

EDUC 5180K

Teaching and Learning Mathematics – Junior/Intermediate

Instructors:

Vera Sarina

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Office Hours: 10:00-11:15am

Schedule:

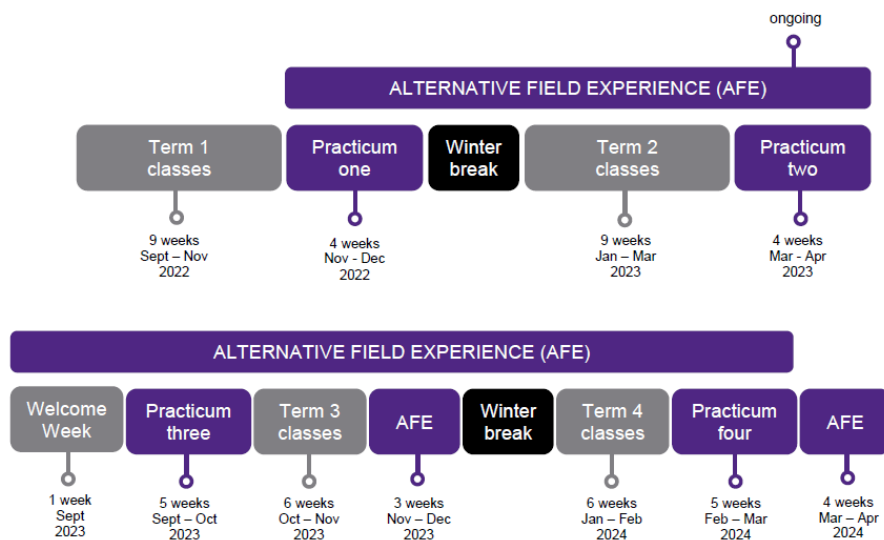
Mondays, 11:30am-12:30pm

Program Context:

This is a **Curriculum Course** taken by Teacher Candidates in **Junior/Intermediate** during **Year 1, Full Year** of the Bachelor of Education.

Bachelor of Education

Program Overview – Class of 2024



Course Information:

The underlying purpose of the course is to extend the skills and knowledge for teaching mathematics in the junior/intermediate divisions. The new and exciting elementary Ontario mathematics curriculum is coming to schools in September 2020. The course aims to give teacher candidates an opportunity to start building their pedagogical knowledge of teaching elementary mathematics curriculum which is based on subject matter knowledge and knowledge of general principles of pedagogy.

This course is focused on introducing the pre-service teachers to:

- deeper understanding of the key concepts of the elementary mathematics including the content of the Ontario Math Proficiency Test
- mathematics pedagogy and classroom practice including the instructional approaches in mathematics recommended by the Ontario mathematics curriculum, 2020
- use of technology to enhance student learning including coding

There are no required materials for this course. You will be provided with electronic/paper documents and links to various websites instead. You are strongly recommended to obtain grades 7 and 8 Mathematics textbooks. If you cannot borrow them from an elementary/middle school, many public libraries have copies of the textbooks. You usually cannot sign newer editions out, but the older versions will do.

""How mathematics is contextualized, positioned, promoted, discussed, taught, learned, evaluated, and applied affects all students. Mathematics must be appreciated for its innate beauty, as well as for its role in making sense of the world. Having a solid foundation in mathematics and a deep appreciation for and excitement about mathematics will help ensure that all students are confident and capable as they step into the future.", OMC 2020

Number of Weeks: 18

Week 1: Course Orientation/Focuses

Teacher Candidates demonstrate knowledge of their subject matter, and an awareness of how their work is governed by the Ontario curriculum, and education related legislation.

Assessment Activities

Type	Name	Description
Formative Assessment		• Reading Course Syllabus
		• Signing up for working groups
		• Exploring MPT site
		• Completing "Me and Mathematics" survey

Week 2:

Curriculum Content: Number strand

Pedagogy content: Social-Emotional Learning (SEL) Skills

Teacher Candidates demonstrate knowledge of their subject matter, and an awareness of how their work is governed by the Ontario curriculum, and education related legislation.

Teacher Candidates demonstrate an understanding of the relationship between well-being and development of all pupils.

Assessment Activities

Type	Name	Description
Formative Assessment	Online participation in the Discussion Forum "Exploring Ontario Math Curriculum.	Number strand, Part 1: Deepening understanding of numbers Social-Emotional Learning (SEL) Skills and the Mathematical Processes

What I notice and what I wonder."

Week 3:
Curriculum Content: Number strand
Pedagogy content: Lesson planning

Teacher Candidates demonstrate knowledge of their subject matter, and an awareness of how their work is governed by the Ontario curriculum, and education related legislation.

Teacher Candidates create and refine their process of pedagogical documentation of

- a variety of effective teaching and assessment practices.
- A variety of effective classroom management strategies.
- How pupils learn and the factors that influence pupil learning and achievement

Assessment Activities

Type	Name	Description
Formative Assessment	Online participation in the Discussion Forum	Number strand, Part 2: The properties and order of operations on numbers Lesson planning, Part 1: The features of a good lesson plan
	"Starting your Lesson Plan. Choosing Curriculum Expectations and Learning Goals"	

Week 4:
Curriculum Content: Number strand
Pedagogy content: Lesson planning

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- a variety of effective teaching and assessment practices.
- a variety of effective classroom management strategies.
- how pupils learn and the factors that influence pupil learning and achievement.

Assessment Activities

Type	Name	Description
Formative Assessment	Problem Set #1 submission.	Lesson planning, Part 2: Inquiry-based activities
	Online participation in the Language of Mathematics Discussion Forum "Analyzing a Sample Lesson Plan".	

Week 5:
Curriculum Content: Number strand
Pedagogy content: Assessment and evaluation

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- a variety of effective classroom management strategies.
- how pupils learn and the factors that influence pupil learning and achievement.

Assessment Activities

Type	Name	Description
Formative Assessment	Online participation in the Discussion Forum "Evaluating by Rubrics"	Number strand, Part 4: Understanding fractions Assessment and evaluation in teaching mathematics Part 1

Week 6:

Curriculum Content: Number strand

Pedagogy content: Assessment and evaluation

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- a variety of effective classroom management strategies.
- how pupils learn and the factors that influence pupil learning and achievement.

Assessment Activities

Type	Name	Description
Formative Assessment	Online participation in the Discussion Forum "Recreating the Lesson Plan"	Number strand, Part 5: Operations with fractions Lesson planning, Part 3: Equity in math classrooms: low floor, high ceiling problems

Week 7:

Curriculum Content: Spatial Sense strand

Pedagogy content: Lesson planning

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Teacher Candidates create and refine their process of pedagogical documentation of

- a variety of effective teaching and assessment practices.
- a variety of effective classroom management strategies.
- how pupils learn and the factors that influence pupil learning and achievement.

Assessment Activities

Type	Name	Description
Formative Assessment	Online participation in the Discussion Forum "Analyzing Math Tasks"	Spatial Sense strand, Part 1: Developing geometric reasoning Lesson planning, Part 4: Bringing it all together

Week 8:

Curriculum Content: Spatial Sense strand

Pedagogy content: Assessment and evaluation

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Teacher Candidates create and refine their process of pedagogical documentation of

- a variety of effective teaching and assessment practices.
- a variety of effective classroom management strategies.
- how pupils learn and the factors that influence pupil learning and achievement.

Assessment Activities

Type	Name	Description
Formative Assessment		Spatial Sense strand, Part 2: Exploring measurement formulas Assessment and evaluation in teaching mathematics Part 2

Week 9:

Curriculum Content: Algebra strand

Pedagogy content: Lesson planning

Teacher Candidates demonstrate knowledge of their subject matter, and an awareness of how their work is governed by the Ontario curriculum, and education related legislation.

Teacher Candidates adapt and refine their teaching practices through continuous learning and reflection, using a variety of sources and resources.

Assessment Activities

Type	Name	Description
Formative Assessment	Problem Set #2 submission Lesson Plan submission	Number strand Part 6: Deepening understanding of negative numbers Lesson plans discussion

Week 10:

Curriculum Content: Algebra strand

Pedagogy content: Unit Planning

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- a variety of effective classroom management strategies.
- how pupils learn and the factors that influence pupil learning and achievement.

Assessment Activities

Type	Name	Description
Formative Assessment	Coding Assignment #1	Algebra strand Part 1: Deepening an understanding of equalities and inequalities Coding Part 1

Week 11:

Curriculum Content: Algebra strand

Pedagogy content: Unit Planning

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- a variety of effective teaching and assessment practices.
- a variety of effective classroom management strategies.
- how pupils learn and the factors that influence pupil learning and achievement.

Assessment Activities

Type	Name	Description
Formative Assessment	Coding Assignment #2	Algebra strand Part 2: Patterning and linear relations Coding Part 2

Week 12:

Curriculum Content: Algebra strand

Pedagogy content: Unit Planning

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- a variety of effective teaching and assessment practices.
- a variety of effective classroom management strategies.
- how pupils learn and the factors that influence pupil learning and achievement.

Assessment Activities

Type	Name	Description
Formative Assessment	Coding Assignment #3	Algebra strand Part 3: Word Problems

Week 13:

Curriculum Content: Algebra strand

Pedagogy content: Unit Planning

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Teacher Candidates create and refine their process of pedagogical documentation of

- a variety of effective teaching and assessment practices.
- a variety of effective classroom management strategies.
- how pupils learn and the factors that influence pupil learning and achievement.

Assessment Activities

Type	Name	Description
Formative Assessment	Online participation in the Discussion Forum "Choosing Learning Goals and Curriculum Expectations for Your Unit".	Algebra strand Part 4: Mathematical modeling Unit Planning Part 1: Backward Design. Cross-curricular approach and curriculum mapping

Week 14:

Curriculum Content: Data strand

Pedagogy content: Unit Planning

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- a variety of effective classroom management strategies.
- how pupils learn and the factors that influence pupil learning and achievement.

Assessment Activities

Type	Name	Description
Formative Assessment	Problem Set #3 submission	Coding and Spatial Sense: Coding Polygons Unit Planning, Part 2, Culminating Task

Week 15:

Curriculum Content: Data strand

Pedagogy content: Curriculum mapping

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Teacher Candidates create and refine their process of pedagogical documentation of

- a variety of effective teaching and assessment practices.
- a variety of effective classroom management strategies.
- how pupils learn and the factors that influence pupil learning and achievement.

Assessment Activities

Type	Name	Description
Formative Assessment	Online participation in the Discussion Forum "Designing a Culminating Task"	Data strand Part 1: Data Literacy Data collection, organization and analysis

Week 16: Curriculum Content: Linear relations

Teacher Candidates demonstrate knowledge of their subject matter, and an awareness of how their work is governed by the Ontario curriculum, and education related legislation.

Assessment Activities

Type	Name	Description
Formative Assessment	Online participation in the Discussion Forum "Developing a sequence of learning activities/lesson sketches"	Data strand Part 2: Probability

Week 17:

Curriculum Content: Financial Literacy

Teacher Candidates demonstrate knowledge of their subject matter, and an awareness of how their work is governed by the Ontario curriculum, and education related legislation.

Teacher Candidates collaborate with other teachers and school colleagues to create and sustain learning communities in their classrooms and in their schools.

Assessment Activities

Type	Name	Description
Formative		Bringing it all together in Math Modeling

Assessment

Week 18: Wrap-up

Teacher Candidates collaborate with other teachers and school colleagues to create and sustain learning communities in their classrooms and in their schools.

Teacher Candidates engage in ongoing professional learning and apply it to improve their teaching practices.

Assessment Activities

Type	Name	Description
Formative Assessment	Unit Plan submission	Unit Plans Discussion Wrap-Up. Q&A
	Problem Set #4 submission	Next steps: professional development

Course Competencies:

Assessment
Classroom Management
Differentiated Instruction
Lesson Plans
Ministry of Education Curriculum
Report Cards
Rubrics
Technology in the Classroom
Unit Plans

Assessment and Course-Specific Grading Policies:

Class Work/Participation (Ongoing)

Class work/Participation is assessed on on-going basis. Attendance is a major but not only factor. Students are expected to

- actively participate in class discussions and problem-solving
- share their knowledge of mathematics
- pose relevant and meaningful questions

4 Problem Sets/Math Tasks

The due dates are indicated in the course outline.

Coding Assignments

Coding assignments will be done in class during the Coding sessions.

Lesson Plan (Week 9)

Your Lesson Plan is to be created individually or in pairs It will:

- Demonstrate a clear understanding of the key concept throughout the lesson
- Be original work and not a copy from another source or person
- Require students to participate in activity that develops a new concept or skill in the area of financial literacy

Unit Plan (Week 18)

There are three components of the task:

- A balanced unit plan, for a topic in the grade 4-8 mathematics curriculum that incorporates a reasonable variety of teaching strategies and assessment strategies. You do not have to include fully developed lesson plans but brief description of each lesson is required.
- Fully developed cumulative task (cannot be a test)
- A brief presentation of your unit and cumulative assessment

How to Protect Your Professional Integrity:

The Bachelor of Education is an intense and demanding program of professional preparation. Teacher Candidates are expected to demonstrate high levels of academic commitment and professional integrity that align with both Western University's Academic Rights and Responsibilities and the Professional Standards and Ethical Standards set by the Ontario College of Teachers. These expectations govern your time in class, in your Practicum, in your Alternative Field Experiences, and include the appropriate use of technology and social media.

The Teacher Education Office will only recommend teacher candidates for Ontario College of Teachers certification when candidates have demonstrated the knowledge of, and adherence to, the faculty policies throughout the two-year program.

To review the policies and practices that govern the Teacher Education program, including attendance, plagiarism, progression requirements, safe campus and more, visit: edu.uwo.ca/CSW/my-program/BEd/policies.html

Faculty of Education Pass/Fail Policy:

All courses and assignments in the Bachelor of Education are assessed as Pass/Fail.

Instructors will make the Success Criteria of the assignments clear, and refinements of the criteria may take place in class as a means of co-constructing details of the assignments in the first two weeks of a course. This will allow for differentiation of process, product and timeline depending upon student needs.

Success Criteria will

- Articulate what needs to occur to demonstrate learning outcomes for a course/assignment;
- Inform the instructional process so that teaching can be adapted to ensure students continue to remain on track to meet the criteria as needed and appropriate.
- Align with the assignments created to provide opportunities for students to demonstrate the knowledge, skills and abilities they are working toward;
- Establish clear descriptive language that allows Teacher Candidates to identify, clarify and apply the criteria to their work and to their engagement in peer feedback;
- Focus the feedback on progress toward meeting the overall and specific tasks/assignment goals for the course.

Participation

Participation is essential to success in the Teacher Education program. As a professional school, you need to treat coming to class as showing up for work in the profession. If you are not in class, you cannot participate. Actively participating in discussions, peer reviews/feedback, group work and activities is integral to the development of your own learning and to the learning within your classroom community.

Given the varied experiences of Teacher Candidates in the program, you may engage with ideas/concepts or skills that are familiar or unfamiliar to you.

A Professional Teacher Candidate is one who:

- Arrives in class (virtual or on-site) on time, and prepared. This includes completing any readings, viewing assignments or tasks in advance of class as requested.
- Listens to others and contributes thoughtfully to discussions;
- Models respectful dialogue and openness to learn, monitors, self-assesses and reformulates one's prior beliefs and understandings in light of new information;
- Monitors and addresses their wellness, practices self-care, and seeks appropriate support when necessary.

Ontario Curriculum & Supplementary Resources:



**Curriculum &
Resources**

dcp.edu.gov.on.ca/en

Campus Services & Resources:



**Health and
Wellness**
uwo.ca/health



Peer Support
westernusc.ca



Learning Skills
uwo.ca/sdc/learning



**Indigenous
Services**
Indigenous.uwo.ca



**Student Accessibility
Services**
sdc/uwo.ca/ssd



Writing Support
writing.uwo.ca



**Financial
Assistance**
registrar.uwo.ca



Not sure who to ask?
Contact the Teacher Education Office at
eduwo@uwo.ca