

EDUC 535.07/.15/.22 - Specialization II Mathematics Summer 2023

Section	Instructor	Time	Location	Email
S01	Douglas C Stretch	1.00-3.50	EDT 146	Douglas.stretch1@ucalgary.ca

Class Dates: MTWRF, July 10-21

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:

The intent of the Specialization Seminar II is to deepen students' 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, students will also refine their knowledge of discourse and theory within the discipline and develop a deeper understanding of ways to enact this theory in a classroom context. Students 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 their 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 Math 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 Studies) and *intentions* (learning objectives) across the units in a grade from the Alberta Programs of Studies.
- 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 possible engagement in a D2L environment.

READINGS AND RESOURCES: There is no required textbook for this course. Assigned readings are drawn from professional and research journals which will form the main readings and reference for this course and are listed as below:



- Alberta Education. (nd). Benchmarks, strategies, and resources for teachers of English language learners. http://www.learnalberta.ca/content/eslapb/
- Alberta Education. (2007). Mathematics Kindergarten to Grade 9 Program of Studies. Retrieved from https://education.alberta.ca/media/3115252/2016_k_to_9_math_pos.pdf
- Alberta Education. (2008). Mathematics Grade 10-12 Program of Studies. Retrieved from https://education.alberta.ca/media/564028/math10to12.pdf
- Alberta Education. (2010). Making a Difference: Meeting diverse learning needs with differentiated instruction. Retrieved from <u>https://open.alberta.ca/dataset/9780778586012/resource/4f325cbc-0b11-4284-80fb-6b83e3072b49</u>
- Alberta Education (2016). Streamlined expression of competencies descriptions, indicators and examples. <u>https://education.alberta.ca/media/3272998/competency-indicators-september-30-2016.pdf</u>
- Alberta Teachers' Association. (2020). *Foundational knowledge for indigenous education*. <u>https://teachers-ab.libguides.com/foundationalknowledge/math</u>
- Ansari, D. (2016). No More Math Wars, An evidence-based, developmental perspective on math education. *Education Digest*, 81(7), 4–10. <u>https://ezproxy.lib.ucalgary.ca/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=sch&A</u> N=113072592&site=ehost-live
- Boaler, J (2016). Mathematical Mindsets: Unleashing Students' Potential Through Creative Math, Inspiring Messages and Innovative Teaching from <u>https://ebookcentral-proquest-</u> com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?pqorigsite=primo&docID=4444210#goto_toc
- Burns, M (2007) About Teaching Mathematics: A K-8 Resource Math Solutions, California
- Friesen, S. (2009). What did you do in school today?: Teaching effectiveness: A framework and rubric. Retrieved from <u>http://www.galileo.org/cea-2009-wdydist-teaching.pdf</u>
- Galileo Network, (ND). Big mathematical ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings as the foundation for elementary and middle school mathematics. Journal of *Mathematics Education Leadership*, 7(3), 9-21. Retrieved from: <u>http://galileo.org/pl/wp-content/uploads/math-big-ideas.pdf</u>.
- Galileo Educational Network. (nd). *Guide to Assessing Critical Thinking*. <u>http://www.galileo.org/tips/rubrics/ct_rubric.pdf</u>
- Galileo Educational Network. (nd). Designing rubrics. *Focus on Inquiry* <u>https://inquiry.galileo.org/ch3/designing-rubrics/</u>
- Keeley, P., & Tobey, C.R. (2011). Mathematics formative assessment: 75 practical strategies for linking assessment, instruction, and learning. Thousand Oaks, CA: Sage. <u>https://ucalgary.primo.exlibrisgroup.com/permalink/01UCALG_INST/46139d/alma99100273947970433</u> 6
- Kemp, R. R. (2006). Relational understanding and instrumental understanding. Mathematics Teaching in the Middle School, 12(2), 88–95. Retrieved from <u>https://www-jstororg.ezproxy.lib.ucalgary.ca/stable/41182357</u>
- Kilpatrick, J., Swafford, J., & Findell, B. (2001). Chapter 9: Teaching for mathematical proficiency. In J.
 Kilpatrick, J. Swafford, & B. Findell, *Adding it up: Helping children learn mathematics* (pp. 313-368).
 Washington, DC: National Academies Press <u>https://ebookcentral-proquest-</u>
 com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=3375421&ppg=334
- National Council of Teachers of Mathematics (2000). *Principles and Standards for School Mathematics* https://ucalgary.primo.exlibrisgroup.com/permalink/01UCALG_INST/46139d/alma991023580049704336
- National Council of Teachers of Mathematics (2014). *Principles to Actions: Ensuring mathematics success for all* <u>https://ebookcentral-proquest-com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/detail.action?docID=6478900</u>



- Van de Walle, J.A., Karp, K.S., Bay-Williams, J.M. (2019). Elementary and middle school mathematics: Teaching developmentally, 10th US ed. Pearson. <u>https://ucalgary.primo.exlibrisgroup.com/permalink/01UCALG_INST/1rf6mu5/alma99102815938490433</u> 6
- Wiggins, G. & McTighe, J. (2011). Understanding By Design® Framework. Alexandria, VA: Association for Supervision and Curriculum Development. Retrieved from <u>https://www.ascd.org/ASCD/pdf/siteASCD/publications/UbD_WhitePaper0312.pdf</u>
- Wiggins, G. & McTighe, J. (2005). Understanding by design (2nd Edition). Alexandria, VA: Association for Supervision & Curriculum Development. <u>https://ebookcentral-proquest-</u> com.ezproxy.lib.ucalgary.ca/lib/ucalgary-ebooks/reader.action?docID=3002118

ADDITIONAL RECOMMENDED READINGS AND RESOURCES: Other readings and relevant resources will be shared often in class. A list will be maintained on D2L for your reference.

LEARNING TASK (LT)	DESCRIPTION OF LEARNING TASK	GROUP / INDIVIDUAL	WEIGHT	DUE DATE
1	An inquiry into teaching mathematics	Group	30%	Digital folder and powerpoint: Friday, July 14 th (by 1 PM)
				Workshop dates: July 14, 17-21
2	Designing a unit and assessment plan	Individual	40%	Penultimate project (for peer review): Friday, July 21 nd (by 1 PM)
				Final project: Monday, July 24 th
3	Demonstrating your evolving conceptual understanding of Mathematics	Individual	30%	Friday, July 28 th

LEARNING TASKS OVERVIEW

WEEKLY COURSE SCHEDULE:

Date	Торіс	Readings and Tasks	LT Due Dates and Reminders
July 10 & 11	 Welcome & Introduction Developing a deeper conceptual understanding of the historical, socio-cultural, political contexts of the <i>discipline</i> Essential Question (s) [EQ1]: What are the goals of math teaching? What 	Monday: Alberta PoS front matter review Alberta Education. (2007). Mathematics Kindergarten to Grade 9 Program of Studies. Retrieved from <u>https://education.alberta.ca/media/3115252</u> <u>/2016 k to 9 math pos.pdf</u> or Alberta Education. (2008). Mathematics Grade 10-12 Program of Studies. Retrieved from <u>https://education.alberta.ca/media/564028/</u> <u>math10to12.pdf</u>	 Monday: Intro to LT1 & workshop format Partner and topic selection; selection of workshop dates Intro to LT2 Intro to LT3



does it mean to be a teacher of math?Tuesday: Readings for LT3 (assigned on day 1):TuesEQ2: What is your understanding of mathematical reasoning and problem-solving skills?Tuesday: Readings for LT3 (assigned on day 1):Stu LTAnsari, D. (2016). No More Math Wars, An evidence-based, developmental perspective on math education. Education Digest, 81(7), 4–10.LTFriesen, S. (2009). What did you do in school today?: Teaching effectiveness: A framework and rubric. Retrieved from http://www.galileo.org/cea.2009.wdvdist.No	sday: udents work on Γ1 in class Γ2 sign-up
EQ2: What is your understanding of mathematical reasoning and problem-solving skills?Ansari, D. (2016). No More Math Wars, An evidence-based, developmental perspective on math education. Education Digest, 81(7), 4–10.LTFriesen, S. (2009). What did you do in school today?: Teaching effectiveness: A framework and rubric. Retrieved from 	Γ2 sign-up
Friesen, S. (2009). What did you do in school today?: Teaching effectiveness: A framework and rubric. Retrieved from http://www.galileo.org/cea-2009-wdwdist-	
teaching.pdf	
 July 12 & 13 Developing a deeper conceptual understanding of the historical, socio-cultural, political contexts of the discipline. EQ: What is your understanding of mathematical reasoning and problem-solving skills? What does it mean to be a "designer" of learning? Stage 1. Identify Desired Results Kate a Conceptual the sources for LT2: Alberta Education. (2007). Mathematics Grade 10-12 Program of Studies. Retrieved from https://education.alberta.ca/media/3115252 /2016 k to 9 math_pos.pdf or Alberta Education. (2008). Mathematics Grade 10-12 Program of Studies. Retrieved from https://education.alberta.ca/media/564028/ math10to12.pdf Galileo Network, (ND). Big mathematical ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles, R. (2005). Big ideas and understandings. Adapted from Charles and understandings and the foundation for t	dnesday: udents work on Γ1 in class ursday: udents work on Γ1 in class



		elementary and middle school mathematics. Jou <i>rnal of Mathematics</i> <i>Education Leadership</i> , 7(3), 9-21. Retrieved from: <u>http://galileo.org/pl/wp- content/uploads/math-big-ideas.pdf</u> Wiggins, G. & McTighe, J. (2005). <i>Understanding by design</i> (2nd Edition). Alexandria, VA: Association for Supervision & Curriculum Development. <u>https://ebookcentral-proquest- com.ezproxy.lib.ucalgary.ca/lib/ucalgary- ebooks/reader.action?docID=3002118</u> (Chapters 3, 4, 5, & 6)	
July 14	 Identify and critique the key learning perspectives and intentions in the Alberta Programs of Study EQ: What does it mean to be a "designer" of learning? Stage 1. Identify Desired Results 	Friday: Resources for LT2 as mentioned above	 LT1 digital folder and presentation due July 14th (by 1 PM) LT1 workshops commence Students work on LT2 Stage 1 in class
July 17 & 18	 Identify and critique the key learning perspectives and intentions in the Alberta Programs of Study EQ: What will you accept as evidence that student understanding took place? Stage 2. Determine what constitutes acceptable evidence of competency in the outcomes and results (assessment) EQ2: How do you shift the responsibility of learning from the teacher to the students? Stage 3 Plan the 	 Monday & Tuesday: Resources for LT2: Alberta Assessment Consortium: https://aac.ab.ca/ Username: teachers Password: master Galileo Educational Network. (nd). <i>Guide to</i> <i>Assessing Critical Thinking</i>. http://www.galileo.org/tips/rubrics/ct_rubri c.pdf Galileo Educational Network. (nd). Designing rubrics. <i>Focus on Inquiry</i> https://inquiry.galileo.org/ch3/designing- rubrics/ Keeley, P., & Tobey, C.R. (2011). Mathematics formative assessment: 75 practical strategies for linking assessment, 	 LT1 workshops continue Students work on LT2 Stages 2 and 3 in class



	appropriate learning activities	 <i>instruction, and learning.</i> Thousand Oaks, CA: Sage Wiggins, G. & McTighe, J. (2005). Understanding by design (2nd Edition). Alexandria, VA: Association for Supervision & Curriculum Development. <u>https://ebookcentral-proquest-</u> com.ezproxy.lib.ucalgary.ca/lib/ucalgary- ebooks/reader.action?docID=3002118 (Chapters 7, 8, 9, & 10) 	
July 19 & 20	 Identify and critique the key learning perspectives and intentions in the Alberta Programs of Study EQ: What does it mean to be a teacher of diversity? Stage 4: Learner differentiation 	 Wednesday & Thursday: Resources for LT2: Alberta Education. (2010). Making a Difference: Meeting diverse learning needs with differentiated instruction. Retrieved from https://open.alberta.ca/dataset/9780778586 012/resource/4f325cbc-0b11-4284-80fb- 6b83e3072b49 Alberta Teachers' Association. (2020). Foundational knowledge for indigenous education. https://teachers- ab.libguides.com/foundationalknowledge/ math Alberta Education. (nd). Benchmarks, strategies,and resources for teachers of English language learners. http://www.learnalberta.ca/content/eslap b/ 	 LT1 workshops continue Students work on LT2 Stage 4 in class
July 21	 Applying the Big Ideas that underpin the overarching learning objectives in the discipline EQ: What does it means to be a reflective practitioner? 		 LT2 due (for peer review) LT2 final draft due July 24th Review of LT3 LT3 due July 28th

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 three required Learning Tasks for this course. Completion of all tasks is required to pass this course.

LEARNING TASK 1: An Inquiry into Teaching Mathematics

(Group Submission)

DUE: Friday, July 14th by 1 PM

Percentage of final grade: 30% **Workshop Length:** 45 minutes (30 min interactive workshop, 15 min Q & A) (on July 14, 17-21)

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 Mathematics, our focus is on emphasizing students' active engagement in genuine mathematical problems, an approach to make mathematical learning appealing to all students. Of central importance are mathematical pedagogical practices, with the integration of students' learning of core disciplinary concepts, and with active engagement in doing mathematics (Alberta Education's Programs of Study; NCTM Principles, Standards, and Expectations). As a new teacher, there will be challenges acquiring the knowledge and skill to meet these expectations. This assignment is meant to introduce the opportunities and challenges that mathematics 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 mathematical-related skills and attributes.

Expectations: For this assignment, students (in groups of 2-3) will develop an investigable question on the topic of teaching mathematics nested within the above context. The question will emerge from class discussion and readings (including from Specialization I) and can be connected to the development of your final longer-term unit plan (Assignment 2). This work can also be connected to Alberta Education's (nd) *Teaching Quality Standard*. You should consider many sources of evidence for answering your question: journal articles, teacher blogs, teacher resource books, even conversations with experienced teachers or students and your own observations from your field experience.

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 and submit a digital folder that could include text, visuals, media, and other supporting links for this inquiry. Be creative in the development of this folder.

LT1 topics and further explanations will be presented to you in both D2L Content and our first class.

Required elements of this project 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).
- In-class learning session
 - the significance of the inquiry,
 - how the inquiry fits in the ongoing pedagogical knowledge building focused on the teaching of mathematics,
 - how these ideas generated from the inquiry may be active 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

Group inquiry projects will be assessed on the following criteria:

- 1. Quality and meaningfulness of research question and resources used in investigation
 - Clarity of presentation of the inquiry question
 - Fullness of rationale for the question
 - Meaningfulness to pre-service teachers within the discipline
 - Significance and relevance of resources; correct citation
- 2. Overall Presentation of findings
 - Organization, clarity, and succinctness of digital folder
 - Specificity of references made to resources
 - Effectiveness of writing to convey the brainstorming and key findings of the group
 - Strength of summary of findings
- 3. Digital folder design elements used in representation of group inquiry question and findings
 - Effectiveness of visuals in depicting issues raised in inquiry
 - Clear, relevant, and striking use of visuals and/or technology and media
 - Connectedness between inquiry question, supporting text, and use of visual content
- 4. Learning activity facilitation
 - Intent of facilitation is clearly communicated and followed.
 - Balanced presentation that actively engages participants.
 - Unfolds logically in relation to the purpose and allows the development of important insights.

Summary of Grading Based on Above Criteria

A+ to A project will present a significant research question with a clear rationale and exceptional explication of findings that are organized, well written, and supported. The digital folder will employ engaging and clearly connected visuals.

A- to B+ project will be guided by a good research question with a supporting rationale and generally well written and developed findings that are paired with research support and some examples. The digital folder will include mainly relevant and strong visuals.

B to B- project may present a roughly sketched research question in need of some refinement, a somewhat developed rationale, and findings that are lacking in some clarity, development, and/or examples. The digital folder will include many images and files but may not be complete or may hold examples that are not connected to the project.



LEARNING TASK 2: Designing a Unit and Assessment Plan

(Individual Submission)

Penultimate project (for peer review) due on: Friday, July 21st (by 1 PM) **Percentage of the Final Grade:** 40% **Final project due on:** Monday, July 24th

Expectations: For this assignment, students will design a unit-plan for learning and assessment to sponsor deep understanding of a key disciplinary concept and/or competency, and illustrative of key aspects of theory introduced in the course. It should involve a rationale for the learning plan, as supported by theory and the discipline of math education, and the practicalities of enacting this plan by fitting it into a larger context/concept, integrating effective formative assessment strategies for scaffolding, and adapting to the needs of diverse learners. The learning design and the theoretical framework supporting it will be posted on D2L for analysis and "feedforward" suggestions from members of the class.

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 mathematical processes and the nature of mathematics 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.	

CRITERIA FOR ASSESSMENT OF LEARNING TASK 2



Learning Outcomes	Assessment is directly matched to learning outcomes from Stage 1. (<i>Ab Ed Achievement Indicators</i>)	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.	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 an	nd engaging?	
Design Is Informed by Pedagogical Content Knowledge	Designs learning experiences that engage the students in doing work that require distinct ways of thinking about and acting in the world that disciplines embody to make meaningful connections and build deep understanding.	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 real 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 	 The work students undertake fosters disciplined habits of mind. Students are asked to: Formulate plausible solutions, Articulate assumptions, 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



	among concepts		
Stage 4: Learner I	nclusion		
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.

LEARNING TASK 3: Demonstrating Your Evolving Conceptual Understanding of Mathematics

(Individual Submission)

DUE: Friday, July 28th **Percentage of the Final Grade:** 30% **Multimodal Response Length:** 700-1000 words or 7-10 minutes

The purpose of the assignment is for you to respond to the question **"How has your conceptualization of Mathematics changed?"** as way of reflecting thoughtfully on the pedagogical content knowledge in the subject area. you will have opportunities to demonstrate your scholarly and professional thinking about key pedagogical issues that underpin our work as math teachers Your response may take a number of forms. It could be a conventional academic essay, an imagined Socratic dialogue between a teacher and student, an illustrated story, an animation, a short video or a podcast. However, all responses must be persuasive – that is, you must fashion a personal stand on the question(s), and then set out to prove your interpretation using *relevant and varied evidence*.

All responses must refer to:

- Alberta Education's Programs of Study
- At least 3 articles or chapters read during EDUC 460 and/or EDUC 535

You may also want to draw upon:

- Discussions in your inquiry groups
- Observations made during your field experience

<u>Criteria</u>

The following criteria will be used to assess the work. Your response should:

- Articulate a clear, insightful, and persuasive argument
- Draw upon relevant evidence from the readings to support the argument
- Demonstrate an emerging understanding of concepts and theories related to the teaching of the discipline
- Use an appropriate mode of expression in a way that is sophisticated, clear, and accurate.
- Include peer-reviewed references and cited in APA 7.



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
Articulates a clear, insightful, and coherent understanding of teaching math within each pedagogical issue	Clearly expresses specific insights and understandings that underpin the teaching of math.	Insights and understandings are clear and somewhat specific to the teaching of math.	Insights and understandings are generally clear but not directly connected to the teaching of math.
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.
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.
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.



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: <u>http://www.ucalgary.ca/pubs/calendar/current/e-</u>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 prior to the end of the course 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
А	4.0	90-94	Excellent – Superior performance showing comprehensive understanding of the subject matter
A-	3.7	85-89	
B+	3.3	80-84	
В	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	
С	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: <u>https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf</u>. 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: <u>ucalgary.ca/legal-</u>

<u>services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf</u>. 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 <u>http://www.ucalgary.ca/pubs/calendar/current/k.html</u>

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 <u>educrep@su.ucalgary.ca.</u>