



UNLV – College of Education
Preparing Professionals for Changing Educational Contexts

Department of Teaching and Learning
Inquire. Educate. Innovate.

Course Information

I.	Prefix & Number	CIE 631
II.	Title	Integrated STEM science content
III.	Credits	3 Credit hours
IV.	Semester	
V.	Instructor	
VI.	Office/Phone/Email	
VII.	Class Location	
VIII.	Office Hours	
IX.	Prerequisites	--
X.	Course Description (Course Introduction)	Focuses on science content that can be used for integrated STEM (Science, Technology, Engineering, and Mathematics) education at the K-8 level.

XI. Knowledge Objectives

Upon completion of this course students will be able to meet the following objectives:

Objectives:
After completion of this course, the student should be able to:

- Knowledge
Discuss **trends and issues** in K-8 science education.

Explain how K-8 students **learn and think** scientifically and the **psychological and sociological influences** on students.

- Performance Skills
Demonstrate application of the **materials and resources** available for implementing a standards-based approach to the teaching and learning of science.

- Demonstrate **knowledge of science content** that can be integrated into effective STEM lessons.

- Dispositions
Demonstrate a **positive and professional attitude** toward the teaching and learning of science.

- Results
Synthesize **research and application literature** to demonstrate conceptual science understanding.

XII. RESULTS

Course Objectives	Measurement/Evaluation
Discuss trends and issues in K-8 science	Weekly readings and assignments, class discussions, and annotated bibliography and topic paper
Explain how K-8 students learn and think scientifically and the psychological and sociological influences on students.	Weekly readings and assignments and Lesson plan presentation
Demonstrate application of the materials and resources available for implementing a standards-based approach to the teaching and learning of science.	Weekly readings and assignments and Lesson plan presentation
Demonstrate knowledge of science content that can be integrated into effective STEM lessons.	Science projects and science content assessment
Demonstrate a positive and professional attitude toward the teaching and learning of science.	All aspects of class

Synthesize research and application literature to demonstrate conceptual science understanding.	Topic paper and lesson plan presentation.
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XIII. COURSE RESOURCES

Required Materials:

Next Generation Science Standards Lead States. (2013). Next generation science standards: For states, by states. Washington, DC: National Academies Press.

Also available online at <http://www.nextgenscience.org/>

National Research Council (2012). *A framework for K-12 science education: Practices, crosscutting concepts, and core ideas*. Washington, DC: National Academies Press. <https://www.nap.edu/catalog/13165/a-framework-for-k-12-science-education-practices-crosscutting-concepts>

XIV. ASSIGNMENTS

1. Science Projects (30 points)

Students will complete three projects based on the main science topics covered in the class. The projects will cover different Disciplinary Core Ideas across physical science, life science, and Earth and space science with common crosscutting concepts and science and engineering practices.

2. Annotated Bibliography and topic paper (20 points)

Students will read 6 practitioner articles connected to a mathematical content topic related to the topic of their lesson plan. (e.g. National Science Teachers Association articles). Students will create an annotated bibliography from the articles with a minimum two paragraph summaries of each article.

Students will then write a 3 page paper with the following sections.

--Introduction

--Describe the science content topic, what it means to have conceptual understanding of this topic, and any potential student misconceptions or difficulties with this topic.

--2 questions that I still have or want more information about

--1 idea that will directly affect my teaching in the future.

The paper should include a reference list, appropriate APA citations, and be free from grammar mistakes.

3. Science content assessment (10 points)

Students will take an assessment based on the science content that are a part of the class activities.

Students will use this as a self-assessment to identify areas of science content weakness and to inform project topic choices.

4. Lesson plan presentation (15 points)

Students will develop a lesson that is aligned to science standards that develops conceptual understanding of a science topic that could be used after an integrated STEM lesson. Each student will

present the lesson to the class as if the class was the elementary/middle school class for which the lesson was designed. Each student will be expected to hand-in a word-processed lesson plan. A lesson plan format will be provided.

5. Weekly Readings and Assignments (25 points)

Complete all readings and weekly assignments for each week and participate in class activities, including intro and exit letters (5pts each) and interactive notebooks

XV. SPECIAL NOTES

Academic Misconduct

Academic integrity is a legitimate concern for every member of the Campus community; we all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility, and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy, and are encouraged to always take the ethical path whenever faced with choices. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's educational mission. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another person, from the Internet or any other source without proper citation of the sources. See the [Student Conduct Code](https://www.unlv.edu/studentconduct/student-conduct), <https://www.unlv.edu/studentconduct/student-conduct>.

Auditing Classes

Auditing a course allows a student to continue attending the lectures and/or laboratories and discussion sessions associated with the course, but the student will not earn a grade for any component of the course. Students who audit a course receive the same educational experience as students taking the course for a grade, but will be excused from exams, assessments, and other evaluative measures that serve the primary purpose of assigning a grade.

Classroom Conduct

Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn or of instructors to teach. Use of electronic devices such as pagers, cellular phones, or recording devices, or potentially disruptive devices or activities, are only permitted with the prior explicit consent of the instructor. The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an administrative drop of the student from the course.

Copyright

The University requires all members of the University Community to familiarize themselves with, and to follow copyright and fair use requirements. You are individually and solely responsible for violations

of copyright and fair use laws. The University will neither protect nor defend you, nor assume any responsibility for employee or student violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional [copyright policy information](#) is available at <http://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC)

The [UNLV Disability Resource Center](#) (SSC-A, Room 143, <https://www.unlv.edu/drc>, 702-895-0866) provides resources for students with disabilities. Students who believe that they may need academic accommodations due to injury, disability, or due to pregnancy should contact the DRC as early as possible in the academic term. A Disabilities Specialist will discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours, so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

Final Examination

The University requires that final exams given at the end of a course occur on the date and at the time specified in the Final Exam schedule. The general schedule is typically available at the start of the semester, and the classroom locations are available approximately one month before the end of the semester. See the [Final Exam Schedule](#), <https://www.unlv.edu/registrar/calendars>.

Identity Verification in Online Courses

All UNLV students must use their Campus-issued ACE ID and password to log in to WebCampus.

UNLV students enrolled in online or hybrid courses are expected to read and adhere to the [Student Academic Misconduct Policy](#), <https://www.unlv.edu/studentconduct/misconduct/policy>, which defines, “acting or attempting to act as a substitute for another, or using or attempting to use a substitute, in any academic evaluation or assignment” as a form of academic misconduct. Intentionally sharing ACE login credentials with another person may be considered an attempt to use a substitute and could result in investigation and sanctions, as outlined in the Student Academic Misconduct Policy.

UNLV students enrolled in online courses are also expected to read and adhere to the [Acceptable Use of Computing and Information Technology Resources Policy](#), <https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy>, which prohibits sharing university accounts with other persons without authorization.

To the greatest extent possible, all graded assignments and assessments in UNLV online courses should be hosted in WebCampus or another UNLV-managed platform that requires ACE login credentials for access.

Incomplete Grades

The grade of “I” (Incomplete) may be granted when a student has satisfactorily completed three-fourths of course work for that semester/session, but cannot complete the last part of the course for reason(s) beyond the student’s control and acceptable to the instructor, and the instructor believes that the student can finish the course without repeating it. For undergraduate courses, the incomplete work must be made up before the end of the following regular semester. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the period indicated, a grade of “F” will be recorded, and the student’s GPA will be adjusted accordingly. Students who are fulfilling an Incomplete grade do not register for the course, but make individual arrangements with the instructor who assigned the “I” grade.

Library Resources

Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the [Libraries’ Research Consultation](http://guides.library.unlv.edu/appointments/librarian) website: <http://guides.library.unlv.edu/appointments/librarian>. You can also [ask the library staff](http://ask.library.unlv.edu/) questions via chat and text message at: <http://ask.library.unlv.edu/>.

Missed Classwork

Any student missing class, quizzes, examinations, or any other class or laboratory work because of observance of religious holidays will be given an opportunity during that semester to make up the missed work. The make-up opportunity will apply to the religious holiday absence only. It is the responsibility of the student to notify the instructor within the first 14 calendar days of the course for Fall and Spring courses (except for modular courses), or within the first 7 calendar days of the course for Summer and modular courses, of their intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit the Policy for Missed Work, under Registration Policies, on the [Academic Policies](https://catalog.unlv.edu/content.php?catoid=6&navoid=531) webpage, <https://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

In accordance with the policy approved by the Faculty Senate regarding missed class time and assignments, students who represent UNLV in any official extracurricular activity will also have the opportunity to make up assignments, provided that the student provides official written notification to the instructor no less than one week prior to the missed class(es).

The spirit and intent of the policy for missed classwork is to offer fair and equitable assessment opportunities to all students, including those representing the University in extracurricular activities. Instructors should consider, for example, that in courses which offer a “Drop one” option for the lowest assignment, quiz, or exam, assigning the student a grade of zero for an excused absence for extracurricular activity is both contrary to the intent of the Faculty Senate’s policy, and an infringement on the student’s right to complete all work for the course.

This policy will not apply in the event that completing the assignment or administering the examination at an alternate time would impose an undue hardship on the instructor or the University that could reasonably have been avoided. There should be a good faith effort by both the instructor and the student to agree to a reasonable resolution. When disagreements regarding this policy arise, decisions can be appealed to the Department Chair/Unit Director, College/School Dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to: fine arts activities, competitive intercollegiate athletics, science and engineering competitions, liberal arts competitions, academic recruitment activities, and any other event or activity sanctioned by a College/School Dean, and/or by the Executive Vice President and Provost.

Rebelmail

Rebelmail is UNLV’s official email system for students, and by University policy, instructors and staff should only send emails to students’ Rebelmail accounts. Rebelmail is one of the primary ways students receive official University communications, information about deadlines, major Campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the University. Emailing within WebCampus is also acceptable.

Tutoring and Coaching

The Academic Success Center (ASC) provides tutoring, academic success coaching, and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, please visit the [ASC website](https://www.unlv.edu/asc), <https://www.unlv.edu/asc>, or call 702-895-3177. The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of SSC A, Room 254. Drop-in tutoring is located on the second floor of the Lied Library, and on the second floor of the College of Engineering building (TBE A 207).

UNLV Writing Center

One-on-one or small group assistance with writing is available free of charge to UNLV students at the [Writing Center](https://writingcenter.unlv.edu/), <https://writingcenter.unlv.edu/>, located in the Central Desert Complex, Building 3, Room 301 (CDC 3-301). Walk-in consultations are sometimes available, but students with appointments receive priority assistance. Students may make appointments in person or by calling the Center, 702-895-3908. Students are requested to bring to their appointments their Rebel ID Card, a copy of the instructions for their assignment, and two copies of any writing they have completed on their assignment.

XVI. GRADING POLICY

Science Projects	30
Annotated bibliography and topic paper	20
Science content assessment	10
Lesson plan demonstration & presentation	15
Weekly readings and assignments	25
	100

The Final Grade will be determined thusly: **No late work is accepted**

Points Earned	Grade
96-100	A
91-95	A-
87-90	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-
<60	F

Attendance Policy

Attendance is required and affects the final grade. For the purposes of this class, attendance is defined as **presence and participation** in class discussions and activities. Lack of participation may be considered as absence from class. Sharing with colleagues is an integral part of the course. Your attendance pattern (absences, late arrivals, early departures, and participation) will influence your final grade as follows:

<u>Absences</u>	<u>Effect on grade</u>
0 – 2	no change
3	grade drops 1/3 (e.g., B+ will drop to B)
4	grade drops 2/3 (e.g., B+ will drop to B-)
5 or more	F

Note: 3 tardies (late arrivals and early departures) equals one absence.

XVII. TENTATIVE CLASS SCHEDULE

Week	Lesson Topic	Related Assignment Due
1	Class introduction/Course Overview	<ul style="list-style-type: none">• Weekly Readings• Intro Letter
2	Science & STEM National Standards and Context	<ul style="list-style-type: none">• Weekly Readings• Science Assessment
3	Science Connections-Physics- Math	<ul style="list-style-type: none">• Weekly Readings
4	Science Connections-Physics- Engineering	<ul style="list-style-type: none">• Weekly Readings
5	Science Connections-Physics- Technology	<ul style="list-style-type: none">• Weekly Readings• Physics Lesson Plan
6	Science Connection- Earth Science- Math	<ul style="list-style-type: none">• Weekly Readings
7	Science Connections-Earth Science- Engineering	<ul style="list-style-type: none">• Weekly Readings
8	Science Connections-Earth Science- Technology	<ul style="list-style-type: none">• Weekly Readings• Earth Science Lesson Plan
9	Science Connection- Biology- Math	<ul style="list-style-type: none">• Weekly Readings
10	Science Connections-Biology- Engineering	<ul style="list-style-type: none">• Weekly Readings
11	Science Connections-Biology- Technology	<ul style="list-style-type: none">• Weekly Readings• Biology Lesson Plan

12	Guided Peer Review of lesson plan packet	<ul style="list-style-type: none">• Weekly Readings
13	Research in Stem	<ul style="list-style-type: none">• Weekly Readings• Annotated Bibliography
14	Lesson Plan Demonstrations & Presentations	<ul style="list-style-type: none">• Lesson Plan Packet (all 3)
15	Lesson Plan Demonstrations & Presentations	<ul style="list-style-type: none">• Exit Letter