

**EDUC 460.09: Elementary Science Specialization I
Winter, 2026**

Erin Spring

Section	Instructor	Time	Location	Email
S01				

Land Acknowledgement: The University of Calgary, located in the heart of Southern Alberta, both acknowledges and pays tribute to the traditional territories of the peoples of Treaty 7, which include the Blackfoot Confederacy (comprised of the Siksika, the Piikani, and the Kainai First Nations), the Tsuut'ina First Nation, and the Stoney Nakoda (including Chiniki, Bearspaw, and Goodstoney First Nations). The City of Calgary is also home to the Métis Nation of Alberta Battle River Territory (Districts 5 and 6).

Class Dates: January 12 – March 13, 2026

Last Day to Add/Drop/Swap: Due to the non-standard dates associated with this program, please check your Student Centre for the important dates pertaining to your section.

Pre-requisite: Due to the multiple pathways in the Bachelor of Education, please consult Undergraduate Programs in Education for questions related to pre-requisite courses.

Office Hours: Typically I am available after class or by appointment. Office hours will be held primarily on zoom if otherwise necessary beyond the time around our class sessions.

Email: Students are required to use a University of Calgary (@ucalgary.ca) email address for all correspondence. **Please, always add “[EDUC 460]” in the subject line of your e-mail so I can prioritize your communication (ex. “[EDUC460] Learning Task 1 question”).**

COURSE DESCRIPTION:

The intent of the Specialization I Seminar is to introduce students to the concepts, theory, and design planning related to teaching within the specialization of Science. Theory, as connected to an understanding of practical classroom experiences, will particularly inform the course curriculum and will be explored through course readings, analysis of teaching/learning artifacts, and through the design of discipline-based learning and assessment plans. Topics in teaching and learning will include teaching inclusively and addressing the needs of diverse learners, effective integration of technology, and discipline-based inquiry. Assignments will present the opportunity for students to develop an understanding of short-term instructional designs and to begin to examine curriculum shifts in the province.

LEARNER OUTCOMES:

Students will be knowledgeable about:

1. Developing a foundational understanding of the nature of discourse in the discipline, as related to teaching and learning, including specialized language, concepts, and terminology;
2. Understanding teacher as designer of learning and assessment plans and use of the resources available for designing learning and assessment.
3. Exploring and applying introductory theory related to the teaching of the discipline with an emphasis on designing discipline-based tasks and assessment processes and creating an adaptive classroom learning environment to better meet the needs of today's diverse learners.
4. Successfully designing short-term learning and assessment plans to deepen understanding of key ideas/concepts within the discipline.

COURSE DESIGN AND DELIVERY:

This course will be delivered face-to-face on campus with possible engagement in a D2L environment. The course will be delivered through a design-based and inquiry-focused approach where learning intent, expectations and assessment processes are made visible and transparent. Participation is crucial to the knowledge building in this course. While there are, of course, readings, they don't "contain" the knowledge of this course. Your learning will be primarily through applying concepts from the readings while you experience, design, and critique science learning activities. Assessment is based on rubrics for the three Learning Tasks. D2L will be used to post class information and for submitting assignments.

Students will require access to a computing device that contains current software and hardware capable of running D2L, creating documents for learning tasks, and ability to run free programming platform software such as Scratch. If you do not own a personal device, there are computers available for student use in the Doucette library and the Taylor Family Digital Library.

REQUIRED RESOURCES:

All required resources can be found in the weekly schedule. Additional class readings and other support resources will be posted on the course shell in D2L prior to class. It is your responsibility to keep up with materials and announcements posted on D2L.

GENERATIVE AI:

In this course, our primary focus is to cultivate an equitable, inclusive, and accessible learning community that emphasizes individual critical thinking and problem-solving skills. As such, students are expected to complete Learning Tasks, tests, and other academic evaluations using their own knowledge and abilities. However, I will not be using any form of plagiarism detection or AI detection tools, so course participants may use artificial intelligence tools, including generative AI, to gather information, review concepts, and/or to help create Learning Task outlines as they see fit. However, (1) it is the student's responsibility to inform the instructor in writing of the intention to use such technology in advance of its use; (2) the student is ultimately accountable for the work they submit; (3) any content generated or supported by an artificial intelligence tool must be cited appropriately; and (4) the instructor reserves the right to deny any uses of generative AI determined to be harmful or against the goals of learning. It is the student's responsibility to be clear on the limitations on the use of generative AI tools for each task or assessment, on the expectations for citation and referencing, and on fact checking statements created by generative AI tools. If you are in

doubt as to the use of generative AI tools in this course, please discuss your situation with the course instructor. Misuse of these tools will be considered academic misconduct and will be treated as such.

As a general guideline, I liked this excerpt of when using AI crosses the line from Daniel Stanford:

You should never include in your assignment anything that was not written directly by you without proper citation (including quotation marks and in-line citation for direct quotes). Including anything you did not write in your assignment without proper citation will be treated as an academic misconduct case.

If you are unsure where the line is between collaborating with AI and copying from AI, we recommend the following heuristics:

- 1. Never hit "Copy" within your conversation with an AI assistant. You can copy your own work into your conversation, but do not copy anything from the conversation back into your assignment. Instead, use your interaction with the AI assistant as a learning experience, then let your assignment reflect your improved understanding.*
- 2. Do not have your assignment and the AI agent itself open on your device at the same time. Similar to above, use your conversation with the AI as a learning experience, then close the interaction down, open your assignment, and let your assignment reflect your revised knowledge.*

This heuristic includes avoiding using AI assistants that are directly integrated into your composition environment: just as you should not let a classmate write content or code directly into your submission, so also you should avoid using tools that directly add content to your submission. Deviating from these heuristics does not automatically qualify as academic misconduct; however, following these heuristics essentially guarantees your collaboration will not cross the line into misconduct.

LEARNING TASKS OVERVIEW

The full assignment descriptions and assessment details will be discussed in class and posted to D2L. The descriptions in this syllabus should be treated as summaries or overviews, not the full and complete assignment requirements.

LEARNING BUNDLE	DESCRIPTION OF LEARNING BUNDLE	GROUP / INDIVIDUAL	WEIGHT	DUE DATE
1	Evolving Conceptual Understanding of Science	Individual	30%	January 16 & March 13
2	Science Teaching Resource Evaluation	Individual	30%	February 13
3	Design of a Short-term Learning Plan (Lesson Plan)	Individual	40%	March 13

TENTATIVE SCHEDULE OF WEEKLY ACTIVITIES/READINGS (TOPICS, ACTIVITIES, AND READINGS SUBJECT TO CHANGE)

Date	Topic	Readings and Tasks
Week 1 – January 12 And 16 <u>Introductions And Fundamentals Of Teaching Elementary Science</u>	<u>Monday:</u> Welcome & Introductions Course Overview <u>Friday:</u> Students Understanding in Science Goals of Teaching Science	<u>Monday:</u> <u>Required Reading:</u> 1. This document <u>Be generally familiar with:</u> 2. Alberta Science Programs of Study. https://curriculum.learnalberta.ca/curriculum/en/gf/c/SCI <u>Friday:</u> <u>Required Reading</u> 3. Fitzgerald, A., & Smith, K. (2016). Science that matters: Exploring science learning and teaching in primary schools. <i>Australian Journal of Teacher Education</i> , 41(4), 4. http://ro.ecu.edu.au/cgi/viewcontent.cgi?article=2892&context=ajte 4. Hanuscin, D.L. & Lee, E.J. (2013) Ch. 1 Helping Students Understand the Nature of Science. In Hanuscin, D. L., & Rogers, M. P. (Eds.). (2013). <i>Perspectives: Research & Tips to Support Science Education, K-6</i> . NSTA Press. https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=1416110&ppg=16 <u>Learning Bundle 1 Task 1 Due January 16th</u>
Week 2 - January 19 And 23 <u>Teaching Approaches In Elementary Science</u>	<u>Monday:</u> Evidence at the Elementary Level Outdoor Learning Day <u>Friday:</u> Introduction to General Learning Theories Elementary Science Learning Theories	<u>Monday:</u> <u>Required Reading</u> 1. Hanuscin, D.L. & Park Rogers, M. (2013) Learning to observe and infer. In Hanuscin, D. L., & Rogers, M. P. (Eds.). (2013). <i>Perspectives: Research & Tips to Support Science Education, K-6</i> . NSTA Press. https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=1416110&ppg=20 <u>Friday:</u> <u>Required Reading</u> 2. Robertson, B. (2018). Q: How do we best teach and learn science concepts? <i>Science and Children</i> , 55(9), 69-75. http://ezproxy.lib.ucalgary.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=130365445&site=ehost-live

<p>Week 3 - January 26 And 30</p> <p><u>Interdisciplinary Science Teaching</u></p>	<p><u>Monday:</u></p> <p>Science vs STEM vs STEAM</p> <p><u>Friday:</u></p> <p>Whole-Body Learning of Science</p>	<p><u>Monday:</u></p> <p><u>Required Reading</u> (Skimming)</p> <ol style="list-style-type: none"> 1. Education - STEM & STEAM Education Research Guide. (2024). https://libguides.ucalgary.ca/c.php?g=255548&p=1702130 <p><u>Friday:</u></p> <p><u>Required Reading</u></p> <ol style="list-style-type: none"> 2. The Kennedy Center. (n.d.). <i>Arts integration in practice: Science</i>. The Kennedy Center. https://www.kennedy-center.org/education/resources-for-educators/classroom-resources/articles-and-how-tos/articles/collections/arts-integration-resources/arts-integration-in-practice-science/ 3. Manches, A., & Mitchell, E. (2023). Embodied Learning for early and primary science: Key implications from the Move2Learn project. <i>Journal of Emergent Science</i>, 24, 23-32. https://www.ase.org.uk/system/files/Manches.pdf
<p>Week 4 – February 2 And 6</p> <p><u>Creation Of Short-Term Learning Plan (Aka Lesson Planning)</u></p>	<p><u>Monday:</u></p> <p>Strategies in Elementary Science</p> <p><u>Friday:</u></p> <p>Making Lesson Plans</p>	<p><u>Monday:</u></p> <p><u>Required Reading</u> (Pick one and read before class):</p> <ol style="list-style-type: none"> 1. Ch. 5 - Using children's literature, stories, poetry and songs. In Cross, A., & Board, J. (2014). <i>Creative ways to teach primary science</i>. McGraw-Hill Education (UK). https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=1920720&ppg=63 1. Ch. 6 – Models and analogies. In Cross, A., & Board, J. (2014). <i>Creative ways to teach primary science</i>. McGraw-Hill Education (UK). https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=1920720&ppg=78 1. Ch. 8 – Demonstrations. In Cross, A., & Board, J. (2014). <i>Creative ways to teach primary science</i>. McGraw-Hill Education (UK). https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=1920720&ppg=106 1. Ch. 9 – Dance and drama. In Cross, A., & Board, J. (2014). <i>Creative ways to teach primary science</i>. McGraw-Hill Education (UK). https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=1920720&ppg=120 1. Ch. 10 – Playground science. In Cross, A., & Board, J. (2014). <i>Creative ways to teach primary science</i>. McGraw-Hill Education (UK). https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=1920720&ppg=132 1. Ch. 11 – Thinking frames. In Cross, A., & Board, J. (2014). <i>Creative ways to teach primary science</i>. McGraw-Hill Education (UK). https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=1920720&ppg=143

		<u>Friday:</u> <u>Required Reading</u> 2. Brown, P.L., & Abell, S.K. (2013). Ch. 5 Examining the Learning Cycle. In Hanuscin, D.L., & Park Rogers, M. (2013). <i>Perspectives: Research and Tips to Support Science Education, K-6</i> . Arlington, VA: National Science Teachers Association http://ezproxy.lib.ucalgary.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=130365445&site=ehost-live
Week 5 – February 9 And 13 <u>LT1 Showcase</u>	<u>Monday:</u> In-Class Work Time Identify and Critique Key Learning Perspectives in the Alberta Program of Studies <u>Friday:</u> Showcase of Resources	<u>Monday:</u> <u>Required Reading</u> None <u>Friday:</u> <u>Required Reading</u> None <u>Learning Bundle 2 Due Friday, February 13th</u>
Term Break		
Week 6 – February 23 And 27 <u>Field Trip To A Local Elementary School</u> <u>Inquiry And Exploration In Science</u>	<u>Monday:</u> Science and Engineering at the Elementary Level <u>Friday:</u> Science Activities	<u>Monday:</u> <u>Required Reading</u> 1. Lachapelle, C.P., Sargianis, K., & Cunningham, C.M. (2013). Engineer it, learn it: science and engineering practices in action. <i>Science and Children</i> , 51(3), 70-76. http://ezproxy.lib.ucalgary.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=91710125&site=ehost-live 2. Keeley, P. (2020). “Doing” science vs. “doing” engineering. <i>Science and Children</i> , 57(6), 16-18. https://ezproxy.lib.ucalgary.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=141705443&site=ehost-live <u>Friday:</u> <u>Required Reading</u> None
Week 7 – March 2 And 6 <u>Assessment And Inclusion In Science</u>	<u>Monday:</u> Assessment of Elementary Science <u>Friday:</u> Inclusion in Elementary Science	<u>Monday:</u> <u>Required Reading</u> 1. Hanuscin, D., & Park Rogers, M. (Eds.). (2013). <i>Perspectives: Research and tips to support science education, K-6</i> . National Science Teachers Association. https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=1416110 Ch. 16 – Lee, M.H., & Abell, S.K. (2013). Assessing for science Learning. https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=1416110

		<p>com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=1416110&ppg=78</p> <p>2. Keeley, P. (2017). Embedding formative assessment into the 5E instructional model. <i>Science and Children</i>, 55(4), 28-31. http://ezproxy.lib.ucalgary.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=sch&AN=126367653&site=ehost-live</p> <p><u>Friday:</u> <u>Required Reading</u></p> <p>1. Science with Mrs. Lau. (2018). Ten Tips for Teaching ELL Science. https://www.scienceandmathwithmrs lau.com/2017/09/ten-tips-teaching-ell-science/</p> <p>2. Lappe, G. & Dwyer, K. (2021). Using ELL Strategies in the Science Classroom. https://www.edutopia.org/article/using-ell-strategies-science-classroom/</p>
<p>Week 8 – March 9 And 13</p> <p><u>Field Trip To A Local Elementary School</u></p> <p><u>Course Completion</u></p>	<p><u>Monday:</u></p> <p>Delivery of Learning Plans to Elementary Students</p> <p>Identify and critique key learning perspectives in the Alberta Program of Studies</p> <p><u>Friday:</u></p> <p>Showcase of Learning Plans</p>	<p><u>Monday:</u> <u>Required Reading</u> None</p> <p><u>Friday:</u> <u>Required Reading</u> None</p> <p><u>Learning Bundle 1 Task 3 Due March 13th</u></p> <p><u>Learning Bundle 3 Due March 13th</u></p>

CHANGES TO SCHEDULE:

Please note that changes to the schedule may occur to meet the emerging needs and dynamics of the participants in the course.

LEARNING TASKS AND ASSESSMENT

The course is structured around the completion of Three Learning Bundles. The Learning Bundle descriptions and assessment details will be discussed in class in addition to the provided written descriptions in this document. The instructor will facilitate the ongoing work and will support students as they engage with the Learning Bundles by providing ongoing, timely, and constructive feedback to further learning.

As well, we will be taking a Specifications Grading approach to assessment in this course where students will earn grades based on the requirements they choose to complete. Students must complete all the requirements at AND below their chosen grade. Students who aim to earn an A must complete all 3 of the Learning Bundles to an acceptable standard, students who choose to earn a B must complete Learning Bundles 2 & 3 to an acceptable standard, students who choose to earn a C must complete Learning Bundles 1 & 3 to an acceptable standard, and students who choose to earn a D must complete Learning Bundle 3 to an acceptable standard.

In addition to the above:

- Students will be given three (3) ‘mulligans’ you can use to re-submit any material once per pass as a re-attempt to get the work to an “acceptable” standard.
- Students who exceed expectations FOR A GIVEN letter grade, will earn the “+” letter designation. For example, a student aiming to complete the “B” letter grade requirements who completes the optional digital collection component of Bundles 2 & 3 will earn a B+ letter grade. To earn an A+ students must exceed expectations for all Learning Bundles.
- Students who do not successfully complete 1 (and only 1) of the specifications within a single Learning Bundle, will earn the “-” letter designation for that bundle. This excludes Learning Bundle 3, which must be completed for successful completion of the course.

The Three required Learning Bundles for this course, which will come to form the start of your Science Teacher Portfolio, are:

I. Learning Bundle 1: Evolving Conceptual Understanding of Science, 30% Due January 16th and March 13th

Task 1) For this Task, students will respond to the prompt of “**Your Developing Science Education Philosophy**” as a way of reflecting thoughtfully on the pedagogical content knowledge involved in being an Elementary Science Specialist and make a statement of where they are entering the course at. Submissions should draw upon discussions in previous courses, educational experiences, readings from this and other courses, and observations made during field experiences. These developing philosophies should take a form of an honest reflection making a statement of where each student is entering the course from and what their goals are for learning in this specialization course

Task 2) As a developing teacher, you are expected to engage in and contribute to learning opportunities as a professional. In this course, this looks like: completing course readings and engaging in reading discussions, completing D2L discussion board posts as they arise, and attending opportunities for learning as a part of the course.

Task 3) For this Learning Task, students will respond to the prompt of “**Your changing conceptualization of science**” as a way of reflecting thoughtfully on the pedagogical content knowledge involved in being an Elementary Science Specialist. Responses may take a number of forms, such as an academic essay, an imagined Socratic dialogue between a teacher and student, an illustrated story, an animation, a short video or podcast, or other approved model. However, all responses must be persuasive – that is, students must fashion a personal stance on the prompt and then set out to persuade the reader of their interpretation using **relevant and varied evidence**. At a minimum, all responses must refer to the Alberta Education Programs of Study and at least 3 articles or chapters read during the course. In addition to these sources, you may also want to draw upon discussions in your class inquiry groups, additional readings from this and other courses, and observations made during your field experiences.

Artifacts of Tasks 1&3 will be submitted individually, shared electronically via a digital folder to be uploaded on D2L on the date due. This post can include text, visuals, media, links, or any other medium allowed by D2L. Submission components for the **Evolving Conceptual Understanding of Science Bundle** will include:

1. You will submit a single file, link to a webpage, or folder submission of whatever you chose to create as your response to the prompt.

Criteria for Assessment of Learning Bundle 1

For Learning Bundle 1, you will be assessed based on the following criteria (which will be expanded on in a rubric posted to D2L and a conversation on the first day of class):

1. Quality of Arguments

- Argument is articulated clearly, insightfully, and persuasively (Tasks 1 & 3)
- Argument demonstrates an emerging understanding of concepts and theories related to the teaching of the discipline (Task 3)
- Submission includes at least 3 peer reviewed references (Task 3)

2. Engagement with in-class activities/discussions

- Student engages constructively with in-class discussions and activities in a way that shows an evolving understanding of science teaching (Task 2)

3. Overall Presentation of Submissions

- Submission is presented in an organized, clear, and succinct way (Tasks 1, 2, & 3)
- Submission uses an appropriate mode of expression for the argument being made (Tasks 1, 2, & 3)
- Resources are cited correctly and embedded when relevant (Tasks 1, 2, & 3)

II. Learning Bundle 2: Science Teaching Resource Evaluation, 30%, Due: February 13th, 2026

For this Learning Bundle, students will choose an Elementary Science Teaching Resource available either through the Doucette Library or openly available to evaluate. The resources chosen for this Learning Task should emerge from class activities, engagement with peers & class readings, and should be connected to the development of the Short-Term Learning Plans (Learning Task 2). Students will evaluate the resources through research into theories of teaching & learning within the discipline and through peer discussion of personal experiences and observations. The choice of resources for this Learning Task are up to each individual student based on their own interests.

Task 1) For this Task, students will evaluate an individually chosen Elementary Science Teaching Resource and provide a handout (or other option which may be discussed in consultation with the instructor) containing the following elements: A clear description of the resource, an explanation of what makes it a Science Teaching Resource for the Elementary level, a statement of how the resource may be used for teaching within the Alberta Science Curriculum, at least one possibility for how a teacher might use the resource in their teaching, and a brief summary of their thoughts as a developing teacher on their chosen resource as well as new or further questions raised as a result of their learning. Students are also encouraged to include a digital collection illustrating your developing thoughts through the process of exploring their resource

Task 2) For this Task, students will share their learning through a showcase during class time to develop a collective teacher toolbox for all members of the class. This showcase will occur in the form of a “Science Fair” format where students will have a chance to move around the room and engage with each others’ resources and ask questions

Task 3) For this Task, students will provide two responses to posts by classmates on D2L of their own thoughts as a developing teacher on assigned resources during the showcase event.

Artifacts produced in Learning Bundle 2 will be shared electronically via a D2L Discussion Board on the date due as well as in a class showcase. The D2L post can include text, visuals, media, links, or any other medium allowed by D2L. Students should be creative in the development of this post.

Submission components for the **Science Teaching Resource Evaluation Bundle** will include:

1. A starting explanation of your chosen Elementary Science Teaching Resource in the form of a digital (or physical if you choose) handout and a possible digital collection of additional resources.
2. A list of resources used in the project completion (APA 7th edition).
3. A casual in-person discussion with peers of their own chosen resource and effective questioning for peers during the in-class showcase.
4. Two responses to posts by classmates on D2L of their own thoughts as a developing teacher on assigned resources during the showcase event to classmates on D2L.

Criteria for Assessment of Learning Bundle 2

For Learning Bundle 2, you will be assessed based on the following criteria (which will be expanded on in a rubric posted to D2L and a conversation on the first day of class):

1. Quality and meaningfulness of Elementary Science Teaching Resource and resources used in investigation
 - Elementary Science Teaching Resource is described clearly, insightfully, and completely (Task 1)
 - Elementary Science Teaching Resource is clearly connected to the Alberta Science Curriculum (Task 1)
 - Elementary Science Teaching Resource is meaningful to teaching Elementary Science (Task 1)
 - Evaluation demonstrates an emerging understanding of concepts and theories related to the teaching of the discipline (Task 1)
 - Submission includes at least 3 peer reviewed references (Task 1)
2. Overall Presentation of Elementary Science Teaching Resource
 - Elementary Science Teaching Resource is presented in an organized, clear, and succinct way (Task 2)
 - Thoughts as a developing teacher are presented with “I statements” and demonstrate a growing understanding of science teaching (Tasks 1, 2, & 3)
 - Resources are cited correctly and embedded when relevant (Tasks 1, 2, & 3)
3. Quality of responses to classmates
 - Responses to peers are thoughtful and representative of a growing teacher identity (Tasks 2 & 3)

III. Learning Bundle 3: Design of a Short-term Learning Plan (Lesson Plan), 40%, Due: March 13th

For this Learning Bundle, students will work individually to design a Short-Term Learning Plan (Lesson Plan) that is illustrative of key aspects of curriculum and educational research introduced in the course. Students will then present on their Short-Term Learning Plan designs to each other in order to build the collective teacher toolbox of the class. These Short-Term Learning Plans may take any form chosen by the individual student (such as around a specific project, a unit as distinguished in the Alberta Programs of Study, or other design choice).

Task 1) For this Task, students will design a Short-Term Learning Plan for learning and assessment to foster deep understanding of planning an engaging Science Lesson within a full day of teaching at the Elementary level. The Short-term Learning Plans in this course will provide structure for 1-3 days of full-day instruction with particular attention given to covering the entirety of a 1-3 lessons of elementary or middle school Science instruction (90-minute daily class) with direct connections to the Alberta Science Curricula. Components of this submission will include a rationale for the learning plan – as supported by theory and discipline discussed in and beyond the course – discussion of practicalities of enacting this Learning Plan (i.e. how it fits it into a larger context / concept), and consideration for integration of effective assessment strategies for scaffolding / learning progression and adapting to the needs of diverse learners. Students are also encouraged to include a Digital Collection illustrating your developing thoughts through the process of exploring their resource. Submission of this plan will be in the form of a .doc AND a .pdf file submission based on a provided (or approved) template.

Task 2) For this Task, students will share their learning through a showcase during class time to develop a collective teacher toolbox for all members of the class. This showcase will occur in the form of a “Science Fair” format where students will have a chance to move around the room and engage with each others’ Learning Plans and ask questions.

Task 3) For this Task, students will provide two responses to posts by classmates on D2L of their own thoughts as a developing teacher on assigned Learning Plans during the showcase event.

Artifacts of Learning Bundle 3 will be submitted individually, shared electronically via a digital folder to be uploaded on D2L on the date due. This post can include text, visuals, media, links, or any other medium allowed by D2L.

Submission components for the **Design of a Short-Term Learning Plans Bundle** will include:

1. A completed Short Term Learning Plan for teaching Science at the Elementary Level in the form of a digital (or physical if you choose) handout and a possible digital collection of additional resources.
2. A list of resources used in the project completion (APA 7th edition).
3. A casual in-person discussion with peers of their own Short Term Learning Plan and effective questioning for peers during the in-class showcase.
4. Two responses to posts by classmates on D2L of their own thoughts as a developing teacher on assigned resources during the showcase event to classmates on D2L.

Criteria for Assessment of Learning Bundle 3

For Learning Bundle 3, you will be assessed based on the following criteria (which will be expanded on in a rubric posted to D2L and a conversation on the first day of class):

1. Quality and meaningfulness of Short-term Learning Plan structure

- Short-term Learning Plan is described clearly, insightfully, and completely (Tasks 1 & 2)
- Short-term Learning Plan is clearly connected to the Alberta Curriculum (Task 1)
- Short-term Learning Plan is particularly meaningful to teaching Elementary Science (Task 1)
- Short-term Learning Plan demonstrates an emerging understanding of concepts and theories related to the teaching of science at the elementary level (Task 1)
- Short-term Learning Plan includes considerations of accessibility and understanding inclusion within school systems (Task 1)
- Short-term Learning Plan includes opportunities for discussion of multiple ways of knowing (Task 1)
- Short-term Learning Plan embeds assessment opportunities (formative and summative) throughout the lesson design with clear expectations for students (Task 1)
- Short-term Learning Plan considers required prior content knowledge, skills, or other considerations for the lesson/activities (Task 1)
- Submission includes at least 3 peer reviewed references (Task 1)

2. Overall Presentation of Short-term Learning Plan

- Short-term Learning Plan is presented in an organized, clear, and succinct way (Tasks 1 & 2)
- Thoughts as a developing teacher are presented with “I statements” and demonstrate a growing understanding of science teaching (Tasks 1, 2, & 3)
- Resources are cited correctly and embedded when relevant (Tasks 1, 2, & 3)

3. Quality of responses to classmates

- Responses to peers are thoughtful and representative of a growing teacher identity (Tasks 2 & 3)

THE EXPECTATION OF EXCELLENCE IN PROFESSIONAL WORK

Please review the Academic Calendar carefully. It describes the program and provides detailed schedules and important dates. It contains information on expectations for student work and professional conduct. In addition, procedures are described regarding concern about student performance in the program. Please pay especially careful attention to details and descriptions in the following topic areas:

- *The Importance of Attendance and Participation in Every Class*

As this is a professional program, experiences are designed with the expectation that all members will be fully involved in all classes and in all coursework experiences. As you are a member of a learning community your contribution is vital and highly valued, just as it will be when you take on the professional responsibilities of being a teacher. We expect that you will not be absent from class with the exception of documented instances of personal or family illness or for religious requirements.

- *Engagement in Class Discussion and Inquiry*

Another reason for the importance of attendance and participation in every class is that the course involves working with fellow students to share ideas and thinking. For example, each class you will work with a small group to engage fellow students in discussions on work being considered in class. You will also help other groups by providing ideas for scholarly inquiry in assignments. If you find that you are experiencing difficulties as a group collaborating, please inform the instructor.

EXPECTATIONS FOR WRITING

All written assignments (including, to a lesser extent, written exam responses) will be assessed at least partly on writing skills. Writing skills include not only surface correctness (grammar, punctuation, sentence structure, etc.) but also general clarity and organization. Sources used in research papers must be properly documented. If you need help with your writing, you may use the writing support services in the Learning Commons. For further information, please refer to the official online University of Calgary Calendar, Academic Regulations, E. Course Information, E.2: Writing Across the Curriculum:

<https://calendar.ucalgary.ca/pages/2c2d1ce47b8c4d008aec9cc3da49876e>

MISSING OR LATE SUBMISSIONS

All late submissions of assignments must be discussed with the instructor **prior to the due date**. A deferral of up to 30 days may be granted at the discretion of the Associate Dean of Undergraduate Programs prior to the end of the course with accompanying written evidence.

<https://calendar.ucalgary.ca/pages/jyekfh6xwhoHwxetCi1>

ISSUES WITH GROUP TASKS

With respect to group work, if your group is having difficulty collaborating effectively, please contact the instructor immediately. If a group is unable to collaborate effectively or discuss course materials online in a timely manner, the instructor may re-assign members to different groups or assign individual work for completion.

GRADING: <https://calendar.ucalgary.ca/pages/fc4adb8643f84441ab32300237b80df1>

Grade	GPA Value	%	Description per U of C Calendar
A+	4.0	95-100	Outstanding
A	4.0	90-94	Excellent – Superior performance showing comprehensive understanding of the subject matter
A-	3.7	85-89	
B+	3.3	80-84	
B	3.0	75-79	Good - clearly above average performance with knowledge of subject matter generally complete
B-	2.7	70-74	
C+	2.3	65-69	
C	2.0	60-64	Satisfactory - basic understanding of the subject matter
C-	1.7	55-59	
D+	1.3	52-54	Minimal pass - Marginal performance
D	1.0	50-51	
F	0.0	49 and lower	Fail - Unsatisfactory performance

Academic Misconduct

Academic Misconduct refers to student behavior which compromises proper assessment of a student's academic activities and includes cheating; fabrication; falsification; plagiarism; unauthorized assistance; failure to comply with an instructor's expectations regarding conduct required of students completing academic assessments in their courses; and failure to comply with exam regulations applied by the Registrar.

For information on the Student Academic Misconduct Policy and Procedure please visit:

<https://www.ucalgary.ca/legal-services/university-policies-procedures/student-academic-misconduct-policy>

<https://www.ucalgary.ca/legal-services/university-policies-procedures/student-non-academic-misconduct-policy>

Additional information is available on the Academic Integrity Website at: <https://ucalgary.ca/student-services/student-success/learning/academic-integrity>

Academic Accommodation

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://ucalgary.ca/student-services/access/prospective-students/academic-accommodations> .

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the designated contact person in their faculty. The course outline should clearly list the appropriate Faculty contact person(s) and their contact details. For further information see E.1 C. Course Policies and Procedures <https://calendar.ucalgary.ca/pages/a89ecfbf758841b5983c4b67746e7846>

Research Ethics

Students are advised that any research with human participants – including any interviewing (even with friends and family), opinion polling, or unobtrusive observation – must have the approval of the Conjoint Faculties Research Ethics Board (<https://research.ucalgary.ca/conduct-research/ethics-compliance/human-research-ethics/conjoint-faculties-research-ethics-board-cfrehb>) or the Conjoint Health Research Ethics Board <https://research.ucalgary.ca/conduct-research/ethics-compliance/human-research-ethics/conjoint-health-research-ethics-board-chrehb>

In completing course requirements, students must not undertake any human subjects research without discussing their plans with the instructor, to determine if ethics approval is required. Some courses will include assignments that involve conducting research with human participants; in these cases, the instructor will have applied for and received ethics approval for the course assignment. The instructor will discuss the ethical requirements for the assignment with the students.

For further information see E.5 Ethics of Human Studies

<https://calendar.ucalgary.ca/pages/627ed88eb4b041b7a2e8155effac3501>

Instructor Intellectual Property

Course materials created by instructors (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the instructor. These materials may NOT be reproduced, redistributed or copied without the explicit consent of the instructor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing.

Access and Privacy Office (Formerly) Freedom Of Information and Protection of Privacy

Student information will be collected in accordance with typical (or usual) classroom practice. Students' assignments will be accessible only by the authorized course faculty. Private information related to the individual student is treated with the utmost regard by the faculty at the University of Calgary. For more information, please see: <https://www.ucalgary.ca/legal-services/access-information-privacy>

Copyright Legislation

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (<https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy>) and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorised sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy <https://www.ucalgary.ca/legal-services/university-policies-procedures/student-non-academic-misconduct-policy>.

Sexual and Gender-Based Violence Policy

The University recognizes that all members of the University Community should be able to learn, work, teach and live in an environment where they are free from harassment, discrimination, and violence. The University of Calgary's sexual violence policy guides us in how we respond to incidents of sexual violence, including supports available to those who have experienced or witnessed sexual violence, or those who are alleged to have committed sexual violence. It provides clear response procedures and timelines, defines complex concepts, and addresses incidents that occur off-campus in certain circumstances. Please see the policy available at <https://www.ucalgary.ca/legal-services/university-policies-procedures/sexual-and-gender-based-violence-policy>

Other Important Information

Please visit the Registrar's website at: <https://www.ucalgary.ca/registrar/registration/course-outlines> for additional important information on the following:

- Wellness and Mental Health Resources
- Student Success
- Student Ombuds Office
- Student Union (SU) Information
- Graduate Students' Association (GSA) Information
- Emergency Evacuation/Assembly Points
- Safewalk

For additional resources including, but not limited to, those aimed at wellness and mental health, student success or to connect with the Student Ombuds Office, please visit

<https://www.ucalgary.ca/registrar/registration/course-outlines>

Education Students Association (ESA) President for the academic year is Tracy Dinh, esa@ucalgary.ca.

Werklund SU Representative is Siena Yee, educrep@su.ucalgary.ca.