

## EDUC 5486

### Engaging the Wider Community in Support of Mathematics Learning

#### Instructors:

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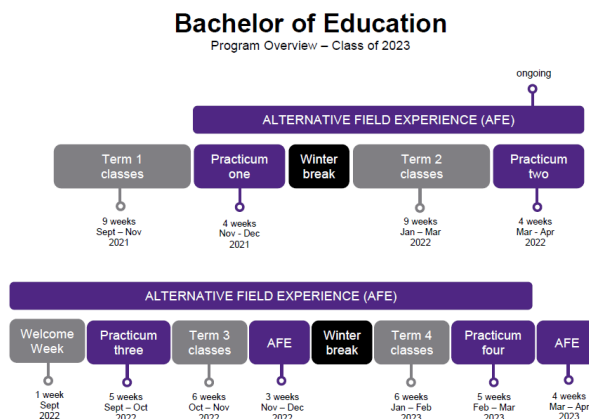
**Dr. George Gadanidis**,  
Course Coordinator  
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Office Hours: by appointment

#### Schedule:

**Section 1:** Thursdays- 12:00 PM- 3:00 PM  
Room 2051

#### Program Context:

This is a **Specialty Course** taken by Teacher Candidates during **Year 2, Full Year** of the Bachelor of Education.



# Engaging Wider Community in Support of Mathematics Learning (EDUC 5486)

## Course Description:

Teacher candidates will investigate knowledge mobilization in mathematics education using arts-informed modes of communication. Building on the collective knowledge developed in Part 1, they will learn how to engage parents, colleagues and the wider community, through networks and communities of practice, in support of the mathematics education of Primary/Junior students. 3 hours per week, full year, .50 credit

This course focuses on the application of arts-informed modes of communication for the teaching and learning of mathematics in the primary and junior grades. The course builds onto the knowledge and application of professional learning in EDUC 5485. Teacher candidates will learn about the professional design of lessons to inspire wonder, awe, and creativity in student's experiences in mathematics. Teacher candidates will investigate how to nurture students to build knowledge through social interactions, creative play and engage parents to co-create success with the home.

The course is rooted in:

- nurturing aesthetic experiences in mathematics for computational thinking and engaging communities of practice
- designing aesthetic math experiences in the six strands of elementary mathematics
- culturally relevant and responsive pedagogy for equity, inclusion, and diversity
- effective use of assessment, evaluation, and feedback
- differentiated opportunities for instruction and targeted interventions in mathematics
- collaborative inquiry and socially constructed learning

## Course Credits:

0.5

## Number of Weeks: 12

### Week 1:

#### Knowledge Mobilization for Aesthetic Learning Experiences

Knowledge Mobilization and Community Engagement

Inquiry-Based Learning in Mathematics - Constructivism, Agency

Designing Aesthetic Math Experiences

Inquiry Projects for Pedagogy of Mathematics Through The Arts

## Learning Activities

Type	Name	Description
Assignment	Week 1 Co-create success criteria for our course	<b>Collaborative Inquiry:</b> The manner in which teachers support meta-cognition for students is dependent on welcoming the voice of all in co-creating success. Please discuss what you feel should be considered as indicators of success in our course together and what you are interested in pursuing as part of your inquiry project. Research to Inform Elementary Mathematics Curriculum Revision (Dr. Chris Suurtamm): <a href="https://vimeo.com/428533304/b64cbc0e8b">https://vimeo.com/428533304/b64cbc0e8b</a>
Assignment	Week 1 Materials & Readings	The Importance and Beauty of Mathematics: <a href="https://www.dcp.edu.gov.on.ca/en/curriculum/elementary-mathematics/context/the-importance-and-beauty-of-mathematics">https://www.dcp.edu.gov.on.ca/en/curriculum/elementary-mathematics/context/the-importance-and-beauty-of-mathematics</a>
Assignment	Week 1 Reflections on Professional Practice	<b>Forum Posting:</b> This course is designed with your professional development as a salient factor for success. Using a constructivist lens for learning, please share the questions you bring to this course and what you would like to learn about in mathematics education.

## Week 2: Curriculum, Teaching and Learning (1)

The professional design of learning environments for teaching and learning mathematics

Nurturing aesthetics values in mathematics; wonder, surprise and beauty

Theories of Learning for Knowledge Mobilization

Inquiry Projects for Pedagogy of Mathematics Through The Arts

Mathematics Curriculum Overview (2020); Connection to Destreamed Grade 9 Mathematics

## Learning Activities

Type	Name	Description
Assignment	Week 2 Collaborative Inquiry	Planning for Summative Inquiry Projects - Viewing exemplars within a curriculum innovation framework.
Reading	Week 2 Materials & Readings	Gadinidis, G. (2021). From Pedagogy to Mathematics, Part 2: Access and Democracy. <a href="https://imaginethis.ca/pedagogy-mathematics-part-2/">https://imaginethis.ca/pedagogy-mathematics-part-2/</a>  OAME Podcast - Talk 24: Destreaming Math: Equity, Practice, and Politics - Jason To - <a href="https://talks.oame.on.ca/season-4">https://talks.oame.on.ca/season-4</a>

<b>Assignment</b>	Week 2 Reflections on Professional Practice	<b>Forum Posting:</b> Professional Reflection on Barriers to Using High-Impact Instructional Practices in Mathematics
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### Week 3: Curriculum, Teaching and Learning (2)

Teacher leadership in mathematics; curriculum innovation framework

Continued inquiry into the professional design of learning environments for teaching and learning

Nurturing aesthetics values in mathematics; wonder, surprise, and beauty

Mathematics Tasks Analysis

Inquiry Projects for Pedagogy of Mathematics Through The Arts

### Learning Activities

Type	Name	Description
<b>Assignment</b>	Week 3 Collaborative Inquiry	Spiralled curriculum, innovation and 10 Dimensions of Mathematics Education; math tasks analyses.
<b>Reading</b>	Week 3 Materials & Readings	Growing Success (Pages 28-47) <a href="http://www.edu.gov.on.ca/eng/policyfunding/growsuccess.pdf">http://www.edu.gov.on.ca/eng/policyfunding/growsuccess.pdf</a>
<b>Assignment</b>	Week 3 Reflections on Professional Practice	Forum Posting: Professional reflection on communicating arts-informed practices to parents.
<b>Assignment</b>	Week 3 Reflections on Professional Practice	

### Week 4: Assessment, Evaluation and Feedback (1)

Understanding the manner in which teachers support self-regulated learning

Front-loading of assessment, evaluation and feedback

Planning and monitoring objectives in a course of study

Long-Range Planning in Mathematics

## Learning Activities

Type	Name	Description
Assignment	Week 4 Collaborative Inquiry	Discussion of problems of professional practice in the application of assessment, evaluation and feedback.
Reading	Week 4 Materials & Readings	Assessment and Evaluation - Mathematics (2020): <a href="https://www.dcp.edu.gov.on.ca/en/curriculum/elementary-mathematics/context/assessment-and-evaluation-of-student-achievement">https://www.dcp.edu.gov.on.ca/en/curriculum/elementary-mathematics/context/assessment-and-evaluation-of-student-achievement</a>  A Parent's Guide to the Math Curriculum (2020) <a href="https://www.ontario.ca/page/new-math-curriculum-grades-1-8">https://www.ontario.ca/page/new-math-curriculum-grades-1-8</a>
Assignment	Week 4 Reflections on Professional Practice	Sharing of draft plans in collaborative groups for what you intend to investigate for your arts-informed mathematics inquiry project. Submit scaffold of draft inquiry projects.

## Week 5: Assessment, Evaluation and Feedback (2)

Effective planning for assessment, evaluation and feedback for students to nurture the five strands in math as related to aesthetics

Imperative understanding of the role of feedback in the self-regulation of students and socio-emotional learning in math.

Moderated practice of establishing success criteria

Moderated practice of evaluating student work, grading, and justifying rationale for feedback to students.

## Learning Activities

Type	Name	Description
Assignment	Week 5 Collaborative Inquiry	Discussion of problems of professional practice in making thinking visible; analysis of math tasks.
Reading	Week 5 Materials & Reading	Mathematical Processes: <a href="https://www.dcp.edu.gov.on.ca/en/curriculum/elementary-mathematics/context/the-mathematical-processes">https://www.dcp.edu.gov.on.ca/en/curriculum/elementary-mathematics/context/the-mathematical-processes</a>

<b>Assignment</b>	Week 5 Moderated Marking Activity	Moderated marking of students' work in mathematics and collaborative inquiry into the applied practice of providing feedback in mathematics.
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## Week 6: Differentiated Instruction for Equity, Diversity, and Inclusion (1)

Differentiated Instruction in Mathematics Education

Applying adapted teaching strategies for content, processes and performance tasks

Focused planning for coding and computational thinking

Culturally relevant and responsive pedagogy for equity, inclusion and diversity

Destreamed Grade 9 Mathematics Courses

### Learning Activities

Type	Name	Description
<b>Assignment</b>	Week 6 Collaborative Inquiry	Discussion of problems of professional practice in differentiating content, processes and performance tasks.
<b>Reading</b>	Week 6 Materials & Readings	Kotsopolous, D., Floyd, L., Khan, S., Namukasa, I., Somanath, S., Weber, J., Yiu, C. (2017). A Pedagogical Framework for Computational Thinking. <i>Digital Experience in Mathematics Education. Mathematics and Programming</i> , 3, 154-171.
<b>Assignment</b>	Week 6 Reflections on Professional Practice	<b>Forum Posting:</b> Professional reflection on the applied nature of assessment, evaluation and feedback in mathematics.

## Week 7: Differentiated Instruction for Equity, Diversity, and Inclusion (2): Computational Thinking

Differentiated Instruction in Mathematics Education

Applied practice to adapt teaching strategies for computational thinking

Culturally relevant and responsive pedagogy for equity, inclusion and diversity

Indigenous Knowledge and Mathematics Education

## Learning Activities

Type	Name	Description
Assignment	Week 7 Collaborative Inquiry	Collaborative inquiry for applied practice to adapt teaching strategies in coding and computational thinking.
Reading	Week 7 Materials & Readings	Traditional Indigenous Mathematics in the Ontario Classroom - <a href="https://m.youtube.com/watch?v=EysJgsXPwiQ">https://m.youtube.com/watch?v=EysJgsXPwiQ</a>
Assignment	Week 7 Reflections on Professional Practice	Applied practice with multiple teaching strategies that support students' mathematical communications using shared and guided instruction.

### Week 8:

#### Special Education - Targeted Interventions for Students with Special Needs

Targeted interventions to support students in mathematics

Leading practices for special education in mathematics

Math Anxiety - Mental Health and Wellness

## Learning Activities

Type	Name	Description
Assignment	Week 8 Collaborative Inquiry	Discussion of problems of professional practice in teaching students with learning disabilities in mathematics and language.
Reading	Week 8 Materials & Readings	Tiered Approaches to the Education of Students with Learning Disabilities: <a href="https://www.ldatschool.ca/tiered-approaches-to-the-education-of-students-with-learning-disabilities/">https://www.ldatschool.ca/tiered-approaches-to-the-education-of-students-with-learning-disabilities/</a>
Assignment	Week 8 Reflections on Professional Practice	<b>Forum Posting:</b> Professional reflection on teaching and learning with students with exceptional needs in mathematics.

### Week 9:

#### Digital Tools for Teaching and Learning: Transitioning Mathematics to e-Learning

Understanding differentiation using digital platforms to teach mathematics

Transitioning lessons from brick-and-mortar to e-learning classrooms

Integrating digital learning tools in the regular classroom for student engagement and support

Gallery Walk presentations of draft Inquiry Projects

## Learning Activities

Type	Name	Description
Assignment	Week 9 Collaborative Inquiry	Gallery Walk of Draft Inquiry Projects; professional reflection, critical thinking and peer feedback on inquiry projects.
Reading	Week 9 Materials & Readings	Ontario Ministry of Education (2013). Learning for All. Toronto: Queen's Printer for Ontario. (Pages 1-24). <a href="https://www.ontario.ca/page/learning-all-guide-effective-assessment-and-instruction-all-students-kindergarten-grade-12">https://www.ontario.ca/page/learning-all-guide-effective-assessment-and-instruction-all-students-kindergarten-grade-12</a>
Assignment	Week 9 Reflections on Professional Practice	Professional discussion on problems of practice in e-learning in mathematics.

## Week 10: Mathematics in the Early Years

Myths of Early Mathematics

Scope and Sequence of Math Instruction

Learning Trajectories - Kindergarten Mathematics Curriculum

The Role of Play in Children's Learning of Mathematics

## Learning Activities

Type	Name	Description
Assignment	Week 10 Collaborative Inquiry	Discussion of effective resources and teaching strategies for mathematics in the early years.
Reading	Week 10 Materials & Readings	Clements & Sarama (2018). Myths of Early Math. Education Sciences, 8, 71. Retrieved from: <a href="https://www.mdpi.com/2227-7102/8/2/71">https://www.mdpi.com/2227-7102/8/2/71</a>
Assignment	Week 10 Reflections on Professional Practice	<b>Forum Posting:</b> Professional discussion on problems of practice for mathematics education in the early years - continuity throughout the grades.

## Week 11: Presentations of Inquiry Projects

Presentations of Culminated Inquiry Projects for Pedagogy of Mathematics Through The Arts



## Learning Activities

Type	Name	Description
Assignment	Week 11 Collaborative Inquiry	Collaborative discussion of effective teaching strategies for mathematics through the arts and outreach to parents.
Reading	Week 11 Materials & Readings	High-Impact Instructional Practices in Mathematics <a href="https://www.dcp.edu.gov.on.ca/en/learning/high-impact-instructional-practices-in-mathematics-resource-and-supports">https://www.dcp.edu.gov.on.ca/en/learning/high-impact-instructional-practices-in-mathematics-resource-and-supports</a>
Assignment	Week 11 Presentations of Summative Inquiry Projects and Parent Resource	Professional discussion with presentations of culminating inquiry projects and parent engagement resource.

## Week 12: Consolidation - Mind Map and Culminated Learning

Performance Task: Mind Maps of Course Learning; Salient Outcomes

Course Evaluation

## Learning Activities

Type	Name	Description
Assignment	Week 12 Collaborative Inquiry	Collaborative discussion about your consolidated understanding of teaching mathematics through the arts.
Assignment	Week 12 Mind Map Submissions	<b>Submission:</b> Consolidation of Your Professional Learning in Mathematics - Mind Maps

## Assessment Activities

Type	Name	Description
Summative Assessment	Due Wk 04: Inquiry Project - Scaffold	Inquiry Project for Arts-Informed Pedagogy of Mathematics Select an area of teaching arts-informed mathematics that catches your attention. Write a summary of your draft plan of inquiry and what your investigation will entail.
Summative Assessment	Due Wk 09: Inquiry Project - Gallery Walk	Gallery Walk of your draft Inquiry Project. Present a summary of your discernment and what you are learning about the pedagogy of arts-informed mathematics.
Summative Assessment	Due Wk 11: Inquiry Project - Publication and Presentation	Presentation of Final Publications of Inquiry Projects Candidates will share the last iteration of inquiry projects in small groups and submit the final document to a culminating class publication.
Summative Assessment	Due Wk 11: Parent/Family Resource to Engage Families in Mathematics	Candidates will publish a resource that engages parents and families as active partners in your area of inquiry for arts-informed mathematics education.

<b>Summative Assessment</b>	Due Wk 12: Culminating Performance Task - Mind Map	Performance Task - Culminating Mind Map Bring a completed mind map that represents your professional learning throughout the course.
<b>Formative Assessment</b>	Ongoing: Formative Assessments	-Participation in Collaborative Inquiry - Knowledge Building, Celebrating Successes -Dialogue within Focus Groups: Theories of Learning and Everyday Instruction -Reflections on Professional Practice; Barriers to Implementation -Reciprocal Discussions of Course Readings and Resources

## 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](http://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](http://dcp.edu.gov.on.ca/en)

## Campus Services & Resources:



**Health and Wellness**

[uwo.ca/health](http://uwo.ca/health)



**Peer Support**

[westernusc.ca](http://westernusc.ca)



**Learning Skills**

[uwo.ca/sdc/learning](http://uwo.ca/sdc/learning)



**Indigenous Services**

[Indigenous.uwo.ca](http://Indigenous.uwo.ca)



**Student Accessibility Services**

[sdc/uwo.ca/ssd](http://sdc/uwo.ca/ssd)



**Writing Support**

[writing.uwo.ca](http://writing.uwo.ca)



**Financial Assistance**

[registrar.uwo.ca](http://registrar.uwo.ca)



**Not sure who to ask?**

Contact the Teacher Education Office at [eduwo@uwo.ca](mailto:eduwo@uwo.ca)