lynne Zummo Assistant Professor of Learning Sciences <a href="mailto:Lynne.zummo@utah.edu">Lynne.zummo@utah.edu</a> ( <i>this is the best way to contact me</i> ) Office location: SAEC 3 <sup>rd</sup> floor
Help and Consultation	<b>Office Hours:</b> <ul style="list-style-type: none"> <li>• By appointment (flexible)</li> </ul>
Required Materials	<ul style="list-style-type: none"> <li>• Textbook: Windschitl, M., Thompson, J., &amp; Braaten, M. (2018). Ambitious science teaching. Harvard Education Press.</li> <li>• Canvas link: <a href="https://utah.instructure.com/courses/983096">https://utah.instructure.com/courses/983096</a> <ul style="list-style-type: none"> <li>○ Announcements and syllabus updates (if necessary) available via Canvas</li> <li>○ Except from the required textbook, all readings, assignments, and materials will be provided via Canvas</li> </ul> </li> </ul>
Prerequisites	<ul style="list-style-type: none"> <li>• EDU 5170 is recommended but not required</li> </ul>

**Course Description**

The purpose of this course is to support pre-service secondary teachers in deepening their vision of and capacity for high-quality science teaching by further developing research-based, responsive teaching practices. To achieve this purpose, students will learn to design phenomenon-based science learning experiences built around authentic, local issues related to environmental and social justice. This course will culminate with a final project that consists of a set of several fully developed, sequential lesson plans, a “rehearsal” of a learning activity

associated with one of those lessons, and reflective writing on these tasks. This course is open to all students. Students who are pre-service teachers tend to take it after EDU 5170.

### **Course Objectives**

At the end of the course, you should be able to:

1. Integrate theories of learning, as well as theories of science learning through environmental and social issues, with their own experiences to articulate a clear vision of science teaching;
2. Plan for 3-dimensional, phenomena-based science instruction that supports secondary students' learning of big ideas in science and centers environmental and/or social issues as contexts for science learning;
3. Elicit and analyze students' ideas about science concepts, as well as how those ideas can support developing and scientifically-oriented understandings of complex social and environmental issues;
4. Design instructional tasks that center student sensemaking, attend to all learners, support shifts in thinking towards scientific understanding, and engage secondary students in deep consideration of the complex interplay of values, beliefs, sociopolitical, economic, and scientific factors that influence environmental and social justice issues;
5. Design instructional sequences that align with three-dimensional standards (those that integrate disciplinary core ideas, crosscutting concepts, and scientific practices) and are grounded in environmental and social justice issues;
6. Create mechanisms so secondary science students can demonstrate fairly and equitably what they have learned;
7. Reflect on their developing teaching practice in a way that supports secondary student learning and continued growth as a teacher.

### **Attendance**

This is an in-person class with hands-on, collaborative, and interactive class activities that are critical to your learning and development. Please contact the instructor as soon as possible and plan for make-up activities (and remote work/submissions) if you must miss a class.

Given the nature of this course, attendance is required and adjustments cannot be granted to allow non-attendance. However, if you need to seek an ADA accommodation to request an exception to this attendance policy due to a disability, please contact the Center for Disability and Access (CDA). CDA will work with us to determine what, if any, ADA accommodations are reasonable and appropriate.

In compliance with ADA requirements, some students may need to record course content. Any recordings of course content are for personal use only, should not be shared, and should not be made publicly available. In addition, recordings should be destroyed at the conclusion of the course.

## Evaluation Methods/Grades

Students will earn points for each of the assignments and projects. Final grades will be based on the percentage of total points possible in each category, weighted in the following ways:

Participation in weekly classes	20%
Assignment 1: Elicitation activity	10%
Assignment 2: Overview of final project	10%
Assignments 3 & 4: Lesson plans	20%
Assignment 5: Teaching rehearsal	20%
Final Project	20%

### ***Participation in weekly classes: 20%***

This is a highly interactive class. It is expected that you come to class prepared, having done the readings, and ready to contribute to in-depth discussion. Additionally, much class time is spent engaging in science learning experiences as science students. It is expected that you participate in these activities fully. If you are not meeting these expectations, the instructor will speak with you.

### ***Assignments 1-5: 60%***

These assignments are intended to engage you in the actual work of teaching. Assignments 1-4 will ask you to create a variety of lesson plans for 3-dimensional, phenomenon-based science lessons. Specific grading criteria and assignment details will be provided via Canvas. Assignment 5 will ask you to write a lesson plan and enact that plan within our class, using peers as science learners. Then, you will reflect on this enactment.

### ***Final Project: 20%***

The final project will include a compilation of three, sequential, well-developed lesson plans intended to be used with your students in your secondary classroom. They will be based on the work that you did in Assignments 1-5. Additionally, the final project will ask for a written reflection on your growth as a science teacher. Specific criteria and a rubric will be provided via Canvas.

## Course Grades

Letter grades will be assigned according to the following schedule:

Percent of Total Points	Letter Grade
93 – 100%	A
90 – 92%	A-
87 – 89%	B+
83 – 86%	B
80 – 82%	B-
77 – 79%	C+
73 – 76%	C
70 – 72%	C-

67 – 69%	D+
63 – 66%	D
60 – 62%	D-
Below 60%	E

### Coursework Expectations

The University of Utah ([Policy 6-100](#)) expects that you will spend an average of three “clock hours” of work per credit hour, broken down into one hour of class work and two hours of work outside class for *each credit*.

For a three-credit class, this expectation means 3 hours of in-class time plus 6 hours of work outside of class per week. It is expected that your weekly time demands for this course will fluctuate around this **nine-hour average**. Some weeks will demand much less time, some weeks will demand a bit more (particularly when project deadlines loom). Please make an appointment with your instructor if you are experiencing a heavier work load on a consistent basis and need assistance in finding manageable processes.

### Email Correspondence

You are welcome to email me with questions or comments about class. I will answer your emails in a timely manner and I also expect that students also will respond to my emails in a timely fashion. I strive to respond to emails within 24 hours, but no later than 48 hours Monday through Friday and by Tuesday following a weekend/ holiday email. Please do not be shy about resending your email or calling me if you do not receive a response in this time frame. On the flip side, please also be patient if I cannot respond to you within a very short time frame.

### Student Technology Support

The University of Utah seeks to ensure that all students have access to the technology that they need to succeed in classes, research, and scholarship.

The College of Education’s Office of Technology Services and Support (OTSS) offers laptops, multimedia resources (e.g., microphones), and other technology equipment (e.g., adaptors) for checkout to students in the college. See the [OTSS website](#) for available equipment and checkout instructions.

Marriott Library also has a wide range of technology equipment (cables, tablets, cameras, game controllers, etc.) available for student checkout ([see online list](#)). Consult the [Student Checkout Equipment FAQ online](#) for policies and procedures.

If you are experiencing challenges in off-campus online access that makes it difficult to complete your coursework, Marriott Library has mobile hotspots available for checkout to students for 7 days. You also may want to check out access to free public wifi spots from [Xfinity](#) and [Utopia Fiber](#).

### Online Communications & the Student Code

Discussion threads, e-mails, and chat rooms are all considered to be equivalent to classrooms, and student behavior within all instructional contexts (in-person and digital)

shall conform to the [University of Utah Student Code](#). Off-color language or photos are never appropriate. Abusive language is not acceptable and will be dealt with according to the Student Code. Students are expected to adhere to standards of behavior outlined in the Student Code.

Course emails and other online course communications are part of the classroom and, as such, are University property and subject to the Student Code. Privacy regarding these communications between correspondents must not be assumed.

## Course Schedule

Please note: AST indicates Ambitious Science Teaching

Week	Driving Questions	Assignments Due	
		Readings	#
1 Aug. 20	Why practice ambitious science teaching?	<ul style="list-style-type: none"> <li>AST Chapter 1</li> </ul>	
2 Aug. 27	How can I use environmental justice issues as phenomena to support learning of Big Ideas in science?	<ul style="list-style-type: none"> <li>AST Chapter 2</li> <li>Lee &amp; Grapin (2022)</li> </ul>	
3 Sept. 3	How can I support productive classroom discussion about environmental justice phenomena?	<ul style="list-style-type: none"> <li>Morales-Doyle (2017)</li> <li>AST Chapters 3-4</li> </ul>	
4 Sept. 10	What science concepts are embedded in social and environmental justice phenomena?	<ul style="list-style-type: none"> <li>Bradford et al. (2023)</li> <li>AST Chapter 5</li> </ul>	
5 Sept. 17	How can we support productive student thinking about "future" phenomena?	<ul style="list-style-type: none"> <li>AST Chapter 6</li> <li>Ke et al. (2020)</li> </ul>	
6 Sept. 24	How can we introduce new science ideas to support ongoing changes in students' thinking?	<ul style="list-style-type: none"> <li>AST Chapter 8</li> </ul>	#1
7 Oct. 1	How can I use local, place-based resources to support student sensemaking?	<ul style="list-style-type: none"> <li>Gruenewald (2003)</li> </ul>	#2
<b>Fall Break</b>			
8 Oct. 15	How can I design learning experiences that align with 3-dimensional standards?	<ul style="list-style-type: none"> <li>Duncan &amp; Cavera (2015)</li> <li>NRC (2012), p. 1-4 &amp; 23-34</li> </ul>	
9 Oct. 22	How do I assess 3-dimensional student learning?	<ul style="list-style-type: none"> <li>Kang (2014)</li> </ul>	#3
10 Oct. 29	How do I assess student learning in an issues-oriented unit?	<ul style="list-style-type: none"> <li>Kang (2022)</li> </ul>	
11 Nov. 5	How do I assess student learning in an issues-oriented unit?	TBD	#4
12 Nov. 12	How can I support students in finding high-quality information to support their sensemaking?	TBD	
13 Nov. 19	How can I support engagement and buy-in with ambitious science teaching?	<ul style="list-style-type: none"> <li>Schmidt et al. (2017)</li> <li>Larkin (2020); Chapter 15</li> </ul>	
14 Nov. 21	How can I support multilingual students in science learning?	<ul style="list-style-type: none"> <li>Infante &amp; Licona (2018)</li> <li>Román (2018)</li> <li>Suarez (2020)</li> </ul>	
15 Dec. 3	What's the purpose of science education?	<ul style="list-style-type: none"> <li>Feinstein (2011)</li> <li>AST Chapter 14</li> </ul>	
Final due December 10 <sup>th</sup>			

*Note: This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas under Announcements and on the home page.*

## Additional Resources, Policies/Rules, Statements, and Procedures

**Academic Misconduct and Student Code:** It is expected that students adhere to University of Utah policies regarding academic honesty, including but not limited to refraining from cheating, plagiarizing, misrepresenting one's work, and/or inappropriately collaborating. This includes the use of generative artificial intelligence (AI) tools without citation, documentation, or authorization. Students are expected to adhere to the prescribed professional and ethical standards of the profession/discipline for which they are preparing. Any student who engages in academic dishonesty or who violates the professional and ethical standards for their profession/discipline may be subject to academic sanctions as per the University of Utah's Student Code:

<https://regulations.utah.edu/academics/6-410.php> Please note: The University of Utah Student Code articulates the rights and responsibilities of students at the University of Utah. You are responsible for reading and following the [Student Code](#).

**The Americans with Disabilities Act:** The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the [Center for Disability Services](#), Student Services Building, Room 65 (basement level)—this is a temporary office while CDS moves into a permanent location in the Student Services Building in Fall 2024. Please visit the CDS website online for its current location: <https://disability.utah.edu/>

CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services. In compliance with ADA requirements, some students may need to record course content. Any recordings of course content are for personal use only, should not be shared, and should not be made publicly available. In addition, recordings should be destroyed at the conclusion of the course.

**Addressing Sexual Misconduct:** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the [Office of Equal Opportunity and Affirmative Action](#), 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the [Center for Student Wellness](#), 426 SSB, 801-581-7776. To report to the police, contact the [Department of Public Safety](#), 801-585-2677(COPS).

**Lauren's Promise:** Lauren's Promise is a vow that anyone – faculty, staff, students, parents, and community members – can take to indicate to others that they represent a safe haven for sharing incidents of sexual assault, domestic violence, or stalking. Anyone who makes Lauren's Promise vows to: 1) listen to and believe those individuals who are being threatened or experiencing sexual assault, dating violence or stalking; 2) represent



a safe haven for sharing incidents of sexual assault, domestic violence, or stalking; and 3) change campus culture that responds poorly to dating violence and stalking. By making Lauren's Promise, individuals are helping to change campus cultures that respond poorly to dating violence and stalking throughout the nation.

**College of Education – Educational Dispositions Policy:** The College of Education at the University of Utah, in coordination with the Urban Institute for Teacher Education (UITE), expects all candidates for licensure to exhibit behaviors consistent with an education professional. The Utah State Board of Education (as well as national standards for teaching) provide a list of behaviors—called “educational dispositions”—that are critical for working in the education profession. It is your responsibility to familiarize yourself with the [CoE Educational Dispositions Policy](#) and to conduct yourself in accordance with these educational dispositions.

**College of Education - Fitness to Teach Policy:** The College of Education at the University of Utah, in coordination with the Urban Institute for Teacher Education (UITE), offers a nationally accredited curriculum designed to prepare individuals for the teaching profession. However, satisfying the curriculum, field-based, and testing requirements alone does not ensure recommendation to the state of Utah for a teaching license. Prospective licensure candidates must also demonstrate professional dispositions for teaching in accordance with program, university, state, and national requirements for professional licensure. Dispositions for teaching are defined as the behavioral and social abilities expected of an educational professional. The College of Education maintains a Fitness to Teach Policy that outlines the process for reporting student actions that violate standards for education professionals. For students who will seek licensure in education, it is your responsibility to familiarize yourself with [CoE Fitness to Teach Policy](#).

**Drop/Withdrawal Policies:** Students may drop a course within the first two weeks of a given semester without any penalties. Students may officially withdraw (W) from a class or all classes after the drop deadline through the midpoint of a course. A “W” grade is recorded on the transcript and appropriate tuition/fees are assessed. The grade “W” is not used in calculating the student’s GPA. For deadlines to withdraw from full-term, first, and second session classes, see the U's [Academic Calendar](#).

**Support for Students:** Your success at the University of Utah is important to all of us here! If you feel like you need extra support in academics, overcoming personal difficulties, or finding community, the U is here for you. Please refer to the [Student Support Services page](#) for the U for updated information.

*Student Basic Needs:* Success at The University of Utah includes learning about and using available resources. The [Basic Needs Collective](#) (BNC) is a coordinated resource referral hub. They educate about and connect students to campus and community resources to help them meet their basic needs. As a central location for resource referrals related to food, housing, health insurance, managing

finances, legal services, mental health, etc., any student experiencing difficulty with basic needs is encouraged to contact them. Drop into their office located in the Union basement or schedule with them online for an in-person or virtual visit through their webpage: <https://basicneeds.utah.edu/index.php>.

**University Safety Statement:** The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit [safeu.utah.edu](https://safeu.utah.edu). IF YOU ARE IN DANGER, DIAL 911.

**Wellness:** Your personal health and wellness are essential to your success as a student. Personal concerns like stress, anxiety, relationship difficulties, depression, or cross-cultural differences can interfere with a student's ability to succeed and thrive in this course and at the University of Utah. Please feel welcome to reach out to your instructor or TAs to handle issues regarding your coursework. For helpful resources to manage your personal wellness and counseling options, contact:

Center for Student Wellness: 801-581-7776, [wellness.utah.edu](https://wellness.utah.edu)  
2100 Eccles Student Life Center, 1836 Student Life Way, Salt Lake City, UT  
84112