AB

EDUC 427.04: STEM Education (K-12)
Summer 2023

Section	Instructor	Time	Location	Email
S01	Shaily Bhola	M-F 1-3:50pm	EDT01	shaily.bhola@ucalgary.ca
S02	Alison Turner	M-F 1-3:50pm	EDC171	alison.turner@ucalgary.ca
S03	Amber Hartwell	M-F 1-3:50pm	EDC351	amber.hartwell@ucalgary.ca
S04	Rahim Pira	M-F 1-3:50pm	SS012	rnpira@ucalgary.ca

Class Dates: Monday through Friday, July 10, 2023-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: By appointment only

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

Course Description

EDUC 427 STEM Education provides an introduction to key elements of Science, Technology, Engineering, and Mathematics (STEM) pedagogy and curriculum. The intent of the course is to foster an understanding of how STEM informs and shapes interdisciplinary, design-focused, inquiry-based teaching and learning and the role of STEM in culture and society.

Learning Outcomes

Course participants will:

1) Develop a foundational understanding of the nature of discourse in STEM disciplines as related to innovative teaching and learning, including STEM literacy, STEM identity, and transferring understandings across disciplines;
2) Understand and appreciate how the engineering design process can contribute to teaching and learning mathematics and science;
3) Design learning environments in STEM;
4) Identify STEM concepts and make explicit the connections across disciplines; and,
5) Apply introductory literature related to the teaching of STEM with an emphasis on the implementation of resources, the classroom environment, diverse and innovative methods of teaching within STEM, and an introduction to the Alberta Programs of Study.

Course Design and Delivery

The course consists of three modules:

- LT1: Building Understanding of STEM Mathematical Concepts;

- LT2: Building Understanding of STEM concepts through a Design Approach to Robotics;
- LT3A: Building Understanding of STEM concepts through a STEM Unit of Study; LT3B: Building Understanding of STEM components through Reflection.

The course is delivered through a design-based and inquiry-focused approach where learning intent, expectations and assessment processes are made visible and transparent. Participants are crucial to the knowledge building in this course. D2L is an important component of the course where learnings are made visible and shared. Assessment is formative and summative based on rubrics for the three Learning Tasks.

Required Readings: [on D2L]

Davis, B., Francis, K., & Friesen, S. (2019). STEM Education by Design. https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=5763030

Metz, M. (2014) *What does 2x3x4 mean?* (unpublished) [in D2L]

Ontario Ministry of Education. (2014). K-12: Paying attention to spatial reasoning. Queen's Printer for Ontario. Available http://www.edu.gov.on.ca/eng/literacynumeracy/LNSPayingAttention.pdf [in D2L]

Piggott, J. (2014). *Rich tasks and contexts.* Retrieved from http://nrich.maths.org/5662 [in D2L]

Lego Mindstorm

Francis, K. & Poscente, M. (2017). Building number sense with Lego Robots. *Teaching Children Mathematics 23*(5), 310-12. doi: 10.5951/teacchilmath.23.5.0310 Available: https://www-jstor-org.ezproxy.lib.ucalgary.ca/stable/10.5951/teacchilmath.23.5.0310

Minecraft

Stranger, D. (2021). *New Minecraft world to teach students about Anishinaabe culture.* Retrieved from https://www.aptnnews.ca/national-news/new-minecraft-world-to-teach-students-about-anishinaabe-culture/

Recommended Resources:

To find e-books in the library, enter the title in the *search box* on the library's home page at http://library.ucalgary.ca/

Alberta Education (2015). Telling our school stories 2.0: Moving forward with high school redesign [an interim report for 2014/2015]. Edmonton: Alberta Government. Available: https://open.alberta.ca/publications/telling-our-school-stories-2-0-moving-forward-with-high-school-redesign

Francis, K., & Rothschuh, S. (2022). *Robot challenges: Getting started*. https://stem-education.ca/?page_id=350

Gura, M. (2011). *Getting Started with Lego Robotics: A Guide for K-12 Educators*. Eugene, Or: International Society for Technology in Education. [on reserve in Doucette Library]

Moss, J., Bruce, C. D., Caswell, B., Flynn, T., & Hawes, Z. (2016). *Taking shape: Activities to develop geometric and spatial thinking* (1st edition). Toronto: Pearson Canada. [on reserve in Taylor Digital Library]

Vasquez, J.A. Sneider, C. & Comer, M. (2013) STEM lesson essentials: Integrating Science, Technology, Engineering and Mathematics. Portsmouth, NH: Heinemann. [on reserve in Taylor Digital Library]

Resnick, M. (2012). *Let's teach kids to code*. Retrieved from http://www.ted.com/talks/mitch_resnick_let_s_teach_kids_to_code

Truesdell, P. (2014). The engineering design process. In *Engineering essentials for STEM instruction: How do I infuse real-world problem solving into science, technology, and math?* (p. 7-15) Alexandria, VA: ASCD. [library e-version available] http://ebookcentral.proquest.com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?ppg=12&docID=1709532&tm=1500497319721

Software:

Free software downloads are available for:

EV3 - https://education.lego.com/en-us/downloads/mindstorms-ev3/software
Minecraft Education https://education.minecraft.net/en-us/get-started/download

Learning Tasks Overview

LEARNING TASK	DESCRIPTION OF LEARNING TASK	PERCENT OF FINAL GRADE
LT1	***LT1 – Building Understanding of STEM Mathematical Concepts*** **[Team work]** **Due: July 12 in D2L Discussions and Dropbox** Rubric Formative [in-class] assessment by instructor; Rubric Summative assessment [Dropbox] by instructor.	35%
LT2	***LT2 – Building Understanding of STEM concepts through a Design Approach to Robotics*** **[Team work]** **Due: July 17 in Dropbox** Rubric Formative [in-class] assessment by instructor; Rubric Self-assessment [Dropbox] with Rationale/Evidence.	20%
LT3	***LT3A – Building Understanding of STEM concepts through A STEM Unit of Study. [35%]*** **Due July 21 in D2L Discussions and Dropbox [Team work]** Rubric Formative [in-class] assessment by instructor; Rubric Summative assessment [Dropbox] by instructor.	45%

	LT3B – Building Understanding of STEM components through Reflection [10%] [Individual] **Due: July 21 in Dropbox** Rubric Formative [in-class] assessment by instructor; Rubric Self-assessment with Rationale/Evidence [Dropbox].	

Schedule

Concept Study – Mathematics:

	Topics/Themes	**Readings and Assignments**
Day 1	Introduction to STEM	Come prepared to discuss: Davis, Francis & Friesen. Chapter 1 STEM: Disciplinarity within transdisciplinarity Form Groups for LT1 Work on LT1
Day 2	Building Conceptual Understanding of Mathematics	Come prepared to discuss: Davis, Francis, & Friesen Chapter 2 Learning: Acquiring within participating Come prepared to discuss: *Paying Attention to Spatial Reasoning* Work on Learning Task 1
Day 3	Building Conceptual Understanding of Mathematics	Come prepared to discuss: Davis, Francis & Friesen Chapter 3 Mathematics: Calculating within Modeling Come prepared to discuss: *What does 2x3x4 mean?* Work on LT1 Post LT1 in D2L/Dropbox Present in small groups

Technology (Robotics and/or Programming):

	Topics/Themes	**Readings and Assignments**
Day 4	From Using to Designing	Come prepared to discuss: Davis, Francis, & Friesen Chapter 4 Technology: Using within designing Intro to LT2 Work on LT2

	Topics/Themes	Readings and Assignments
Day 5	From Applying to Innovating	Work on LT2
Day 6	Design Challenge	Work on LT2
Day 7	Design Challenge	Present Learning Task 2 for Assessment Intro to LT3AB Work on LT3A

STEM Integration:

	Topics/Themes	Readings and Assignments
Day 8	From Method to Inquiry	Come prepared to discuss: Davis, Francis & Friesen Chapter 6: Science Method within inquiry Work on LT3A
Day 9	STEM	Come prepared to discuss: Davis, Francis & Friesen Chapter 7: STEM education: From recipient to contributor Work on LT3AB
Day 10	Teaching STEM	Work on LT3AB STEM Showcase

- Schedule may change in accordance with course intent and expectations.

Learning Tasks

LT1 – Building Understanding of Mathematical Concepts (35%)

LT1 introduces you to how a rich and authentic problem-solving approach builds conceptual understanding of mathematics. By the end of this unit you will be able to:

- Identify and create mathematical concepts within rich, inquiry focused and authentic problems.
- Make these concepts explicit to STEM components and to the Alberta Programs of Study
- Make connections within and across mathematical concepts.
- Use technology for conveying mathematical concepts.

With instructor guidance and examplars, you will research, develop and present a rich, real-to-the-world-of-the-child problem [K-9] that authentically incorporates the mathematical concepts of multiplication and division operations.

LT1 Expectations

Create a narrated and animated PP for teachers as a professional development opportunity for them to learn how a rich and authentic problem-solving approach builds conceptual understanding of mathematics. This PP:

- Presents the problem/task through an Essential Question [EQ] and includes names of your team;
- Explains the rationale for why the problem is rich, inquiry focused and authentic to the world of the student;
- Provides rationale for multiple solutions;
- Identifies two concepts contained in the problem: multiplication and another mathematical concept.
- States key understandings of the concepts [one concept per slide]
- Provides one extension problem embedded in the problem that challenges and strengthens conceptual understandings (one slide).

The task will be rich, mathematically complex, and academically challenging. Viable solution(s) are explained clearly and are insightfully identified within the solutions.

LT1 Formative and Summative Assessment Rubric:

Chosen Task/Problem	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
Identification	States team members, problem/task, and source is clearly stated; Accurately APA referenced.	States team members, problem/task, and source is APA referenced with minor errors.	unclear; Referenced but not APA.	Team members not identified. Problem not stated, or reference.
Rationale for Challenge richness	Rationale is convincing, specific and insightful. Explains how task is rich, mathematically complex, academically, intellectually and personally challenging for students.	Rationale is convincing, but more details are needed. Or task has potential for being rich but lacks mathematical depth and complexity. Task is somewhat challenging.	Rationale is ambiguous or task is procedural and rote.	No rationale or the task is not challenging or irrelevant.
Solution	Viable solution(s) with accurate mathematics are explained clearly and concisely. The math concepts are insightfully identified within the solutions.	Viable solution(s) are explained clearly, concisely and are accurate.	A solution is inadequately explained and/or solution is incorrect.	No Solution

Mathematical Concept #1 Multiplication	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
Modelling	Mathematical model of concept is insightful and accurately depicted, illustrated within the task.	Mathematical concept is illustrated, but connection to the task is unclear.	Mathematical concept is illustrated and generic (without explicit connections to the problem).	Mathematical concept is not illustrated or is inaccurate.
Explanations	Mathematical concept is eloquently and accurately explained. Animations and images enhance explanation.	Mathematical concept is explained within the problem. Images enhance explanation.	Mathematical concept is not or appears not to be related to the mathematics problem. Images and/or animation detract from explanation.	No concept identified
Understandings	Key feature(s)/element(s), about the concepts, that the learners should understand are clearly stated.	Feature(s)/element(s), about the concepts, that the learners should understand are stated.	Feature(s)/element(s), about the concepts, that the learners should understand are inadequately stated.	No stated understandings

Mathematical Concept #2	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
Modelling	Mathematical model of concept is insightful and accurately depicted, illustrated within the task.	Mathematical concept is illustrated, but connection to the task is unclear.	Mathematical concept is illustrated and generic (without explicit connections to the problem).	Mathematical concept is not illustrated or is inaccurate.
Explanations	Mathematical concept is eloquently and accurately explained. Animations and images enhance explanation.	Mathematical concept is explained within the problem. Images enhance explanation.	Mathematical concept is not explained or appears not to be related to the mathematics problem. Images and/or animation detract from explanation.	No concept identified

Mathematical Concept #2	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
Understandings	Key feature(s)/element(s), about the concepts, that the learners should understand are clearly stated.	Feature(s)/element(s), about the concepts, that the learners should understand are stated.	Feature(s)/element(s), about the concepts, that the learners should understand are inadequately stated.	No stated understandings
Extension Problems	The two or three extension problems provide challenge and deepen understandings of identified concepts.	The two or three practice problems provided address understandings of identified concepts.	The two or three practice problems provided do not address understandings of identified concepts.	No practice problems

Presentation details	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
Number of Slides	Contains eight to ten slides that follow specifications.	Contains more (or less) than eight slides that follow specifications.	Contains more (or less) than eight slides that follow specifications.	There are not eight slides and specifications are not consistently followed.
Style and Design	Style and design enhances presentation.	Style and design supports presentation.	Style and design compromise presentation.	Style and design compromise presentation.

Additional Readings for Mathematics Problems:

Banks, R. B. (2012). *Slicing pizzas, racing turtles, and further adventures in applied mathematics* (Reissue edition.). Princeton, NJ: Princeton University Press. [e-book in library] https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=894679

Banks, R. B. (2013). *Towing icebergs, Falling dominoes, and other adventures in applied mathematics* (Reissue edition.). Princeton, NJ: Princeton University Press.[e-book in library] http://ebookcentral.proquest.com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=1084830

Benson, S., Addington, S., Arshavsky, N., Cuoco, A., Goldenberg, E. P., & Karnowski, E. (2004). *Ways to think about mathematics: Activities and investigations for Grade 6-12 teach*. Thousand Oaks, Calif: Corwin Press Inc. [on reserve in Doucette library]

Bolt, B. (1991). *Mathematics meets technology*. Cambridge; New York: Cambridge University Press. [on reserve in Doucette library]

Dodsworth, D. (1998). Routine Mathematical Problems and Mathematical Inquiry in an Elementary Classroom: Tensions and Struggles https://www.collectionscanada.gc.ca/obj/s4/f2/dsk1/tape7/PQDD_0032/NQ46832.pdf

Gardiner, T. (1996). *Mathematical challenge*. New York: Cambridge University Press. [on reserve in Doucette library]

Gardiner, T. (2002). *Senior mathematical challenge: The UK national mathematics contest 1988-1996*. Cambridge ; New York: Cambridge University Press. [on reserve in Doucette library]

Galileo Educational Network. (2015). *Math*. Available: https://galileo.org/math-fairs/math-fair-problems/

Hamilton, G. (2015). *Math pickle.* Available: http://mathpickle.com

Moscovich, I. (2006). *The big book of brain games: 1000 playthinks of art, mathematics & science*. New York, NY: Workman. [on reserve in Doucette library]

Moskowitz. (2003). *Adventures in mathematics* (1 edition.). River Edge, N.J: World Scientific Publishing. [e-book in library] http://ebookcentral.proquest.com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=1681495

Shasha, D. (1992). *Codes, puzzles and conspiracy: A new mathematical thriller from Dr. Ecco*. New York, NY: W H Freeman. [in library]

Shasha, D. (1998). *The puzzling adventures of Dr. Ecco*. Mineola, NY: Dover Publications. [on reserve in Doucette library]

GENA. (2014). *Inquiry and assessment.* Retrieved from https://galileo.org/resource/inquiry-and-assessment/

LT2 – Building Understanding of STEM through the Engineering Design Process (20%)

LT2 engages in robotics tasks and makes explicit the conceptual understandings of STEM components and their alignments with curricular outcomes. By the end of this module, you will be able to:

- Design, program and/or build a robot to complete an assigned task using the engineering design process;
- Make explicit the conceptual understandings of STEM components and their alignment with curricular outcomes in the process of engineering design.

LT2 Formative and Summative Assessment Rubric:

Design challenge	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
Challenge	Created a rich, authentic, and inquiry-based STEM challenge, that centralizes the theme of *Build a Better World*.	Created a STEM challenge that is rich and authentic, that touches upon the theme of *Build a Better World*.	Created a STEM challenge but does not accurately reflect the expectation for this challenge. May not have all needed information.	Did not create STEM challenge.
Engineering Design Process	Clearly articulates and illustrates how learners will recognize and apply the components of the engineering design process as found in the challenge.	Articulates how learners will recognize and apply the components of the engineering design process as found in the challenge.	Articulates an engineering design process that is generic and/or superficial to the challenge.	Does not articulate an engineering design process.

LT3A – Building Understanding of STEM concepts through an Inquiry Focused STEM unit of study

LT3A provides the opportunity to design a rich, authentic inquiry-based STEM unit of study for your classroom and showcase your unit in a digital poster.

You may build upon on the robot you built and programmed in LT2, or use another tool/software to address the theme: *Make the World a Better Place*. This should be an interdisciplinary challenge. This could be a prototype that you would present to your students as an exemplar before they set out to design their own robot on this theme. Then, create a digital poster showcasing this unit of study which can be shared with other STEM teachers.

By the end of this module, you will be able to:

- Apply the engineering design process to develop a STEM inquiry unit of study;
- Build on your understanding of the mathematics and science concepts [from LT2] contained within your STEM inquiry;
- Begin to articulate classroom teaching strategies: e.g. group/individual work, collaboration and communication of assignments, developing habits of mind;
- Appreciate how integrating design processes are important beyond the STEM disciplines.
- Learn how to work as a team to develop inquiry teaching approaches.
- Present your unit of study in a digital poster.

On the final day of classes, you will present your prototype and your digital poster at the STEM showcase.

Digital Poster Details: [Exemplars will be provided]

The purpose of this poster is to describe and illustrate the design of the LT3A teaching and learning experience. You will create a digital poster to accompany your challenge to illustrate how you would teach this project. Consider the audience for the poster to be teachers and administrators.

The poster:

- States the task in which your students will engage;
- Describes and illustrates the engineering design process specific to the task;
- Identifies, shows, and develops the STEM concepts intrinsic to the task;
- Identifies and models TWO mathematics concepts and ONE science concept that are addressed in your Robot Design Process;
- Attends to how learners will be assessed;
- Attends to how learners will engage in the task.

LT3A Formative and Summative Assessment Rubric:

Issue/Problem/ Question	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
	Clearly and eloquently articulated.	Clearly articulated.	Articulated, but clarification is needed.	Not stated.

STEM Design Process	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
Design Process	Clearly articulates and illustrates how learners will recognize and apply the components of the engineering design process as found in the task.	Articulates how learners will recognize and apply the components of the engineering design process as found in the task.	Articulates an engineering design process that is generic and/or superficial to the challenge/task.	Does not articulate an engineering design process.

Mathematics and Science Concepts*	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
Science Concept Identification	Science concept is clearly, accurately, and sufficiently identified and developed within the task/challenge.	Science concept is accurately identified and developed within the task/challenge. A little more detail is needed.	Science concept is insufficiently identified and/or underdeveloped.	Science concept is not stated and/or inaccurate.
Science Concept Explanation	The ways that the science concept connects to the task/challenge are clearly, sufficiently, and accurately explained.	The ways that the science concept is addressed by the task/challenge is explained. A little more detail is needed.	The ways that the science concept is addressed by the task/challenge is ambiguous and/or generic.	The ways that the science concepts is addressed by the task/challenge is not stated or are in accurate.

Mathematical Concepts Identification #1	Model, illustration or representation of mathematics is clearly explained within the task/challenge.	Mathematical concept is identified and developed within the task/challenge. A little more detail is needed.	Mathematical concept is insufficiently identified and/or underdeveloped and/or inaccurate.	Mathematical concept is not stated.
Mathematical Concept Explanation #1	The ways that the mathematical concept is situated and understood within the mathematical model is clearly, sufficiently, and accurately articulated.	The ways mathematical concept is addressed by the task/challenge is explained. A little more detail is needed.	The ways that the mathematical concept is addressed by the task/challenge is ambiguous and/or generic.	The ways that the mathematical concept is addressed by the task/challenge is not stated or inaccurate.
Mathematical Concepts Identification #2	Model, illustration, or representation of mathematics is clearly explained within the task/challenge.	Mathematical concept is identified and developed within the task/challenge. A little more detail is needed.	Mathematical concept is insufficiently identified and/or underdeveloped and/or inaccurate.	Mathematical concept is not stated.
Mathematical Concept Explanation *2	The ways that the mathematical concept is situated and understood within the mathematical model is clearly, sufficiently, and accurately articulated.	The ways mathematical concept is addressed by the task/challenge is explained. A little more detail is needed.	The ways that the mathematical concept is addressed by the task/challenge is ambiguous and/or generic.	The ways that the mathematical concept is addressed by the task/challenge is not stated or inaccurate.

Prototype	Prototype is available for demo of complete challenge and for engaging visitors in mini tasks.			Prototype is not available for demo of complete challenge, and/or Prototype is not designed for engaging visitors in mini tasks.

Poster details	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
Digital Design and Layout	Design and layout, images and annotations enhance the demonstration, support communication, and are aesthetically pleasing.	Design and layout, images and annotations enhance the demonstration and support communication.	Design and layout, images and annotations do not enhance the demonstration and do not adequately support communication.	Poster does not have images or annotations.
Attention Grabbing	Draws visitors in.	Conveys information but does not grab attention.	Information is confusing and does not grab attention.	Is aesthetically unpleasing

LT3B – Building Understanding of STEM components through Reflection

Compose an individual narrative (500 words maximum) on the engineering design process and the nature of participatory work. It can be submitted in any medium (e.g., text, audio, video etc.) The medium for this narrative is open and should include:

- Engineering Design: Articulate an engineering design process and relate the process to your experience in the design challenge.
- Group work: Your group's understanding of the nature of participatory work and the kinds of dispositions and habits that individuals working in teams need to hone. Draw upon the *Guide to Assessing Teamwork and Collaboration* that is posted in the D2L site for this course.
- Implication for Teaching Practice: Self-reflection in the process of learning and how this will inform your teaching practice.

LT3B Formative and Summative Assessment Rubric:

Narrative	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
Design process	An engineering design process is clearly and eloquently articulated in the context of the specific task.	An engineering design process is articulated in the context of the specific task. A little more detail and specifics is warranted.	An engineering design process is partially articulated in the context of the specific task.	An engineering design process is not articulated and/or how you engaged in the design process is not explained.
Group work	Depth of understanding of the nature of participatory work and the kinds of dispositions and habits required by individuals working in teams	Depth of understanding of the nature of participatory work and the kinds of dispositions and habits required by individuals working in teams is articulated.	Depth of understanding of the nature of participatory work and the kinds of dispositions and habits required by individuals working in teams is superficially or	Depth of understanding of the nature of participatory work and the kinds of dispositions and habits required by individuals working in teams

Narrative	Excellent (A)	Good (B)	Satisfactory (C)	Unsatisfactory
	is insightful and clearly articulated.		generically articulated.	is insufficiently developed.
Composition of the Narrative	Concise, clear clean wording and composition render the work accessible, unambiguous, and sufficiently engaging.	The wording and composition render the work accessible, mostly unambiguous, and sufficiently engaging.	The wording and composition are too ambiguous, and/or insufficiently engaging.	The wording and composition are too ambiguous, and/or insufficiently engaging.
References	Clearly stated; Accurately APA referenced.	Stated; APA referenced with minor errors.	unclear; Referenced but not APA.	Not stated or unclear; not referenced.
Word limit	Adheres to 500-word limit.	Is within 10% of word limit.	Is within 20% of word limit.	Does not adheres to word limit.

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
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://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf. 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: 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 based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to their Instructor.

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 is Claire Gillis, esa@ucalgary.ca.

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