Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: https://catalog.uvu.edu/

Semester: Spring
Course Prefix: SCIE
Course Title: Teaching Methods in Science II

Year: 2025
Course and Section #: 4220-001
Credits: 3

Course Description

Examines instructional methods and curriculum for teaching science in the secondary school. Includes developing, adapting, evaluating, and using strategies and materials for teaching biological and physical sciences, appropriate both to the special needs of the learners and the special characteristics of science discipline. This course is designed to meet the competencies of the "Science Education Teaching and Dispositions Knowledge" requirement for a science core teaching endorsement through the state of Utah.

Course Attributes

This course has the following attributes:

☐ General Education Requirements
☐ Global/Intercultural Graduation Requirements
☐ Writing Enriched Graduation Requirements
☒ Discipline Core Requirements in Program
☐ Elective Core Requirements in Program
☐ Open Elective
Other: *Click here to enter text.*

Instructor Information

Instructor Name: Dr. Mark Wathen

Student Learning Outcomes

1. Implement research-based instructional methods that foster critical thinking.
2. Design a lesson segment based on state science standards.
3. Design performance-based science assessments and rubrics.
4. Analyze ways in which differentiating instruction occurs in the science classroom.

Course Materials and Texts

1. Ambitious Science Teaching, Mark Windschitl, Jessica Thompson, and Melissa Braaten. (ISNB-13 978-1682531624).
2. Utah SEEd standards. (https://www.schools.utah.gov/curr/science.php).
3. Internet access.

Course Requirements

Course Assignments, Assessments, and Grading Policy

Assignments in this course directly contribute to a final project of the course which is a mini <u>Unit Plan that must include a minimum of three lesson plans and one assessment</u>. We expect these lessons to be aligned with major ideas and of themes of the course. These include….

…. aligning your instructional philosophy and practices with how students learn best.
  Teaching Statement & Philosophy (50 pts)

…. providing a cohesive narrative in your instruction over multiple days with lessons mutually supporting students' ability to recall and apply concepts across diverse contexts.
  Mini-Unit Design (150 pts)

…. being implemented effectively, and reflected on, to improve instructional practice.
  Mini-Teach Lesson Plans and Reflections (3 @ 100 pts. each)

…. being able to assess student understanding both pre and post instruction.
  3D Assessment Write-up (100 pts.)

….providing a safe space for learning science to occur.
  Flinn Safety Certificate (100 pts.)

…. being reflective of authentic middle and high school science classrooms.
  Evaluations of Classroom Videos (100 pts.)

Mini-Unit Plan (200 pts.)
Must include:
1) Unit outline/Cover letter
2) Revised planning commentary
3) A three-lesson plan sequence
   a. The three revised lessons from your mini-teaches
4) One self-developed 3-D assessment that is highly aligned with SEEd
5) Revised Teaching Philosophy

VI. Grading
Grades will be based on the percentage of points earned.
A: 95-100%;   A-: 90-94%;   B+: 87-89%;   B: 83-86%;   B-: 80-82%;   C+: 77-79%;
C: 73-76%;   C-: 70-72%;   D+: 67-69%;   D: 63-66%;   D-: 60-62%;   E: 0-59%

Assignment Summary

Assignments	Points Possible
Teaching Philosophy	50
Mini-Unit Design Part 1- Mini-Unit Outline/Cover Sheet Part 2 - Planning Commentary	50 100
Mini-Teach Lesson Plans and Reflections	100 100 100
3-D Assessment	100
Safety Certificate	100
Evaluation of Classroom Videos	100
Mini-Unit Plan	200
Total Points Possible	**1000**

Required or Recommended Reading Assignments

1. *Ambitious Science Teaching*, Mark Windschitl, Jessica Thompson, and Melissa Braaten. (ISNB-13 978-1682531624).
2. Utah SEEd standards. (https://www.schools.utah.gov/curr/science)
3. Phelan, Patricia, et al. "Students' Multiple Worlds: Negotiating the Boundaries of Family, Peer, and School Cultures." *Anthropology & Education Quarterly*, vol. 22, no. 3, 1991, pp. 224–50. *JSTOR*, http://www.jstor.org/stable/3195764.
4. Wilcox, Jesse, Jerrid W. Kruse, and Michael P. Clough. "Teaching science through inquiry." *The Science Teacher* 82.6 (2015): 62.
5. NSTA "Transitioning from Scientific Inquiry to Three-Dimensional Teaching and Learning" 2018. https://static.nsta.org/pdfs/PositionStatement_Three-DimensionalTeachingAndLearning.pdf
6. Ladson-Billings, Gloria. "But That's Just Good Teaching! The Case for Culturally Relevant Pedagogy." *Theory Into Practice*, vol. 34, no. 3, 1995, pp. 159–65. *JSTOR*, http://www.jstor.org/stable/1476635.

General Description of the Subject Matter of Each Lecture or Discussion
Click here to enter text.

Required Course Syllabus Statements

Generative AI
One goal of this course is to help students discover and develop their identities as classroom teachers. Part of that process is to contemplate concepts and teaching practices and their impacts on student learning. This is a reflective process that requires synthesis of personal values, strengths, and pedagogical knowledge. Certain assignments in this course will permit or even encourage the use of generative artificial intelligence (GAI) tools such as ChatGPT or Copilot. The default is that such use is disallowed unless otherwise stated. Any such use must be appropriately acknowledged and cited. It is each student's responsibility to assess the validity and applicability of any GAI output that is submitted; you bear the final responsibility. Violations of this policy will be considered academic misconduct. We draw your attention to the fact that different classes at UVU could implement different AI policies, and it is the student's responsibility to conform to expectations for each course. (adapted from Harvard University mixed draft policy)

Using Remote Testing Software
☒ This course does not use remote testing software.

☐ This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU Accessibility Services at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity

At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in UVU Policy 541: *Student Code of Conduct*.

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a specially dedicated space for meditation, prayer, reflection, or other forms of religious expression.