Teaching Science in Elementary School
In Person BED 4311 (CRN 24253) Spring 2023 Syllabus

Instructor & Contact Information:
Justice Toshiba Walker, PhD
Primary: Blackboard Course Messages
Secondary: jtwalker@utep.edu

Primary Teaching Assistant
Alex Acquah, MBA
Primary: Blackboard Course Messages
Secondary: acquah@miners.utep.edu

Secondary Teaching Assistant
Christopher Rivera, undergrad.
Primary: Blackboard Course Messages
Secondary: carivera7@miners.utep.edu

Meeting Time:
Monday | 8:30-11:20 am MT

Duration:
January 22nd – April 29th, 2024

Location HYBRID:
Primary: In Person
Education Building Room 402
Secondary: (only when notified in writing) LIVE ONLINE via ZOOM
Meeting ID: 874 1160 2769
Passcode: bioMaker2
Tertiary (only when notified in writing): Asynchronous

Office Hours: Office hours are available online using the course ZOOM link on Mondays from 7:20 to 8:20am and 1:00 to 2:00pm, and by appointment, using this link to schedule. Email to alert me you are in the waiting room. Questions are welcomed and encouraged. Email any time.

Course Website: We will frequently communicate during our LIVE in-persona and (when notified in writing by me) online class sessions, and also through the course website which can be accessed using Blackboard. The function of the course website is primarily for discussion, collaboration on weekly readings, for sharing information or activities that you find interesting and relevant, and for submitting assignments. It is intended to function as a supplemental asynchronous structure to support LIVE in person and (when applicable) online engagement.

Course Description:
This course addresses teaching and learning in elementary (pre secondary) science classrooms. The topics are selected to reflect current and relevant areas in science education practice. Accordingly, they address issues that impact students, teachers and schools in diverse contexts. The course is premised on several organizing themes in education, including:

21st Century Learning: topics investigated under this theme include: Inquiry, Problem, and Design-based learning, information technologies, educational technologies, current STEM fields of research, citizenship science, and ethical decision-making.
Skills: topics investigated under this theme include literacy, questioning, visualizations, direct instruction strategies, and teaching SPED and gifted students.

Teaching Science in Diverse Schools: topics investigated under this theme include sociocultural issues in STEM, culturally relevant pedagogies, English language learning, and demographic parity.

Specific Course Objectives:
Ultimately, the goal of this course is to equip you with the knowledge, skills and literacies needed to design successful learning experiences for pre-secondary students. The course also places special emphasis on developing mastery along the following strands: (i) relevant science content expertise, (ii) diverse perspectives of student learning and knowledge building, (iii) designing meaningful and appropriately rigorous learning experiences, (iv) leveraging effective tools to assess student learning.

As such, at the conclusion of the course, you should be able to:

Demonstrate mastery of those domains, standards and competencies identified in the Texas Education Agency’s (TEA) Texas Examination of Educators Standards (TExES) and necessary for successful completion of the Texas Educator Certification Examination Program.

Identify and describe the goal of science education in a modern democratic society—and addressing such key ideas as: why learn science; what counts as science; and what does it mean to practice science?

Engage with an arc of pedagogical paradigms that span from developmentally appropriate instructional practices in science education.

Address specific resource, cultural, and intellectual teaching challenges within science education in urban contexts.

Demonstrate skills in setting science instructional goals and objectives, curriculum planning and design, implementing differentiated instructional techniques, leveraging instructional technology, and delivering learning experiences all in learner-centric ways that are consistent with your science teaching philosophy and institutional objectives.

Design and foster a science learning community that is socially, culturally, and intellectually inclusive.

To evaluate these outcomes, I will use the following assessment procedures: Formative evaluation of in person and online engagement, discussions, and written reflections as well as summative assessment of lesson plan designs and in-class presentations.
Course Structure:
This is an LIVE in person course. We will use Zoom when required by UTEP and/or when arranged ahead by the course instructor through written notification. UTEP Blackboard, and several other online resources to support both synchronous LIVE and asynchronous engagement. Classes will be arranged as weekly modules—that is, each week is “packaged” as a single module so that all the materials, lecture notes, submission areas, discussion posts are in one area for a given week. It is expected that students will participate in all activities.

Required Texts:


Optional Resources:


Technology Requirement:
Course content is delivered in person (and via Zoom when you are notified in writing), and the Internet using the Blackboard learning management system. Ensure your UTEP email account is working and that you have access to the Web and a stable web browser. Google Chrome and Mozilla Firefox are the best browsers for Blackboard; other browsers may cause complications. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

You will need to have access to a computer/laptop. You should download or update the following software: Zoom, Microsoft Office, Adobe Acrobat Reader, Windows Media Player, QuickTime, and Java. Check that your computer hardware and software are up-to-date and able to access all parts of the course.
If you do not have word-processing software, you can download Word and other Microsoft Office programs (including Excel, PowerPoint, Outlook and more) for free via UTEP’s Microsoft Office Portal. Click the following link for more information about Microsoft Office 365 and follow the instructions.

**IMPORTANT:** If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP Help Desk as they are trained specifically in assisting with technological needs of students. You may reach the UTEP Technology Support Help Desk at 915-747-HELP (4357). Please do not contact me for this type of assistance. The Help Desk is much better equipped than I am to assist you!

**Note:** For students with laptop computer access, visit this link to apply to check out a device with UTEP technology support: [https://semesterlaptop.questionpro.com/](https://semesterlaptop.questionpro.com/).

Course Communication (How we will stay in contact with each other): For asynchronous portions of the course, we will stay in touch using the following communication channels:

**Office Hours:** We will likely not be able to meet on campus, but I will still have office hours for your questions and comments about the course. You can schedule a meeting with me using this link: [https://calendly.com/justicewalker](https://calendly.com/justicewalker).

**Email:** Blackboard Course Messaging is the best way to contact your course instructors (your TA and I). We will make every attempt to respond to your message within 24-48 hours of receipt. When messaging us, be sure to clearly state your question.

**Discussion Board:** If you have a question that you believe other students may also have, please post it in the Help Board of the discussion boards inside of Blackboard. Please respond to other students’ questions if you have a helpful response.

**Announcements:** Check the Blackboard announcements frequently for any updates, deadlines, or other important messages.
### Course Assignments and Weighting:

<table>
<thead>
<tr>
<th>Assignment Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participation (weekly):</strong> Class attendance and participation is required and will</td>
<td>15%</td>
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<tr>
<td>be assessed as a completion score (i.e., attendance/participation/completion will</td>
<td></td>
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<tr>
<td>earn full credit, absence/non-participation will earn none). PLEASE NOTE: MORE THAN</td>
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<tr>
<td>TWO ABSENCES IN THIS COURSE WILL RESULT IN NO MORE THAN 5% CREDIT IN THIS ASSIGNMENT CATEGORY.</td>
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<tr>
<td><strong>Discussion Board Engagement and Professionalism(weekly):</strong> Class members are</td>
<td>10%</td>
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<tr>
<td>expected to— on a weekly basis—author at least ONE response to discussion board</td>
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<tr>
<td>prompts on Blackboard. Writing prompts will consist of material from readings,</td>
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<tr>
<td>module content, professional self reflections, etc. It is critical that discussion</td>
<td></td>
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<tr>
<td>content be related to course content. Course members are also required to respond to</td>
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<tr>
<td>at least TWO entries from a classmate. A rubric is available on Blackboard. Please</td>
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<tr>
<td>note: this amounts to THREE Blackboard discussion posts each week.</td>
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<tr>
<td><strong>Demonstration and Discussion Board Leader (twice):</strong> In groups of three, you will</td>
<td>20%</td>
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<tr>
<td>lead TWO activities/demonstrations/discussions of topics addressed in weekly</td>
<td></td>
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<tr>
<td>readings and/or instructional slides. You may SIGN UP HERE.</td>
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<tr>
<td>For this activity, you should: (1) lead discussion on the prior week (if you are</td>
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<tr>
<td>presenting on 2/6, you should lead discussion on 1/30), (2) synthesize and</td>
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<tr>
<td>summarize key ideas developed in the discussion board and incorporate them in your</td>
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<tr>
<td>presentation, (3) introduce an activity or demonstration that incorporate key ideas</td>
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<tr>
<td>from the discussion board and/or ideas developed in class, and related to active</td>
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<tr>
<td>learning. Presentations should take between 20 and 30 minutes to deliver.</td>
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<tr>
<td><strong>Written Reflections (300-500 words each):</strong> You will write three reflections.</td>
<td>15%</td>
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<tr>
<td>The first (weight: 2%) will be based on your teaching philosophy at the start of</td>
<td></td>
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<tr>
<td>this course.</td>
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<tr>
<td>The second (weight: 10%: 8% for implementation and 2% for written reflection) will</td>
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<tr>
<td>be based on your implementation of a short 60 minute activity (in groups of four</td>
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<td>total drawn from peers in our course) with a local partner (these will take place</td>
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<tr>
<td>on Wednesdays from 6-7pm (you should arrive at 5:30pm). You can SIGN UP HERE in</td>
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<tr>
<td>groups of NO MORE THAN four. PLEASE NOTE: MISSED IMPLEMENTATIONS WILL RESULT IN A</td>
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<tr>
<td>ZERO SCORE FOR THE IMPLEMENTATION ASPECT OF REFLECTION TWO.</td>
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<tr>
<td>I have coordinated five opportunities throughout the course for you to participate</td>
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<tr>
<td>in TWO steps, including: (1) meeting with the site team for planning and (2)</td>
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<tr>
<td>implementation. Planning meetings will take place at 10am (and 10:30am on the</td>
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<tr>
<td>second 3/25 session). Implementations will take place at 5:30-7pm at the local site</td>
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<tr>
<td>(2201 E. San Antonio Ave).</td>
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<tr>
<td>Planning and implementation dates are arranged by group according to the following</td>
<td></td>
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<tr>
<td>schedule:</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>Planning Date (meeting with site team)</th>
<th>Implementation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2/5</td>
<td>2/14</td>
</tr>
<tr>
<td>2</td>
<td>2/12</td>
<td>2/28</td>
</tr>
<tr>
<td>3</td>
<td>3/18</td>
<td>3/27</td>
</tr>
<tr>
<td>4</td>
<td>3/25</td>
<td>4/10</td>
</tr>
<tr>
<td>5</td>
<td>3/25</td>
<td>4/24</td>
</tr>
</tbody>
</table>

After the implementation, you should write a reflection about your experiences and views about teaching practice in relation to ideas or topics discussed in this course. **Please Note:** This is an augmented assignment that fulfills the course and teacher credentialing field experience requirement. The goal of field-based experience for this methods course is to give students first-hand experience implementing and reviewing learning theories/practices.
**The Third** (weight: 2%) reflection will be based on your teaching philosophies and learning at the end of the course.

For each reflection, you may draw on your prior experiences, course readings, and/or other sources. These reflections are meant to help you synthesize course content in relation to your experiences and practice. Therefore, it is critical that reflection content be related to course content.

**Lesson Planning:** At three points in the course, you will be asked to produce a one-day lesson plan that leverages a distinct active learning paradigm discussed in class (e.g., inquiry, problem, and/or design-based). The lesson plan should use the 5E or 7E learning model and template provided. Example lessons are available on Blackboard. The lesson plan should be used to deliver a content area listed in the TExES Science Domains (or applicable chapter in Texas Essential Knowledge and Skills for Science).

In addition to the unit plans and accompanying resources, you should also prepare a 400-500 word descriptive summary of the lesson, learning goals, and resource instructions. A scoring rubric for this assignment is available on Blackboard.

**Final Assignment:** The final exam is composed of a group assignment that entails building a detailed 5-day lesson plan. In groups of 2-3, you and your group will put together a 5 day lesson plan (using the 5E or 7E learning model) and accompanying teaching resources. You can sign up to find a group using this [sign up sheet](#). The lesson should distinctly leverage one of the active learning paradigms discussed in class (e.g., inquiry, problem, and/or design-based). The lesson plan should use the 5E or 7E learning model and template provided. The lesson plan should be used to deliver a content area listed in the TExES Science Domains (e.g., appropriate chapter in Texas Essential Knowledge and Skills for Science).

In addition to the plans and accompanying resources, your group should also prepare a 500-word descriptive summary of the unit, learning goals, and resource instructions. A scoring rubric for this assignment is available on Blackboard.

<table>
<thead>
<tr>
<th><strong>Lesson Planning</strong></th>
<th>25%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Final Assignment</strong></td>
<td>15%</td>
</tr>
</tbody>
</table>
**Grading Scheme:**

<table>
<thead>
<tr>
<th>Letter grade</th>
<th>Range of percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (Excellent)</td>
<td>100-90%</td>
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<tr>
<td>B (Above Average)</td>
<td>89-80%</td>
</tr>
<tr>
<td>C (Average)</td>
<td>79-70%</td>
</tr>
<tr>
<td>D (Below Average)</td>
<td>69-60%</td>
</tr>
<tr>
<td>F (Failing)</td>
<td>&lt; 60%</td>
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</tbody>
</table>

**Assignment Evaluation Rubric:**
The following criteria will be used to evaluate course activities (e.g., demonstration/discussion leader, reflections, and lesson plans).

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-9</td>
<td>Logical reasoning that is <strong>clearly articulated</strong> and <strong>entirely based</strong> on ideas consistent with those presented in course content. When appropriate: Topics aligned <strong>exactly</strong> with TEA Approved Educator Standards and Texas Essential Knowledge and Skills for Science.</td>
</tr>
<tr>
<td>8.9-8</td>
<td>Logical reasoning that is <strong>clearly articulated</strong> and <strong>mostly based</strong> on ideas consistent with those presented in course content. When appropriate: Topics <strong>exactly</strong> aligned with TEA Approved Educator Standards and Texas Essential Knowledge and Skills for Science.</td>
</tr>
<tr>
<td>7.9-7</td>
<td>Logical reasoning that is <strong>somewhat articulated</strong> and <strong>mostly based</strong> on ideas consistent with those presented in course content. When appropriate: Topics apparently aligned with TEA Approved Educator Standards and Texas Essential Knowledge and Skills for Science.</td>
</tr>
<tr>
<td>6.9-6</td>
<td>Reasoning that <strong>needs more developed articulation</strong> and <strong>grounding</strong> on ideas consistent with those presented in course content. When appropriate: Topics <strong>apparently</strong> aligned with TEA Approved Educator Standards and Texas Essential Knowledge and Skills for Science.</td>
</tr>
<tr>
<td>&lt;6</td>
<td><strong>Missing logical reasoning</strong> and/or ideas are <strong>NOT based</strong> on ideas consistent with those presented in course content. When appropriate: Topics <strong>not</strong> aligned with TEA Approved Educator Standards and Texas Essential Knowledge and Skills for Science.</td>
</tr>
<tr>
<td>0</td>
<td>Incomplete assignment, not submitted, or significantly past due date (per late submission policy).</td>
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</tbody>
</table>
Course Guidelines:
Absences and/or Course Drop: According to UTEP Curriculum and Classroom Policies, “When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor may drop the student from the class with a grade of “W” before the course drop deadline and with a grade of “F” after the course drop deadline.” See academic regulations in the UTEP Undergraduate Catalog for a list of excuse absences. Therefore, if I find that, due to excessive absences (more than two) or non performance in the course—you are at risk of failing and I will drop you from the course. I will provide 24 hours advance notice via email.

Incomplete Grade Policy: Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

Engagement: Course members (i.e., students) are expected to complete all online class modules and be thoroughly prepared to engage in course reading and discussions. There will be a 5% deduction of your total grade for any missed classes. This is in addition to penalties associated with missed assignments.

Completion Period: Because this course has asynchronous components in addition to occasional LIVE ZOOM classes (when notified in writing), the expectation is that you complete each module within the completion window provided for each (i.e., one week). Assignments are to be submitted through Blackboard Assignment/Google Classroom on the date indicated by 11:59 PM. No hard copies of assignments will be accepted. If assignments are accepted late, a 10-point penalty for every 24-hour period of tardiness may be deducted beginning after the submission due date and time (e.g an assignment due May 28th at 9:00am via Blackboard is considered late at 9:00am on May 29th). Any possibility for an extension must be approved at least 48 hours in advance of the due date and does not guarantee penalty waiver. To be clear: assignments may not be accepted if no prior arrangement has been made with the instructor. Late assignments will only be accepted penalty free in documented cases of medical or technical difficulties that are reported 48 hours before the due date. Please try to submit assignments on time or early.

Missed Assignments: Missed assignments will not be accepted, however there will be opportunities to complete extra credit throughout the semester. Those opportunities will be announced in class or Blackboard. Additional opportunities will be announced on Blackboard and will typically include opportunities to complete additional reflections, quizzes, or teaching assignments (e.g., virtual tutoring).

Language Use: For this course to meet objectives and to be effective it is expected course members be respectful to one another and the diverse groups with which we engage. This is especially important when discussing or sharing about our different perspectives and experiences. In addition, it is an essential aspect of this course that we practice, demonstrate and reflect on the language we use to describe and discuss individuals with language or intellectual differences. This guideline is not intended to limit your freedom of expression, but instead to deepen your consideration of how we use language and the impacts that use has on how we understand others.

Class Community and Professionalism: Course members are expected to participate actively and meaningfully in each class, module, and discussion board. This includes making connections between reading assignments, discussions and activities. It is expected for members to ask questions and raise issues throughout our time together in ways that serve to promote thinking, exchange of ideas and critical reflection.

Academic Integrity: Students are expected to uphold the highest standards of academic integrity that are
consistent with course norms and practices. Any form of scholastic dishonesty is an affront to the pursuit of knowledge and jeopardizes the quality of the degree awarded to all graduates of UTEP. Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are not attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. Proven violations of the detailed regulations, as printed in the Handbook of Operating Procedures (HOOP) and available in the Office of the Dean of Students, may result in sanctions ranging from disciplinary probation, to failing grades on the work in question, to failing grades in the course, to suspension or dismissal among others. **PLEASE NOTE: ASSIGNMENTS IN THIS COURSE ARE ASSESSED FOR ORIGINALITY USING ONLINE TOOLS.**

**Accommodations Policy:** The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting accommodation based on a disability must register with the UTEP Center for Accommodations and Support Services (CASS). Contact the Center for Accommodations and Support Services at 915-747-5148, or email them at cass@utep.edu, or apply for accommodations online via the CASS portal.

**Equal Educational Opportunity:** In order to create equal educational opportunities in the class, all students are expected to demonstrate respect for the diverse voices and individual differences in the class. Particularly, no person shall be excluded from participation in, denied benefits of, or be subject to discrimination under any program or activity sponsored or conducted by the University of Texas at El Paso on the basis of race, color, national origin, religion, sex, age, veteran status, disability, or sexual orientation. Any member of the University community who engages in discrimination or other conduct in violation of University policy is subject to the full range of disciplinary action, up to and including separation from the University. Complaints regarding discrimination should be reported to the University's Equal Opportunity Office. Inquiries regarding applicable policies should be addressed to the University's Equal Opportunity Office, Kelly Hall, 3rd Floor, 915.747.5662 or eoaa@utep.edu.

**Inclusiveness and Equity:** A priority in our classroom is to cultivate relationships of trust and respect and a sense that we see each other as whole, complex human beings. To that end, I want you to know that all of you are welcome in our virtual classroom space—all the parts of you as a person are welcome in our discussions, our activities, our assignments, and in our assessments. We are all complex people with a variety of perspectives, experiences, challenges, assets, and resources—our gender identities, our sexual orientations, our religions, our races, our ethnicities, our economic statuses, our immigration statuses, our parenthoods, our veteran statuses, our ages, our languages, our abilities and disabilities. All the parts of you are welcome in our learning community to the extent that you feel comfortable bringing them in. I strive to show respect for the variety and wholeness in each of you, and I expect that each of you shows respect for each other as well. If you feel marginalized in our class, and you feel comfortable discussing it, I would like to know so that I can support you, protect you, and make changes that feel more inclusive and equitable. You can also talk with our Department Chair and/or you can report a complaint of discrimination to the University’s Equal Opportunity Office, Kelly Hall, Third Floor, 915-747-5662 or eoaa@utep.edu.
Supplemental Resources (Where you can go for assistance):

**Technology Resources:** Help Desk: Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus. If these technical challenges affect your participation in the course, please report them to the UTEP Technology Support Helpdesk promptly, and then forward the case number to me.

**Academic Resources:** UTEP Library: Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students. University Writing Center (UWC): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources. Math Tutoring Center (MaRCS): Ask a tutor for help and explore other available math resources. RefWorks: A bibliographic citation tool; check out the RefWorks tutorial and Fact Sheet and Quick-Start Guide. Grammarly: https://www.grammarly.com/.

**Individual Resources:** Military Student Success Center: Assists personnel in any branch of service to reach their educational goals. Center for Accommodations and Support Services: Assists students with ADA-related accommodations for coursework, housing, and internships. Counseling and Psychological Services: Provides a variety of counseling services including individual, couples, and group sessions as well as career and disability assessments.

**COVID-19 PRECAUTION STATEMENT**

Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID-19 testing.

The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org.
**Course Schedule:** This is a tentative schedule. Any necessary changes will be announced via Blackboard.

<table>
<thead>
<tr>
<th>Week of 1/22</th>
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<tbody>
<tr>
<td><strong>Objective:</strong> Students will be able to describe active learning in order to provide examples of how these are enacted in practice.</td>
</tr>
<tr>
<td><strong>Guiding Ideas:</strong> Active Learning in Science: Inquiry, Problem Based, and Design Approaches</td>
</tr>
<tr>
<td><strong>Resources/Activities</strong></td>
</tr>
<tr>
<td>Lecture Slides</td>
</tr>
<tr>
<td>Lab: Bridge to Nowhere</td>
</tr>
<tr>
<td><strong>By 1/24, 11:59 PM MT:</strong></td>
</tr>
<tr>
<td>Initial Discussion Prompt Post (re: introductions and constructivism)</td>
</tr>
<tr>
<td><strong>By 1/28, 11:59 PM MT:</strong></td>
</tr>
<tr>
<td>Reflection #1: Personal Sketch/Teaching Statement</td>
</tr>
<tr>
<td>Two Peer Discussion Post Responses</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week of 1/29</th>
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<tbody>
<tr>
<td><strong>Objective:</strong> Students will be able to describe design based learning in order to describe how these approaches are used in traditional and more contemporary science teaching and learning.</td>
</tr>
<tr>
<td><strong>Guiding Ideas:</strong> Engineering Design Cycles, Maker Education</td>
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<tr>
<td><strong>Resources/Activities</strong></td>
</tr>
<tr>
<td>Lecture Slides</td>
</tr>
<tr>
<td>Practice Implementation Opportunity (one of five total): <a href="#">sign up here</a>/Reflection #2</td>
</tr>
<tr>
<td><strong>By 2/31, 11:59 PM MT:</strong></td>
</tr>
<tr>
<td>Reading Assignment:</td>
</tr>
<tr>
<td>Teaching Science in Diverse Classrooms: Introduction (pg. 1-6)/Part I (pg. 7-15)</td>
</tr>
<tr>
<td>Ambitious Science Teaching: A Vision of Ambitious Science Teaching (pg. 1-18)</td>
</tr>
<tr>
<td>Initial Discussion Prompt Post (re: module two readings)</td>
</tr>
<tr>
<td><strong>By 2/4, 11:59 PM MT:</strong></td>
</tr>
<tr>
<td>Two Peer Discussion Post Responses</td>
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</tbody>
</table>
**Week of 2/5 ASYNCHRONOUS**

**Objective:** Students will be able to design an active learning intervention in order to deploy pedagogical strategies to support science learning.

**Guiding Ideas:** Forms and Properties of Matter

**Resources/Activities**
Lecture Slides  
Lab: Designing a Does it Dissolve Experiment

**By 2/7, 11:59 PM MT:**  
Reading Assignment:  
*Ambitious Science Teaching*: Planning for Engagement with Big Ideas (pg. 19-38)  
Initial Discussion Prompt Post (re: module three readings)

**By 2/11, 11:59 PM MT:**  
Two Peer Discussion Post Responses

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**Week of 2/12**

**Objectives:** Students will be able to carry out an engineering design activity in order to examine learning affordances and constraints of engineering design.

**Guiding Ideas:** Forms and Mechanics of Motion

**Resources/Activities**
Lecture Slides  
Lab: Recycled Roller Coaster

**By 2/14, 11:59 PM MT:**  
Reading Assignment:  
*Teaching Science in Diverse Classrooms*: Part I (pg. 16-20)  
*Ambitious Science Teaching*: Eliciting Students’ Ideas (pg. 85-110)  
Initial Discussion Prompt Post (re: module four readings)

**By 2/18, 11:59 PM MT:**  
Two Peer Discussion Post Responses
### Week of 2/19 ASYNCHRONOUS

**Objectives:** Students will be able to deploy pedagogical strategies needed to develop and sustain classroom discourse in order to engage learners with socioscientific issues.

**Guiding Ideas:** Forms and Properties of Energy

**Resources/Activities**
- Lecture Slides
- Lab: Slinky Play—Modeling Waves

**By 2/21, 11:59 PM MT:**
- Reading Assignment: *Teaching Science in Diverse Classrooms:* Part II (pg. 21-32)
- *Ambitious Science Teaching: Talk as a Tool for Learning* (pg. 39-64)
- Initial Discussion Prompt Post (re: module five readings)

**By 2/25, 11:59 PM MT:**
- Two Peer Discussion Post Responses
- Lesson Plan #1

### Week of 2/26

**Objectives:** Students will be able to describe visualizations in order to distinguish between the learning affordances and constraints of each.

**Guiding Ideas:** Waves and Lights—Sound

**Resources/Activities**
- Lecture Slides
- Practice Implementation Opportunity (two of five total): sign up here/Reflection #2

**By 2/28, 11:59 PM MT:**
- Reading Assignment: *Ambitious Science Teaching: Encouraging More Students to Participate in Talk* (pg. 65-84)
- Initial Discussion Prompt Post (re: module six readings)

**By 3/3, 11:59 PM MT:**
- Two Peer Discussion Post Responses
## Week of 3/4 ASYNCHRONOUS

**Objectives:** Students will be able to (re)design a board game consistent with state objectives in order to describe how games can be used for science teaching and learning.

**Guiding Ideas:** Earth’s Properties and Characteristics

### Resources/Activities
- Lecture Slides
- Practice Implementation Opportunity (three of five total): [sign up here](#)/Reflection #2

**By 3/6, 11:59 PM MT:**
- Reading Assignment: 
  - *Teaching Science in Diverse Classrooms*: Part II (pg. 33-39)
  - Initial Discussion Prompt Post (re: module seven readings)

**By 3/10, 11:59 PM MT:**
- Two Peer Discussion Post Responses

## Week of 3/18 ASYNCHRONOUS

**Objectives:** Students will be able to describe knowledge building in order to understand how classwide projects can support science teaching and learning.

**Guiding Ideas:** Resources: Renewable and Non Renewable

### Resources/Activities
- Lecture Slides
- Lab: Monopoly—Planet Earth Edition

**By 3/20, 11:59 PM MT:**
- Reading Assignment:
  - *Ambitious Science Teaching*: Organizing with Colleagues to Improve Teaching (pg. 237-256)/Teaching at the Boundaries of Our Knowledge (pg. 105-112)
  - Initial Discussion Prompt Post (re: module eight readings)

**By 3/24, 11:59 PM MT:**
- Two Peer Discussion Post Responses
**Week of 3/25 ASUNCHRONOUS**

**Objectives:** Students will be able to describe contemporary learning technologies in order to understand how they can be used in science teaching and learning.

**Guiding Ideas:** Computing in Science

**Resources/Activities**
- Lecture Slides
- Lab: Make a Paper Circuit Greeting Card

**By 3/27, 11:59 PM MT:**
- *Teaching Science in Diverse Classrooms:* Part II (pg. 40-54)
- *Ambitious Science Teaching:* Allowing Students to Show What they Know (pg. 131-150)

**Initial Discussion Prompt Post (re: module nine readings)***

**By 3/31, 11:59 PM MT:**
- Two Peer Discussion Post Responses
- Lesson Plan #2

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**Week of 4/1**

**Objectives:** Students will be able to describe simulators in order to evaluate their affordances and constraints for science teaching and learning.

**Guiding Ideas:** Seasons, Climate and Weather

**Resources/Activities**
- Lecture Slides
- Lab: Remixing Weather Pattern Simulator in SCRATCH

**By 4/3, 11:59 PM MT:**
- *Ambitious Science Teaching:* Organizing with Colleagues to Improve Teaching (pg. 237-256)

**Initial Discussion Prompt Post (re: module ten readings)***

**By 4/7, 11:59 PM MT:**
- Two Peer Discussion Post Responses
**Week of 4/8**

**Objectives:** Students will be able to describe models in order to evaluate their affordances and constraints for science teaching and learning.

**Guiding Ideas:** Celestial Systems—Our Solar system

**Resources/Activities**
- Lecture Slides
- Lab: Modeling Ecosystems Activity Brainstorm
- Practice Implementation Opportunity (four of five total): [sign up here](#)/Reflection #2
- Note: Find group partners for final lesson plan submission [here](#).

**By 4/10, 11:59 PM MT:**
- Reading Assignment:
  - *Teaching Science in Diverse Classrooms*: Part II (pg. 55-60)
  - Initial Discussion Prompt Post (re: module eleven readings)

**By 4/14, 11:59 PM MT:**
- Two Peer Discussion Post Responses
- Lesson Plan #3

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**Week of 4/15**

**Objectives:** Students will be able to describe mixed-media in order to evaluate their role in supporting science teaching and learning.

**Guiding Ideas:** Ecosystems on Earth

**Resources/Activities**
- Lecture Slides
- Lab: Save our Ecosystem Product Pitch
- Practice Implementation Opportunity (five of five total): [sign up here](#)/Reflection #2
- Note: Find group partners for final lesson plan submission [here](#).

**By 4/17, 11:59 PM MT:**
- Reading Assignment:
  - *Teaching Science in Diverse Classrooms*: Part II (pg. 61-76)
  - Initial Discussion Prompt Post (re: module twelve readings)

**By 4/21, 11:59 PM MT:**
- Two Peer Discussion Post Responses
### Week of 4/22

**Objectives:** Students will be able to describe demonstrations in order to evaluate their affordances and constraints in the context of science teaching and learning.

**Guiding Ideas:** Heredity and Adaptations

**Resources/Activities**
- Lecture Slides
- Lab: Strawberry DNA experiment/Biodesign Biocakes
- Note: Find group partners for final lesson plan submission [here.](#)

**By 4/24, 11:59 PM MT:**
- Reading Assignment: *Ambitious Science Teaching: Organizing with Colleagues to Improve Teaching* (pg. 257-264)
- Initial Discussion Prompt Post (re: module thirteen readings)

**By 4/28, 11:59 PM MT:**
- Two Peer Discussion Post Responses
- Reflection #3: Post Course Teaching Philosophy

### Week of 4/29

**Objectives:** Students will be able to evaluate active learning pedagogical tools and strategies in order to design effective interventions for science teaching and learning.

**Guiding Ideas** Active Learning Paradigms Revisited

**Resources/Activities**
- Lecture Slides
- Note: Find group partners for final lesson plan submission [here.](#)

**By 5/1, 11:59 PM MT:**
- Reading Assignment: N/A
- No Discussion Board
- 3 Day Lesson Plan (in groups of two to three)