Yukon University / University of Regina	**School of Health, Education and Human Services**
	EMTH 310.340 (CRN 13516)/202202 20063
	Term: Winter 2023 **Number of Credits: 3**
Course Outline	

Instructor: Dr. Latika Raisinghani
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Office hours: By appointment (through email)

Course Credits: 3.00
Course Delivery: Virtual Remote Learning (YukonU MyCourses and Zoom)
Meeting Days & Time: Thursdays 5:30 pm–8:25 pm PDT

TERRITORIAL ACKNOWLEDGEMENT[1]

As members of this learning community, we acknowledge our presence in the traditional territory of the Kwanlin Dün First Nation and the Ta'an Kwäch'än Council in Yukon and of the Treaty 4 and Treaty 6 peoples in Saskatchewan. We are thankful for the opportunities to live and learn on the ancestral lands on which the Yukon University and the University of Regina are located and operates. We respect and honour the treaties that were made on all territories and acknowledge the harms and mistakes of the past. Decolonization, Indigenization, and sustainability are our shared responsibilities, and we are committed to move forward in partnership with the Indigenous Nations in the spirit of reconciliation and collaboration.

COURSE DESCRIPTION

This course is designed to address the philosophies, goals, curriculum documents, and methods of instruction and assessment of elementary and middle school (PreK to 8) mathematics. A critical, resource-based approach to this course will provide opportunities for students to reflect on and construct understandings of key issues in mathematics education.

COURSE REQUIREMENTS

For elementary pre-internship students only (Early Elementary and Middle Years)

EQUIVALENCY OR TRANSFERABILITY

Receiving institutions determine course transferability. Find further information at: https://www.yukonu.ca/admissions/transfer-credit

[1] Source: https://www.uregina.ca/indigenization/resources/territoritorial-acknowledgement.html and https://saskschoolboards.ca/wp-content/uploads/Treaty-4-Territory.pdf

LEARNING OUTCOMES

By participating in this course, the students will be able to:

- Gain knowledge about the philosophy, goals, and critical issues of mathematics education
- Become familiarized with the K-8 mathematics curricula, digital and hands-on manipulatives, and other resources
- Cultivate understandings of Indigenous ways of knowing and culturally responsive, ecologically and socially just, inclusive mathematics education practices and work towards building mathematical understandings that promote mathematics as a human endeavour
- Develop capacities to design and implement cross-curricular, multi-model, responsive instruction, and assessment activities in four key strands of mathematics learning namely, 1) Number 2) Patterns and Relations 3) Shape and Space 4) Statistics and Probability
- Develop critical stance to evaluate research, teaching, and learning practices, and engage in personal and professional growth as a mathematics learner and educator
- Reflect on personal mathematical identities, values and beliefs and develop philosophies to empower Self and Others as mathematics learners

COURSE FORMAT and EXPECTATIONS

As a member of the learning community in this course, you are expected to attend all virtual class meetings of this course. These meetings may include synchronous and asynchronous active reading time. Your successful engagement with the course requires at least three additional hours per week beyond the class time to complete assigned readings and assignments. This time may vary depending on individual abilities and needs. This course recognizes the cultural capital and wealth of knowledge each one of us may hold. As an instructor of this course, I anticipate establishing a learning community where everyone feels welcomed and supported, and I am delighted to invite you all to participate in this collaborative learning discourse as a knowledge co-constructor. The success of this course and effectiveness of learning experiences depends on everyone's contributions, and it is crucial that we all take responsibility for our own learning as well as for supporting peers' learning.

To be successful in this course, it is important to:

1. Have access to a digital device, a reliable Internet connection and access to institutional Zoom account and library (you may need access to the University of Regina library to access course Reading List)
2. Participate in all course activities and virtual meetings by listening, speaking, writing in a professional, respectful manner.
3. Engage reflectively with the course readings and other resources by connecting them with the academic, personal, professional, and communal interests.
4. Complete all individual and group assessments in a thoughtful, creative, and organized way, and submit these timely as per the assigned deadlines.

The key is full professional engagement in all aspects of the class. It is crucial that we participate with interest and care for deepening our own and other's learning and aim towards creating rewarding learning experiences for all. In the event of extenuating circumstances, the responsibility rests with you to communicate with your peers (especially, if you are working on the group projects), and the instructor

about the possible extensions of assignments (before the due date), and make-up for any missed work and absences. Please also refer to Yukon Teachers Certification guidelines and Academic Regulations of Yukon University as well as Saskatchewan Teachers' Federation's (STF) guidelines for Teacher Professionalism Codes and Standards.

DELIVERY FORMAT

This course employs remote teaching methods involving both synchronous and asynchronous online modes of learning. All key course resources, and information about the course activities and virtual Zoom meetings are available through Yukon University MyCourses, which will serve as the main platform for communication, instruction, assessments, and evaluation of the course. During the first day of class, we will meet virtually through Zoom to discuss the details of the course including assignments and recommended resources and the nature and scope of synchronous, virtual class meetings as well as engagement in the asynchronous activities during the term.

EVALUATION

Math Around Us Virtual Resource (Due February 2, 2022) This assignment includes two parts: a) Identifying a particular mathematical phenomenon (concept, idea, topic, issue, etc.) around us and analyzing its possible curriculum and pedagogical connections through a pre-recorded 6-8 minute video i.e., virtual resource, and b) Writing a reflection on this learning experience.	30%
Pedagogical Leadership Presentation and Reflection (Ongoing Submissions) This assignment invites you to lead and facilitate a 20-25 minute discussion on a selected mathematics topic during one of the synchronous learning sessions and reflect on your learnings. Your goal is to prompt active engagement and meaningful discussion on the topic and ensure respectful participation of all participants.	30%
Cross-Curricular Resource Development and Microteaching (Due March 29, 2022; Class Presentations on March 30, 2022 or April 6, 2022) This is a group project which involves engaging in a collaborative inquiry and developing and sharing a cross-curricular resource that could be utilized to teach a mathematics topic in a cross-curricular manner to select grade level(s) in Yukon/Saskatchewan schools.	40%
Total Percentage	100%

Note: Detailed guidelines and rubric for each of these assignments are available through the course site. Extensions for assignments may be granted by consultation with the instructor at least three days BEFORE the due date. Late assignments without adequate reason (and for which documentation such as a doctor's note may be requested) will be deducted 5% per day to a maximum of 3 days. After the third day, the assignment will not be accepted and will be recorded as a zero.

COURSE WITHDRAWAL INFORMATION

Last day to withdraw or change to audit from winter term academic courses without academic penalty Thu, Mar 9, 2023. Please Refer to the YukonU website Important dates | Yukon University for other important dates.

TEXTBOOKS & LEARNING MATERIALS

Recommended Key Texts:

- Small, Marian (2021 or various editions). *Making Math Meaningful to Canadian Students K-8*. Toronto, ON: Nelson Publications.
- Boaler, Jo (2016). *Mathematical mindsets: unleashing students' potential through creative math, inspiring messages, and innovative teaching*. San Francisco, CA: Jossey-Bass. (An electronic version of this text is available from the University of Regina Library)

Other helpful texts:

- Van De Walle, John A. & Folk, S. (various editions). *Elementary and Middle School Mathematics: Teaching Developmentally*. Toronto, ON: Pearson Education Canada Inc (or other publishers).

Key Web resources:

- BC Ministry of Education. Indigenous Education Teaching Tools and Resources: https://www2.gov.bc.ca/gov/content/education-training/k-12/teach/resources-for-teachers/indigenous-education
- First Nations Education Steering Committee. Learning First Peoples Classroom Resources. http://www.fnesc.ca/learningfirstpeoples/
- Graham Fletcher website: https://gfletchy.com/
- Learn about Yukon's school curriculum https://yukon.ca/en/school-curriculum
- Make math moments: https://makemathmoments.com/
- Math Central: http://MathCentral.uregina.ca
- NCTM Illuminations: https://illuminations.nctm.org/
- NRich: https://nrich.maths.org/
- Saskatchewan Curriculum https://www.edonline.sk.ca/webapps/moe-curriculum-BBLEARN/index.jsp?lang=en
- The National Council of Teachers of Mathematics (NCTM): https://www.nctm.org/
- Youcubed: https://www.youcubed.org/resource/apps-games/

Virtual Manipulatives:

- Coolmath4kids: https://www.coolmath4kids.com/manipulatives
- Desmos: https://teacher.desmos.com/
- Math before bed: https://mathbeforebed.com/
- Mathigon: https://mathigon.org/activities
- Tap into teen minds: https://tapintoteenminds.com/
- VM Inventory: https://virtualmanipulatives.nikulak.ca/

Note: Having access to a digital device and reliable Internet are crucial to access these resources. We will build on these resources further through our collaborative inquiry into mathematical processes. Additional readings and resources for this course will be available through the Reading List on the course site. These will include selected book chapters, Journal articles and web-based resources. To access this Reading List, you may be directed to login into the University of Regina library.

ACADEMIC INTEGRITY

Students are expected to contribute toward a positive and supportive environment and are required to conduct themselves in a responsible manner. Academic misconduct includes all forms of academic dishonesty such as cheating, plagiarism, fabrication, fraud, deceit, using the work of others without their permission, aiding other students in committing academic offences, misrepresenting academic assignments prepared by others as one's own, or any other forms of academic dishonesty including falsification of any information on any Yukon University document.

Please refer to Academic Regulations & Procedures for further details about academic standing and student rights and responsibilities.

ACCESSIBILITY AND ACADEMIC ACCOMMODATION

Yukon University is committed to providing a positive, supportive, and barrier-free academic environment for all its students. Students experiencing barriers to full participation due to a visible or hidden disability (including hearing, vision, mobility, learning disability, mental health, chronic or temporary medical condition), should contact Accessibility Services for resources or to arrange academic accommodations: access@yukonu.ca.

TOPIC OUTLINE

TENTATIVE SCHEDULE

Weeks	Topic*	Activities
Week 1 January 5	Introduction of the course and participants	Introductions and Course Overview
	Mathematics: Nature and Philosophies	Exploring personal connections and experiences with Mathematics + Chapter 1 and 2 Small, M. + Chapter 1 and 2 Boaler, J.
Week 2 January 12 Topic Selection and Peer Discussion for Pedagogical Leadership	Curriculum and Mathematical Literacy + Planning Instructions and Assessments	Provincial Curriculum + Chapter 3 and 4 Small, M., Chapter 8 Boaler, J. In-class meeting with the peers and instructor on Pedagogical Leadership
Week 3 January 19 Groups and Presentation Day Selection for Cross-Curricular Resource and Microteaching	Teaching Mathematics to Diverse Students	Yukon First Nations Core Competencies + SaskMath Resource + Gear article
	Reading in Mathematics	Barton article In-class meeting with the peers and instructor on cross-curricular resource
Week 4 January 26	Early Number	Chapter 7 Small, M. Early Number + Jung article
	Number Operations: Early operations	Chapter 8 Small M. Early operations + Bay-Williams & Kling article

Week 5 February 2 Math Around Us Resource and Reflection Submission	Number Operations: Estimations and Calculations + Place Value	Chapter 11 Small, M. Estimation and Calculation strategies with larger whole numbers Pedagogical Leadership + Murata & Stewart article
	Fractions	Small, M. Chapter 12 Fractions Pedagogical Leadership + Clarke et al article
Week 6 February 9	Decimals	Small, M. Chapter 13 Decimals Pedagogical Leadership
	Ratio & Proportions	Small, M. Chapter 14 Ratio & Proportions Pedagogical Leadership + Beckmann et al. and Simic-Muller articles
Week 7 February 16	Patterns and Algebra	Chapter 16 Small, M. Patterns and Algebra Pedagogical Leadership
	Mathematical Mindsets + Rich Mathematical Tasks	Chapters 4 and 5 Boaler, J. Math Around Us Virtual Gallery
February 23	**READING WEEK BREAK**	**No Class**
Week 8 March 2	3-D and 2-D Shapes	Small, M. Chapter 17 3-D & 2-D Shapes+ Newcombe article Pedagogical Leadership
	Location and Movement	Small, M. Chapter 18 Location & Movement Pedagogical Leadership
Week 9 March 9	Measurements: Length and Area	Small, M. Chapter 19 Nature of Measurement Pedagogical Leadership + Kamii article or Copley et al article or Preston & Thompson article
Week 10 March 16	Statistics: Data	Small, M. Chapter 21 Data Pedagogical Leadership
	Statistics: Probability	Small, M. Chapter 22 Probability Pedagogical Leadership
Week 11 March 23	Social Justice and Equity in Mathematics	Chapter 6 Boaler, J. + Raisinghani + Kabiri et al. article
	Diverse Cultural and Indigenous Ways of Knowings Mathematics	Wisdom Sharing by Indigenous Elder/Knowledge Keeper**
Week 12 March 30	Inquiry into Mathematics Learning and Teaching	Cross-curricular Resource Sharing and Microteaching
Week 13 April 6	Inquiry into Mathematics Learning and Teaching	Cross-curricular Resource Sharing and Microteaching
	Math Textbooks and Trade books + Reflections	Tarr et al. and Hellwig et al. articles + Final Reflections + Course Feedback

* Specific guidelines for each week will be provided on course site as the term progresses.
** May change depending on the Elder's availability during the term.