

DEPARTMENT OF EDUCATION

COURSE OUTLINE – Fall 2026

ED3300: Numeracy for Elementary Students – 3 (5-0-0) 45 Hours for 9 weeks

Northwestern Polytechnic acknowledges that our campuses are located on Treaty 8 territory, the ancestral and present-day home to many diverse First Nations, Metis, and Inuit people. We are grateful to work, live and learn on the traditional territory of Duncan's First Nation, Horse Lake First Nation and Sturgeon Lake Cree Nation, who are the original caretakers of this land.

We acknowledge the history of this land, and we are thankful for the opportunity to walk together in friendship, where we will encourage and promote positive change for present and future generations.

INSTRUCTOR: Alicia Burdess

IN CLASS: Thursdays 4:30-7:20p.m. A201

LAB: Wednesdays 9:00-10:50 a.m. St. Kateri School

EMAIL: aliciaburdess@nwpolytech.ca

OFFICE HOURS: By appointment

CALENDAR DESCRIPTION: This course is designed to build foundational numeracy skills for K-6 learners, emphasizing the knowledge, skills, competencies, and dispositions required to apply mathematics in authentic situations. Students will deepen their understanding of the progressions of key concepts, the interconnected ideas of mathematics, and the sequencing of curriculum, while gaining confidence in both learning and teaching mathematics. Through hands-on experiences, research, reflection, and collaborative learning labs, participants will explore effective instructional strategies and develop the tools to engage and support all students in meaningful mathematical thinking and learning.

PREREQUISITE(S): ED 2550

REQUIRED MATERIALS:

Van de Walle, J. A., Karp, K. S., Bay-Williams, J. M., & McGarvey, L. M. (2026). *Elementary and middle school mathematics: Teaching developmentally* (7th Canadian ed.). Toronto: Pearson Canada.



LEARNING OUTCOMES:

Alberta Teaching Quality Standard (TQS)

The Bachelor of Education program prepares students for Interim Professional Certification with Alberta Education. Learning Outcomes support students to begin demonstrating competencies and indicators of the Alberta Teaching Quality Standard. Through the completion of ED3300, students will:

1. Exhibit a Productive Disposition:
Demonstrate and foster risk-taking, curiosity, perseverance, growth, and self-confidence in learning and teaching mathematics.
2. Expand Mathematical Understanding for Teaching:
Deepen your understanding of the interconnections and learning progressions of mathematical concepts and relevant competencies. Learn about building conceptual understanding through the relationships between concrete learning with manipulatives, visual representations with diagrams and models, and abstract reasoning with symbols and equations.
3. Develop Teaching Practices that Support Student Learning:
Explore current perspectives on children's mathematics learning and the instructional strategies, representations, tools, and manipulatives that facilitate students' mathematical thinking, learning, and discourse. Understand the importance of collaboration, productive struggle, and problem solving to promote rich, engaging math learning experiences.
4. Assess for Learning:
Explore assessment practices to identify prior knowledge and inform potential early intervention. Use formative assessments to guide instruction and support the development of numeracy skills, knowledge, and attitudes. Apply summative assessments to evaluate learning, communicate progress, and report outcomes.
5. Plan for Learning:
Understand and interpret the K-6 Mathematics Curriculum and design engaging learning and assessment activities for students. Learn how to sequence and connect the learning outcomes to support the developmental progressions of mathematical thinking and understanding. Learn to critically evaluate instructional resources.
6. Understand how to Establish an Inclusive Learning Environment:

Learn how to foster a safe and caring classroom environment where diversity is celebrated and students are empowered to work together, take risks, make mistakes, and share their ideas. Create an environment that allows access for all students through differentiation strategies that promote effective mathematical learning.

TRANSFERABILITY:

Please consult the Alberta Transfer Guide for more information. You may check the transferability of this course at the Alberta Transfer Guide main page <http://www.transferalberta.alberta.ca>.

**** For courses with alpha (letter) grading, a grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. **Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability.****

EVALUATIONS:

Assignment	Percentage	Due date
Assignment 1: Learning Journey Reflections	30%	Weekly Reflections (Mondays at midnight) Self-Assessment Thursday, October 29 in class
Assignment 2: Connecting Rich Tasks	20%	Monday, September 21 at midnight
Assignment 3: Understanding the Operations	20%	Monday, October 26 at midnight
Final Exam: Take-Home Exam	30%	Thursday, November 5 at midnight

* Should due dates change, the Instructor will discuss the new dates with students.

GRADING CRITERIA

To progress in the Bachelor of Education program, students must achieve a minimum grade of C- in all Education (ED) courses. Any grade below C- does not meet the passing requirement and will require the student to repeat the course.

Please note that most institutions will not accept your course for transfer credit **IF** your grade is **less than C-**.

Grading Chart for courses with Alpha Grading:

Alpha Grade	4-point Equivalent	Percentage Guidelines	Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	95-100	C+	2.3	67-69
A	4.0	85-94	C	2.0	63-66
A-	3.7	80-84	C-	1.7	60-62
B+	3.3	77-79	D+	1.3	55-59
B	3.0	73-76	D	1.0	50-54
B-	2.7	70-72	F	0.0	00-49

COURSE SCHEDULE/TENTATIVE TIMELINE:

This is a **tentative** week-by-week outline. It will be updated as the course progresses. Please see the online version in Canvas.

Schedule	Topic	Readings and Resources
Sep. 3 In Class	Introduction & Curriculum	Chapter 1: Teaching and Learning Mathematics in the Twenty-First Century (Van de Walle)* Lockhart's Lament (in class)* Alberta Mathematics Program of Studies K-9 Front Matter* New Learn Alberta Mathematics Curriculum* Alberta Provincial Learning Consortium Website - curriculum support resources* *To read/explore before Lab #1
Introduction to Assignment One - Learning Journey Reflections (Due every week)		
Sep. 9 Lab #1		Introduction to the teacher and students. Initial activity (math game) with small groups



Sep. 10 In Class	Teaching and Learning Mathematics Inquiry and Rich Tasks	Chapter 2: Exploring What It Means to Know and Do Mathematics (Van de Walle) Chapter 3: Mathematical Inquiry Through Rich Tasks and Classroom Discourse (Van de Walle)
Sep. 16 Lab #2		Rich tasks with small groups
Sep. 17 In Class	Developing Number Sense Connections to Indigenous Perspectives	Chapter 7: Developing Early Number Concepts and Number Sense (Van de Walle) Exploring Inuit Students' Responses to Number Talks (Pope and Mitton) Counting Principles/Progression of Number Sense Number Talks/Esti-Mysteries/Problem Strings Rich Tasks/Games Manipulative and Technology
Assignment Two - Connecting Rich Tasks Due Monday, September 21st at midnight		
Sep. 23 Lab #3		Number sense activities with small groups (number talk, esti-mystery, game)
Sep. 24 In Class	Place Value	Chapter 10: Developing Whole Number Place Value Concepts (Van de Walle) Manipulatives and Technology/Mathigon Polypad
Sep. 30	NO LAB	National Day for Truth and Reconciliation
Oct. 1 In Class	Fact Fluency	Chapter 9: Developing Basic Fact Fluency Jo Boaler, Fluency Without Fear
Oct. 7 Lab #4		Fact fluency activities: games, rich tasks, productive practice with small groups
Oct. 8 In Class	Computational Strategies	Chapter 8: Developing Meanings for the Operations (Van de Walle) Chapter 11: Developing Strategies for Addition and Subtraction Computation (Van de Walle) Learning-strategies-for-addition-and-subtraction-facts.pdf
Oct. 14 Lab #5		Exploring addition and subtraction strategies with small groups Exploring manipulatives with small groups: Base 10 blocks and Cuisenaire Rods
Oct. 15 In Class	Computational Strategies	Chapter 12: Developing Strategies for Multiplication and Division Computation (Van de Walle)



		Major Strategies Pam Harris.pdf
Oct. 21 Lab #6		Exploring multiplication and division strategies with small groups Exploring manipulatives with small groups: Base 10 blocks and Cuisenaire Rods
Oct. 22	Planning for Learning Inclusion	Chapter 4: Preparing to Teach and Planning for Mathematical Learning (Van de Walle) Chapter 6: Teaching Mathematics For All Learners (Van de Walle)
Oct. 28 Lab #7		Teaching a Mini Lesson/Collecting Evidence of Learning
Assignment Three - Understanding the Operations Due Monday, October 26th at midnight		
Oct. 29 In Class	Assessment	Chapter 5: Blending Teaching and Assessment (Van de Walle) Chapter 13: How We Use Formative Assessment in a Thinking Classroom (Liljedahl) Formative and Summative Assessment The Triangulation of Assessment
Assignment One - Learning Journey Reflections Self Assessment Due Thursday, October 29th in class		
Nov. 5	Final Exam	Take-Home Culminating Exam Thursday, Nov. 5th at midnight

STUDENT RESPONSIBILITIES:

Attendance and punctuality are essential to success in this course. As our 3-hour classes are highly hands-on and collaborative, much of the learning happens through activities, discussions, and interactions that are difficult to replicate or make up outside of class. As a result, absences and lateness may affect both your learning and your evaluation.

If you are going to be late or absent, you **must notify the instructor before class**. If you miss a class, it is your responsibility to connect with classmates and obtain any materials, information, or instructions you missed.

Being prepared for every class is equally important. This includes completing assigned readings, assignments, and tasks; bringing all required materials; and arriving ready to participate actively and meaningfully. Homework and readings are an essential part of learning. Please plan accordingly to get the most out of this class and our learning time together.

To support everyone's learning, do not disrupt the class. This includes arriving on time, listening to others (instructor and students), engaging in on-task conversations at all times as directed, and only using digital devices to access course-related materials.

If you need an extension to complete an assignment, communicate with me via email before the assignment is due and we will come up with a plan.

Be prepared to push yourself outside of your comfort zone, collaborate, take risks, and make mistakes; this is where the real learning happens!

STATEMENT ON ACADEMIC MISCONDUCT:

Academic Misconduct will not be tolerated. For a more precise definition of academic misconduct and its consequences, refer to the Student Rights and Responsibilities policy available at <https://www.nwpolytech.ca/about/administration/policies/index.html>.

****Note:** all Academic and Administrative policies are available on the same page.

EXPECTATIONS FOR AI USE:

In this course, we commit to AI use guided by ethical and transparent principles. While students are allowed to use advanced automated tools (such as ChatGPT or Dall-E 2) for specific written assignments, it is crucial to adhere to the following guidelines:

Seek prior approval from the instructor for AI use in specific assignments.

When allowed, clearly attribute and cite any AI-generated content in your work, including prompts and AI outputs, as part of your academic record. Include an additional reflection component in your assessments, discussing how AI tools contributed to your learning process.

IMPORTANT: Please note that AI use is strictly prohibited in assessments and assignments not approved by the instructor. Failure to abide by this guideline may be considered an act of cheating and a violation of academic conduct.

RECORDING CLASS LECTURES:

Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor



content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).