

## EDUC 5486

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

#### Instructor:

**Dr. Vince MacDonald**  
E: [vmacdon@uwo.ca](mailto:vmacdon@uwo.ca)  
Office Hours: by appointment

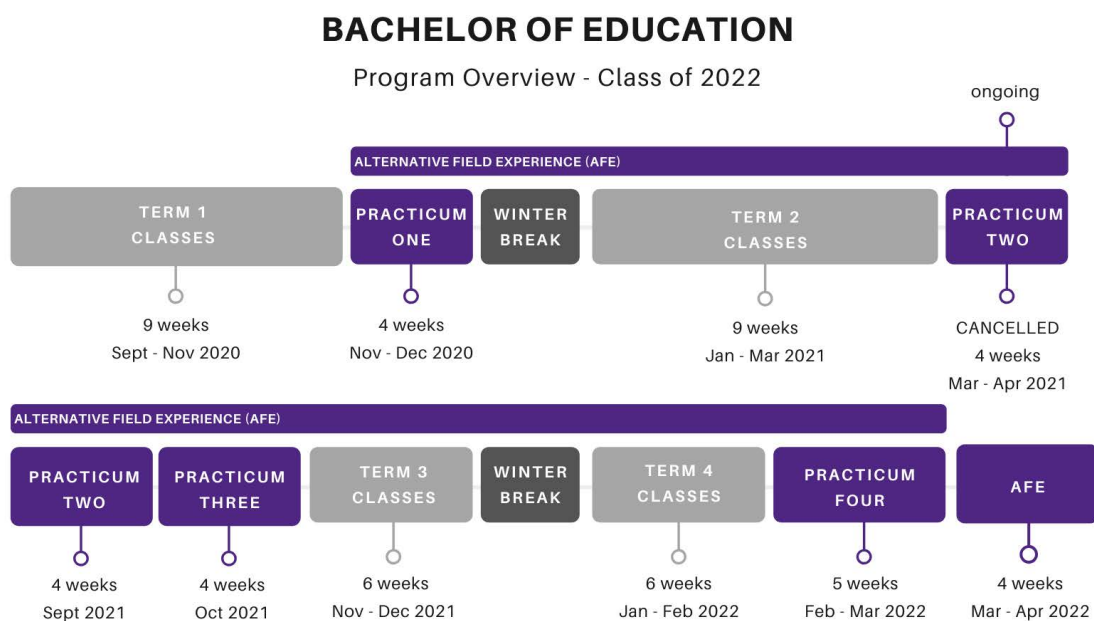
**Dr. George Gadanidis**  
Course Coordinator  
E: [ggadanid@uwo.ca](mailto:ggadanid@uwo.ca)

#### Schedule:

**Section 001:** Thursday  
11:30AM-2:30PM,  
Room: 2051

#### Program Context:

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





## Learning Activities

| Type              | Name   | Description   |
|-------------------|--|---|
| <b>Assignment</b> | Week 1 Co-create success criteria for our course | Collaborative Inquiry: 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.   |
| <b>Reading</b>    | Week 1 Materials & Readings                      | <p>Research to Inform Elementary Mathematics Curriculum Revision (Dr. Chris Suurtamm):<br/> <a href="https://vimeo.com/428533304/b64cbc0e8b">https://vimeo.com/428533304/b64cbc0e8b</a></p> <p>The Importance and Beauty of Mathematics:<br/> <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></p> |
| <b>Assignment</b> | Week 1 Reflections on Professional Practice      | Forum Posting: 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 aesthetic 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   |
|-------------------|------------------------------|---|
| <b>Assignment</b> | Week 2 Collaborative Inquiry | Planning for Summative Inquiry Projects - Viewing exemplars within a curriculum innovation framework. |

## Learning Activities

| Type       | Name  | Description   |
|------------|---|---|
| Reading    | Week 2<br>Materials &<br>Readings                       | 2020 Elementary Math Curriculum Overview:<br><a href="https://www.dcp.edu.gov.on.ca/en/curriculum/elementary-mathematics">https://www.dcp.edu.gov.on.ca/en/curriculum/elementary-mathematics</a>                      |
|            |   | High-Impact Instructional Practices in Mathematics<br><br><a href="http://www.edu.gov.on.ca/eng/teachers/high-impact-instruction-math.pdf">http://www.edu.gov.on.ca/eng/teachers/high-impact-instruction-math.pdf</a> |
| Assignment | Week 2<br>Reflections<br>on<br>Professional<br>Practice | Forum Posting: Professional Discernment on Barriers to Using High-Impact Instructional Practices in Mathematics   |

### 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  |
|------------|--|--|
| Assignment | Week 3<br>Collaborative<br>Inquiry                   | Discussion: Spiralled curriculum, innovation and 10 Dimensions of Mathematics Education  |
| Reading    | Week 3 Materials<br>& Readings                       | Growing Success (Pages 28-47)<br><br><a href="http://www.edu.gov.on.ca/eng/policyfunding/growsuccess.pdf">http://www.edu.gov.on.ca/eng/policyfunding/growsuccess.pdf</a> |
| Assignment | Week 3<br>Reflections on<br>Professional<br>Practice | Forum Posting: Professional Discernment on Assessment, Evaluation and Feedback in Mathematics  |

### 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

Connections to Intermediate Mathematics and Destreamed Grade 9 Courses

Inquiry Projects for Pedagogy of Mathematics Through The Arts

## Learning Activities

| Type              | Name                                      | Description  |
|-------------------|---|--|
| <b>Assignment</b> | Week 4<br>Collaborative<br>Inquiry        | Discussion of problems of professional practice in the application of assessment, evaluation and feedback.<br><br>Assessment and Evaluation - Mathematics (2020):<br><br><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> |
| <b>Reading</b>    | Week 4<br>Materials &<br>Readings         | A Parent's Guide to the Math Curriculum (2020)<br><br><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>  |
| <b>Assignment</b> | Week 4<br>Inquiry<br>Project<br>Scaffolds | Submit a draft scaffold of what you intend to investigate for your arts-informed mathematics inquiry project.  |

## 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   |
|-------------------|------------------------------------|---|
| <b>Assignment</b> | Week 5<br>Collaborative<br>Inquiry | Discussion of problems of professional practice in making thinking visible. |

## Learning Activities

| Type              | Name   | Description  |
|-------------------|--|--|
| <b>Reading</b>    | Week 5<br>Materials &<br>Reading               | Mathematical Processes:<br><br><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<br><br>Moderated<br>Marking<br>Activity | Moderated marking of students' work in mathematics and collaborative inquiry into the applied practice of providing feedback in mathematics.   |

## Week 6: Differentiated Instruction for Equity, Diversity and Inclusion (1)

Problem-solving and communication

Focused planning for properties, relationships, patterns, relations, coding and spatial sense

Differentiated Instruction in Mathematics Education

Applying adapted teaching strategies for content, processes and performance tasks

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<br>Collaborative<br>Inquiry | Discussion of problems of professional practice in differentiating content, processes and performance tasks.  |
| <b>Reading</b>    | Week 6<br>Materials &<br>Readings  | Kotsopolous, D., Floyd, L., Khan, S., Namukasa, I., Somanath, S., Weber, J., Yiu, C. (2017). A Pedagogical Framework for Computational Thinking. Digital Experience in Mathematics Education. Mathematics and Programming, 3, 154-171.<br><br>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> |

## Learning Activities

| Type       | Name  | Description   |
|------------|---|---|
| Assignment | Week 6 Reflections on Professional Practice | Professional discernment on the applied nature of assessment, evaluation and feedback in mathematics. |

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

Differentiated Instruction in Mathematics Education

Applying adapted teaching strategies for content, processes and performance tasks

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                |  |
| Reading    | Week 7 Materials & Readings                 | Ontario Ministry of Education (2013). Learning for All. Toronto: Queen's Printer for Ontario. (Pages 1-24).<br><br>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 | Assessment   |

## 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

Gallery Walk presentations of draft inquiry projects

## 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 | Forum Posting: Professional discernment 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.

### Learning Activities

| Type       | Name  | Description  |
|------------|---|--|
| Assignment | Week 9 Collaborative Inquiry                | Discussion of effective resources and teaching strategies for e-learning in mathematics.                                   |
| Reading    | Week 9 Materials & Readings                 |  |
| Assignment | Week 9 Reflections on Professional Practice | Gallery Walk of Draft Inquiry Projects; professional discernment, critical thinking and peer feedback on inquiry projects. |

## 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 | Forum Posting: Professional discernment 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  |   |
| Assignment | Week 11 Presentations of Summative Inquiry Projects and Parent Resource | Professional discernment with presentations of culminating inquiry projects and parent engagement resource.         |

## Week 12: Consolidation - Mind Map and Sharing of Salient Professional Learning

Performance Task: Mind Maps of Course Learning; Salient Outcomes  
Course Evaluation

## Learning Activities

| Type       | Name                          | Description  |
|------------|-------------------------------|--|
| Assignment | Week 12 Collaborative Inquiry | Collaborative discussion with your peers about your consolidated understanding of teaching mathematics through the arts. |

## Learning Activities

| Type              | Name                 | Description  |
|-------------------|----------------------|--|
| <b>Assignment</b> | Week 12:             | Submission: Consolidation of Your Professional Learning in Mathematics - Mind Maps |
|                   | Mind Map Submissions |  |

## Assessment Activities

| Type                        | Name  | Description   |
|-----------------------------|---|---|
| <b>Summative Assessment</b> | Due Wk 05:<br>Inquiry Project - Scaffold                        | Inquiry Project for Arts-Informed Pedagogy of Mathematics<br><br>Discern a problem and solution to teaching and learning in mathematics using arts-informed modes of communication.<br><br>Scaffold: Written precis of your draft plan of inquiry   |
|                             | Due Wk 08:<br>Inquiry Project - Gallery Walk                    | Inquiry Project for Arts-Informed Pedagogy of Mathematics<br><br>Discern a problem and solution to teaching and learning in mathematics using arts-informed modes of communication.<br><br>Gallery Walk: Gallery presentation of your draft inquiry and guiding questions   |
| <b>Summative Assessment</b> | Due Wk 11:<br>Inquiry Project - Publication and Presentation    | Inquiry Project for Arts-Informed Pedagogy of Mathematics<br><br>Discern a problem and solution to teaching and learning in mathematics using arts-informed modes of communication.<br><br>Publication and Presentation of Culminated Inquiry Project   |
|                             | Due Wk 11:<br>Parent Resource to Engage Families in Mathematics | Teacher candidates will publish a resource for parents that highlights successful teaching practices in your mathematics classroom. The resource should provide salient details about evidence-based practices that nurture the development of students with particular attention to the new mathematics curriculum in Ontario. Describe how your instructional practices scaffold learning (e.g. differentiated instruction, student voice and choice) to nurture surprise and an aesthetic appreciation of mathematics. |

## Assessment Activities

| Type                        | Name  | Description  |
|-----------------------------|---|--|
| <b>Summative Assessment</b> | Due Wk 12:<br>Culminating<br>Performance<br>Task - Mind<br>Map and<br>Essay | Performance Task - Graphic Learning and Essay<br><br>Bring a completed graphic model (e.g. mind map) of your learning to the final class that summarizes your learning throughout the course. Prompts and essay questions will be provided during class to expand your mind map and build upon the culminating knowledge you have mobilized in the course. |
|                             | <b>Formative Assessment</b>   | Ongoing:<br>Formative<br>Assessments   |

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## This course meets the following Course Outcomes:

Knowledge Mobilization: knowledge mobilization and engaging communities of practice

Designing Aesthetic Math Experiences: designing aesthetic math experiences

Alternate Field Collaborative Inquiry: collaborative inquiry for alternate field experiences

Effective Pedagogies In Mathematics: empirical research on differentiated instruction and effective pedagogies in mathematics

# 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 online) 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.

## Support 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)