AB

EDUC 535.09/.17/.23: Science Specialization II - Combined
Summer, 2023

Section	Instructor	Class Times	Location	Email
S01	Dr. Jeff Turner	Mon – Fri, 1:00 – 3:50	EDC 170D	turnej@ucalgary.ca

Start date: Monday, July 10, 2023
Last Day of Classes: Friday, July 21, 2023

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: Available after class or by appointment. Please add course number to the subject line of your email.

Email: Students are required to use a University of Calgary (@ucalgary.ca) email address for all correspondence.

COURSE DESCRIPTION:
The intent of the Specialization Seminar II is to deepen your understanding of the practical aspects of teaching within the specialization and to connect this practice with specific theoretical concepts. While this second specialization course focuses more on practical knowledge, you will also refine your knowledge of discourse and theory within the discipline and develop a deeper understanding of ways to enact this theory in a classroom context. You will additionally become familiar with any relevant Ministry documents associated with the Alberta Curriculum and draw on practical classroom observation from the field experience to participate in meaningful discussion and to connect these observations with a vision for your own teaching. The emphasis of the course is on designing for student learning (subject-specific; assessment to strengthen student learning and improve instruction; and designing for inclusion, differentiation, and inquiry).

LEARNER OUTCOMES:
Over the course of the semester, students will:

1) Further develop a deeper conceptual understanding of the historical, socio-cultural, political contexts of the *discipline of Science Education*, and relate this to curriculum planning in the specialization area,
2) Identify and critique the *key learning perspectives* (as outlined in the front matter of the Programs of Study) and *intentions* (learning objectives) across the units in a grade from the Alberta Programs of Study,
3) Successfully apply theoretical knowledge to the design of a longer-term unit and assessment plan.

COURSE DESIGN AND DELIVERY:
This course will be delivered face-to-face on campus with some engagement in a D2L environment. This course is delivered through a problem-based and inquiry-focused approach. Student participation is crucial to the knowledge building in this course. While there are readings, they do not "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. Students are expected to participate in whole-class and small-group discussions conversation and Desire2Learn (D2L) discussion forums that will include postings and responses in small-groups. Assessment is based on rubrics for the three Learning Tasks. For most class activities, you will need a device with reliable internet connectivity to access D2L, the library website, YouTube, etc.

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 TASKS OVERVIEW

Learning Task	Description of Learning Task	Weight	Group/ Individual	Due Date
LT1	An Inquiry into Teaching Science: Knowledge Building in a Community of Inquiry	30%	Group	Friday, July 14, 1:00 pm
LT2	Creation of a Unit and Assessment Plan	40%	Individual	Friday, July 21, 1:00 pm
LT3	Evolving Conceptual Understanding of Science Teaching	30%	Individual	Monday, July 24

Note: A and A+ are both worth 4.0. A+ is given at the instructor's professional discretion based on work of rare and exemplary quality.

DAILY COURSE SCHEDULE:

Date	Topic	Readings and Tasks
Day 1	**Essential Question (EQ): What are the goals of EDUC 535?** • EDUC 535 Course Outline review – LT1, LT2, and LT3 **What is science all about? What is your philosophy of science?** **What is an inquiry practice as an organizing principal?** • LT1: Partner Selection & Topic selection (D2L) **What does Alberta Education deem as curriculum?**	**Review *Front Matter*** of the Science Programs of Study (PoS) *that supports your grade of interest either* gd. 1-6: p.A1 - A4, gd. 7 – 8: p.1 – 10 or any of the gd. 10 – 12 courses: p. 1 – 12. • Alberta Education, (nd). Programs of Study. https://www.alberta.ca/programs-of-study.aspx

Day 2	**EQ: How do teachers manage both the physical and instructional format of an inquiry-based classroom?** Intro to LT1, workshop format, & 5Es. Intro to LT3 In class time to work on LT1: refine your question.	**Readings for LT3** (assigned on day1): Rennie, L. (2005). Science awareness and scientific literacy. *The Journal of the Australian Science Teachers Association*. 51(1), 10-14. http://ezproxy.lib.ucalgary.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=18133950&site=ehost-live Grueber, D., & Whitin, P. (2012). Valuing little steps toward inquiry. Science and Children, 50(3), 41-45. http://ezproxy.lib.ucalgary.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=82669917&site=ehost-live Zangori, L., Forbes, C., & Biggers, M. (2012). This Is Inquiry... Right?. Science and Children, 50(1), 48-53. http://ezproxy.lib.ucalgary.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=79310878&site=ehost-live **Reference for LT1:** Bybee, et al., (2006). The BSCS 5E Instructional Model: Origins, Effectiveness, and Applications. BSCS, 1–. https://media.bscs.org/bscsmw/5es/bscs_5e_executive_summary.pdf
Day 3	**EQ: How to manage both the physical and instructional format of an inquiry-based classroom?** Intro to LT2: whole/part/whole approach In class time to work on LT1	**Readings for LT3** (assigned on day 2): Shaha, A., (2013). Are school science practicals a complete waste of time? The Guardian, http://www.theguardian.com/science/blog/2013/jun/07/school-science-practicals-waste-time (including video) Shaha, A. (2011). Are science teachers using experiments as props in lessons? The Guardian. http://www.theguardian.com/science/blog/2011/jun/21/science-teaching-experiments-in-lessons Abrahams, I., & Millar, R. (2008). Does practical work really work? A study of the effectiveness of practical work as a teaching and learning method in school science. International Journal of Science Education, 30(14), 1945-1969. http://dx.doi.org.ezproxy.lib.ucalgary.ca/10.1080/09500690701749305 Millar, R. (2009). Analysing practical activities to assess and improve effectiveness: The Practical Activity Analysis Inventory (PAAI). York: Centre for Innovation and Research in Science Education, University of York. https://www.rsc.org/cpd/teachers/content/filerepository/frg/pdf/ResearchbyMillar.pdf

Day 4	**EQ: What does it mean to be a "designer" of learning?**
	
	LT2
	• Stage 1. Identify Desired Results:
	  • Sci. Inquiry & Prob. Solving through Technology or
	  • STS/NoS, Knowledge, Skills, and Attitudes (KSAs).
	• Design thinking & Big Ideas
	
	In class time to work on LT1
		Resources for LT2:
		Alberta Education (n.d.). *Programs of Study*. https://www.alberta.ca/programs-of-study.aspx
		
		Wiggins, G. & McTighe, J. (2005). *Understanding by design* (2nd Edition). Alexandria, VA: Association for Supervision & Curriculum Development. https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=3002118 *** see Ch. 3, 4, 5, & 6**
		
		Harlen, W. (2015). *Working with Big Ideas of Science Education.* Hatfield, UK: Association for Science Education. Chapter 3-4 (pp 11-33) https://www.interacademies.org/sites/default/files/publication/working_with_big_ideas_of_science_education_-_online_july_final.pdf

Day 5	**EQ: What does it mean to be a "designer" of learning?** LT2: Stage 1. Identify Desired Results LT#1: Workshops: schedule posted in D2L In class time to work on LT2, Stage 1	**LT#1 Due: Friday, 1:00 pm** **Resources LT2**: Grady, J. (2010). The inquiry matrix; A tool for assessing and planning inquiry in biology and beyond. *Science Teacher*, (November), 32–37. https://bit.ly/2zwdDiK Parmar, B. (2017, April 24). The one crucial skill our education system is missing. Retrieved from https://www.weforum.org/agenda/2017/04/one-crucial-skill/

Day 6	**EQ: What will you accept as evidence that student understanding took place?** LT2: Stage 2. Determine what constitutes acceptable evidence of competency in the outcomes and results (assessment). LT#1: Workshops In class time to work on LT2, Stage 2	**Resources for LT2:** Alberta Assessment Consortium: https://aac.ab.ca/ Username: teachers Password: master *Understanding by design*: ***see Ch. 7 & 8** Galileo Educational Network. (nd). *Guide to Assessing Critical Thinking.* http://www.galileo.org/tips/rubrics/ct_rubric.pdf Galileo Educational Network. (nd). Designing rubrics. *Focus on Inquiry* https://inquiry.galileo.org/ch3/designing-rubrics/ Black, P. (2003). The importance of everyday assessment. In J. M. Atkin & J. E. Coffey (2003). *Everyday Assessment in the Science Classroom*. https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=355237 Trauth-Nare, A., & Buck, G. (2011). Assessment for learning. *The Science Teacher,* 78(1), 34-39. https://bit.ly/2ZukloI UMass Boston. (2017, February 17). *Formative assessment practices of science teachers* [video]. https://www.youtube.com/watch?v=O3Uca60nGK0
Day 7	**EQ: How do you shift the responsibility of learning from the teacher to the students?** Stage 3: Planning the appropriate learning activities. LT#1: Workshops In class time to work on LT2, Stage 3	**Resources for LT2:** *Understanding by design*: ***see Ch. 9 & 10** Alberta Education. (2019). *Health and safety in the science classroom: Kindergarten to grade 12*. https://education.alberta.ca/media/3795623/health-and-safety-in-the-science-classroom.pdf Bybee, et al., (2006). The BSCS 5E Instructional Model: Origins, Effectiveness, and Applications. BSCS, 1–21. https://media.bscs.org/bscsmw/5es/bscs_5e_full_report.pdf
Day 8	**EQ: What does it mean to be a teacher of diversity?** Stage 4: Learner differentiation LT#1: Workshops In class time to work on LT2, Stage 4	**Resources for LT2:** Alberta Education. (2010). *Making a difference: Meeting diverse learning needs with differentiated instruction*: Chapter 13 (Science) http://education.alberta.ca/media/1234045/makingadifference_2010.pdf Alberta Education. (nd). Benchmarks, strategies,and resources for teachers of English language learners. http://www.learnalberta.ca/content/eslapb/

Day 9	**EQ:** What does it mean to be a teacher of diversity? Stage 4: Learner differentiation LT#1: Workshops In class time to work on LT2, Stage 4	**Reading**: Alberta Teachers' Association. (2020). *Foundational knowledge for indigenous education*. https://teachers-ab.libguides.com/c.php?g=710500&p=5068847 Kimmerer, R. (2013). Braiding sweetgrass: Indigenous wisdom, scientific knowledge and the teaching of plants. (pp. 216- 240) Milkweed Editions. https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=1212658#
Day 10	EQ: What does it means to be a reflective practitioner? Peer review of LT2	**LT#2: Due: Friday, July22, 1:00 pm (for peer review). Final draft Monday, July 25** **LT#3: Due Monday, July 25**

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
There are 3 required Learning Tasks for this course. Completion of all tasks is required to pass this course.

LT1: An Inquiry into Teaching Science: Knowledge Building in a Community of Inquiry
(Group submission)

Due Date: Friday, July 14 @ 1:00 pm
Percentage of the Final Grade: 30%
Length: 45 minutes (30 min interactive workshop and 15 min. Q & A)

Context: There is a strong movement to improve education in Alberta with an emphasis on Mastery Learning as an instructional strategy that results in a comprehensive grasp of curriculum as demonstrated through competency or performance-based evaluations. With an all-encompassing understanding of the curricular intent (the Front Matter) teachers are being challenged to develop rigorous and relevant curriculum. As teachers of science, our focus is on emphasizing students' active engagement in genuine inquiry and problem-solving, an approach to make science learning appealing to all students. Of central importance are science teachers' pedagogical practices with a focus on the integration of students' learning of core disciplinary concepts with active engagement in "doing science". As a new teacher there will be challenges acquiring this pedagogical knowledge and skill to meet these expectations. This assignment is meant to introduce the opportunities and challenges that science teachers face in translating curriculum documents, including the philosophy and rationale of the programs of study, into engaging instruction that leads to student understanding and development of related knowledge, skills, and attributes.

Expectations: For this assignment, students (in groups of 2-3) will develop an investigable question on the topic of teaching science nested within the above context. The question should emerge from Specialization I class discussion and readings along with your practicum experience. This work can also be connected to Alberta Education's (nd) *Teacher Quality Standard*. You should consider many sources of evidence for answering your

question: journal articles, teacher blogs, teacher resource books, and even conversations with experienced teachers.

During the course, you will present your work as a 30 min. (max) Professional Development workshop for teachers. Your presentation should focus on how these "understandings" will influence our pedagogical practices. The presentation along with references (APA 7: see *Purdue online writing lab: APA guide*) must be submitted to both D2L-Discussion and D2L-Dropbox. You are also required to create a digital folder in D2L-Discussion that could include text, visuals, media, and other supporting links for this inquiry.

Required elements of this project should include:

- An explanation of your inquiry question including: a clear statement of the question, your reasons for asking this question, and a summary of your conclusion or findings as well as new or further questions raised.
- A digital collection illustrating the evidence for your findings. You can create these and/or share existing links or examples (where copyright permits). The connection to your inquiry question should be made clear.
- A summary of your inquiry.
- List of resources used in the project completion (This must be presented in APA 7 format).
- Asynchronous learning session
    - the significance of the inquiry,
    - how the inquiry fits in the ongoing pedagogical knowledge building focused on the teaching of science,
    - how these ideas generated from the inquiry may be achieve within the classroom, and
    - what implications does this inquiry have for each of you in shaping your own teacher identity and practice?

CRITERIA FOR ASSESSMENT OF LEARNING TASK 1

Criteria	A to A+ Meets all and exceeds some requirements	A- to B+ Meets all requirements	B to B- Meets most requirements.
Quality & Meaningfulness of Research Question			
Rationale: What and Why do you want to know "this" with respect to informing pedagogical practice?	The research question is clearly stated, specific and addresses a significant need or problem that teachers encounter in the classroom. The rationale for choosing the question is supported with personal interests in professional growth in this area. Considers and/or challenges common assumptions in this area.	The research question is appropriate and clearly stated but is either too general or too narrow, leading to a multitude of sub- question or ruling out new possibilities. The supporting rationale is generally well-written but not relevant to personal interest stemming from classroom experience or identification of professional growth areas.	The research question is roughly sketched and in need of refinement. The supporting rationale is weakly developed and/or does not address personal interest or identification of professional growth areas.
How will it make a difference to your teaching of the discipline?	The question has the potential to hold professional interest over time. Direct links are made to how new knowledge in this area will support teaching in the service of learning.	The question has the potential to hold professional interest beyond this assignment. Weak links are made to how new knowledge in this area will support teaching in the service of learning.	The question has limited importance for on-going investigation. Few or no links are made to how this question will support teaching in the service of learning.
Critique & Critical Analysis			
What are the connections between theory and practice?	Well-developed depth of understanding of the topic shown through credible and respected referenced connections between theory and practice. Cites all academic content obtained from other sources. APA 7 citation style is accurate.	Sufficient depth of understanding of the topic shown through limited referenced connections between theory and practice. Cites most content obtained from other sources. APA 7 citation style is accurate.	Little depth of understanding of the topic with minimum referenced connections between theory and practice. Citations do not employ APA 7 citation style.
Overall Presentation of Findings			
How effective is the creation and development of conceptual ideas in contributing to our pedagogical content knowledge?	Careful and critical development of the conceptual ideas through an inquiry approach so participants will be able to develop and apply pedagogical information, concepts, and skills to new teaching situations.	Some development of the conceptual ideas through an inquiry approach so participants will be able to develop minimal pedagogical understanding. with implications for practice in classrooms.	Little development of the conceptual ideas through an inquiry approach, with little or no connection to pedagogical development and with no implications for practice in classrooms

How effective is the presentation in allowing the viewer to follow your train of thought? Supplementary support provided through D2L.	Presentation design is creative, highly engaging, and effectively supports the research question. All elements of the presentation effectively enhance key ideas. Audience provided with important resources for later consideration.	Overall presentation design is appealing and supports the basic development of conceptual ideas. Elements of the presentation adequately enhance key ideas. Handouts and other resources provided may not directly relate to central topic.	Design of the presentation is adequate but somewhat limited in the development of conceptual ideas. Content arrangement is somewhat confusing and does not adequately assist the participant in understanding order without further narration and support.

LT2: Designing a Unit and Assessment Plan *(Individual submission)*

Due Date: Friday, July 21, 1:00 pm (for peer editing), Final submission, Monday, July 24
Percentage of the Final Grade: 40%

Intent of LT2: The intent of LT2 is to design a unit and assessment plan. We will be using a Whole-Part-Whole learning model over the 2 weeks of the course to develop the unit plan.

Expectations of LT3:

- The unit plan will be comprised of one unit covering:
    - 4 weeks with 80-minute classes for a Senior High class, or
    - 7 weeks with 45 - 60 minutes classes for a Middle/Junior High class.
    - 7 weeks with 30 – 45 minutes classes for an Elementary class.
- The unit plan must follow a clear and comprehensive **design for learning focused template (in D2l Content)** that promotes deep understandings of a key concept or competency of the discipline.
- **Use the following rubric to guide your unit design and assessment.**

CRITERIA FOR ASSESSMENT OF LEARNING TASK 2

Criteria	A to A+ Meets all and exceeds some requirements	B+ to A- Meets all requirements	B- to B Meets most requirements
Stage 1 - Lesson Rationale: To what extent does the design focus on building understanding of targeted content based on an Alberta Education Program of Studies?			
Curricular Outcomes	Has identified targeted understandings of curricular outcomes that are truly enduring, based on transferable big ideas at the heart of the discipline, and in need of uncovering.	Has identified targeted understandings of curricular outcomes that are based on transferable big ideas of the discipline.	Has identified targeted understandings of curricular outcomes and sometimes incorporates them into inquiry-based learning
Targeted Understandings	The targeted understandings are framed by essential questions that spark meaningful connections, provoke genuine inquiry and deep thought, and encourage transfer of learning.	The targeted understandings are framed by some essential questions that adequately make connections for inquiry- based learning, deep thought, and encourage transfer of learning.	The targeted understandings are framed by questions that could be incorporated into inquiry-based learning.
Misconceptions	Misconceptions are relevant and targeted.	Some misconceptions are identified and targeted.	Some misconceptions are identified, but not targeted
Ab Ed PoS Outcomes General (unit) Specific (lesson)	Lists the outcomes students must meet in order for the enduring understandings to develop. Outcomes clearly reflect the PoS, including STS, knowledge, skills, and attitudes and are linked to the targeted understandings.	Outcomes are stated but all of the elements needed to provide the needed knowledge, skills, and attitudes for the targeted understandings have not been included.	Outcomes are stated but do not link to the targeted understandings.
Stage 2 - Assessment Evidence: To what extent do the assessments provide fair, valid, reliable, and sufficient measures of the desired results			
Balanced Assessment	Balanced assessment is integral to the learning and woven into the day-to-day fabric of teaching and learning. Appropriate criterion-based scoring tools are used to evaluate student products and performances.	Balanced assessment is used on a regular basis and is part of the teaching and learning. Some criterion-based scoring tools are used to evaluate student products and performances.	Assessment is primarily summative with limited or irregular use of formative assessment to improve teaching and learning.
Learning Outcomes	Assessment is directly matched to learning outcomes from Stage 1. (*Ab Ed Achievement Indicators*)	Assessment closely matches the learning outcomes from Stage 1.	Limited match between assessment and Stage 1,
Assessment Through Authentic Performance Tasks	Students are asked to exhibit their understanding through authentic performance tasks to provide additional evidence of learning. (GRASP)	Students have limited opportunities to exhibit their understanding through authentic performance tasks to provide general evidence of learning.	Limited number of assessment data provides a partial or incomplete picture of student learning.
Clear Criteria are Established	Assessment criteria are collaboratively designed with students and mediated by or added to by the teacher to reflect authentic real-world standards for high quality work.	Assessment criteria are developed by the teacher and fully explained to students before the work begins.	Assessment criteria are shared after the work has been graded.
Self and Peer Assessment	Students are encouraged to self-assess and peer-assess	Students have limited opportunities to self- assess and peer-assess	No evidence of self or peer assessment.

Stage 3: To what extent is the learning plan effective and engaging			
Design Is Informed by Pedagogical Content Knowledge **(e.g. 5Es)**	Designs learning experiences that engage the students in doing work that require distinct ways of thinking about and acting in the world that the discipline embodies, making meaningful connections and building deep understandings.	Designs learning experiences that are organized around disciplinary ideas and core concepts and requires that students make connections between exiting and new ideas to build understanding.	Selects activities that emphasize subject matter acquisition which deal with acquiring information, facts, and formulas.
Authentic Performance Task	The work students undertake requires them to engage in productive collaboration with each other and with discipline and other experts around real problems, issues, questions, or ideas that are of actual concern and central to the discipline, to the students and to the broader community outside of school.	The work students undertake requires them to engage in productive collaboration with each other around matters that are central to the discipline and the broader community outside of school.	The work students undertake requires them to acquire and recall static, inert facts.
Work Fosters Deep Understanding	The work students undertake fosters strong habits of mind, innovation and creativity. Students are routinely asked to: • Formulate plausible, coherent working theories, • Formulate well- reasoned judgment and conclusions based on evidence with an examination of different viewpoints, • Analyze assumptions, • Discuss how things might be otherwise, i.e., supposition, • Thoroughly examine implications, • Consider ambiguities • Work across a variety of contexts, and, • Make connections between and among concepts	The work students undertake fosters disciplined habits of mind. Students are asked to: • Formulate plausible solutions, • Articulate assumption, • Formulate reasoned judgment and conclusions based on evidence, and, Consider implication that reach beyond the immediate situation.	The work students undertake builds habits of mind that emphasize groupthink by requiring a simplistic solution and/or absolute conclusion attributed to an external authority with no consideration of implications

Stage 4: Learner Inclusion			
ESL Benchmarks (Level 3) reflected in the Performance Task	Appropriately selected ESL benchmark objectives for level 3 students with specific rationale for performance task.	Selected ESL benchmark objectives for level 3 students or rationale for performance task not clearly articulated.	Inappropriate or missing selected ESL benchmark objectives for level 3 students.
Learner Inclusion	A variety of effective and inclusive learning strategies are incorporated into the design to address the learning interests and needs of all students. Inclusion of technology, Indigenous, multicultural, and inter-disciplinary activities are highly evident.	A limited variety of teaching methods are used to engage all students. Inclusion of technology, Indigenous, multicultural, and inter- disciplinary activities are restricted.	There is no evidence of a variety of teaching methods used to engage all students.

LT3: Evolving Pedagogical Content Knowledge of Science Teaching *(Individual submission)*

Due Date: Monday, July 24
Percentage of the Final Grade: 30%

In this assignment, you will have an opportunity to demonstrate your scholarly and professional thinking about your own philosophical beliefs about the **nature of science** and how your work as a **science** teacher is strengthened by these beliefs. The intent of this assignment is to articulate and display your insights into the teaching of science.

- for each of the following issues, write a "pedagogical" belief statement, framed within the ***nature of science***, and
- how it would be translated into action in your classroom, the ***pedagogical content knowledge*** of science (evidence).

Each statement should be self-explanatory.

1. Purpose of Science Education
2. Teaching of Science
3. Learning of Science
4. Planning for Science Instruction
5. Assessment of Science Learning

You may choose a format that best allows you to respond to each issue and provide evidence of your thinking and understanding. Format of presentation may be a succinct individual written composition, an imagined Socratic dialogue, an illustrated story, an animation, or a podcast. A critical understanding of teacher practice related to each statement must be demonstrated within the submissions. I encourage you to draw on anecdotal notes from evidence of learning during course work. Length: max: 1200 words or 7 minutes.

CRITERIA FOR ASSESSMENT OF LEARNING TASK 3

Criteria	**A to A+** Meets all and exceeds some requirements	**B+ to A-** Meets all requirements	**B- to B** **Meets most requirements**	Does not meet requirements
Articulates a clear, insightful, and coherent understanding of teaching science within each pedagogical issue	Clearly expresses specific insights and understandings that underpin the teaching of science.	Insights and understandings are clear and somewhat specific to the teaching of science.	Insights and understandings are generally clear but not directly connected to the teaching of science.	Insights and understandings are unclear.
Uses of specific, concrete examples to explain and illustrate insights (evidence)	Uses relevant examples to support each of the insights.	Uses relevant examples to support most of the insights.	Examples are given but do not support insights.	Examples are not given; insights rely on generalities.
Relevant evidence from LT1 and other sources to support insights	Insights are well developed, reflecting content from LT1, readings, conversations and experiences. Demonstrates skillful use of high quality, credible, relevant sources to develop ideas that are appropriate for the discipline. Cites all content obtained from other sources. APA 7 citation style is accurate.	Demonstrates consistent use of information from LT1 with credible, relevant sources to support ideas that are situated within the discipline. Cites most content obtained from other sources. APA 7 citation style is accurate.	Demonstrates an attempt to use information from LT1 with credible and/or relevant sources to support ideas that are appropriate for the discipline. Cites some content obtained from other sources. Citation style is either inconsistent or incorrect.	Does not use information from LT1 with credible and/or relevant sources to support ideas that are appropriate for the discipline. Does not cite sources.
Organization: structure for communicating insights	Submission is very well and clearly organized. Structure and transitions support effective communication of insights.	Submission is organized. Structure and transitions for the most part support communication of insights.	Submission has limited structure that interferes with clear communications of insights.	Submission lacks clear structure and significantly interferes with clear communications of insights.

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: http://www.ucalgary.ca/pubs/calendar/current/e-2.html

LATE SUBMISSIONS

All late submissions of assignments must be discussed with the instructor **prior to the due date.** Students may be required to provide written documentation of extenuating circumstances (e.g. statutory declaration, doctor's note, note from the University of Calgary Wellness Centre, obituary notice). A deferral of up to 30 days may be granted at the discretion of the Associate Dean of Undergraduate Programs with accompanying written evidence.

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

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

Students in the B.Ed. program must have an overall GPA of 2.5 in the semester to continue in the program without repeating courses.

Academic Accommodation
Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/. Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their Instructor. The full policy on Student Accommodations is available at http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy.pdf.

Academic Misconduct
For information on academic misconduct and its consequences, please see the University of Calgary Calendar at http://www.ucalgary.ca/pubs/calendar/current/k.html

Attendance/ Prolonged Absence
Students may be asked to provide supporting documentation for an exemption/special request. This may include, but is not limited to, a prolonged absence from a course where participation is required, a missed course assessment, a deferred examination, or an appeal. Students are encouraged to submit documentation that will support their situation. Supporting documentation may be dependent on the reason noted in their personal statement/explanation provided to explain their situation. This could be medical certificate/documentation, references, police reports, invitation letter, third party letter of support or a statutory declaration etc. The decision to provide supporting documentation that best suits the situation is at the discretion of the student.

Falsification of any supporting documentation will be taken very seriously and may result in disciplinary action through the Academic Discipline regulations or the Student Non-Academic Misconduct policy.

https://www.ucalgary.ca/pubs/calendar/current/n-1.html

The Freedom of Information Protection of Privacy Act prevents instructors from placing assignments or examinations in a public place for pickup and prevents students from access to exams or assignments other than their own. Therefore, students and instructors may use one of the following options: return/collect assignments during class time or during instructors' office hours, students provide instructors with a self-addressed stamped envelope, or submit/return assignments as electronic files attached to private e-mail messages.

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 Claire Gillis, esa@ucalgary.ca.

Werklund SU Representative is Elsa Stokes, educrep@su.ucalgary.ca.