



Course Title: Mathematics (Senior)  
Instructor: Dr. Tim Sibbald, OCT  
Course Value: 3 credits  
Location: H110 North Bay Campus  
Classes: Thursday & Friday 10:30-12:30.

Course Code: Educ4779  
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Office Hours (Fall): Not specific, I am likely to be in early Thursday and Friday, as well as available to stay after class. You are welcome to catch up to me other times or email if you have a specific time in mind.

**Textbook:** There is no formal textbook in this course. Students are expected to consult various professional documents through this course. The instructor has several textbooks that are used elsewhere for this course that students may wish to consult – they are not assigned to the course because they emphasize an American view of education. It is, however, important to recognize the need to gain professional knowledge and practices using current Ontario documentation and resources. Documents and resources that should be consulted include:

- ✓ Ministry of Education Curriculum Documents
- ✓ Growing Success (2010) – regarding assessment, evaluation and report cards.
- ✓ <http://www.edugains.ca/newsite/math/index.html>
- ✓ Think Literacy: Grades 7-12 subject specific documents – Mathematics grades 10-12 (2005).
- ✓ Think Literacy: Grades 7-12 subject specific documents – Mathematics grades 7-9 (2004).
- ✓ Targeted Implementation and Planning Supports for Revised Mathematics (TIPS4RM)
- ✓ Teacher candidates will find it beneficial to explore practitioner math teaching journals including The Gazette (OAME), Mathematics Teaching in the Middle School (NCTM), The Mathematics Teacher (NCTM), Mathematics Teaching (UK), The Oregon Math Teacher, and any other practitioner math teaching periodicals the library may have.

Students are to actively read and investigate professional resources that provide knowledge, practical advice, and opportunities to further your own professional learning as you begin your career. We will also read some current research in mathematics education and have discussions about what it means in practice.

**Course Description:** Teacher candidates engage in a detailed study of the senior mathematics curriculum. Candidates consider conceptual development, abstraction, practical uses, and progression through the various pathways of the senior mathematics program.

**Learning Outcomes:** By the end of this course, students will:

1. Have a detailed knowledge of the senior curriculum.
2. Show an understanding of the mathematical content in the senior division.
3. Critically appraise options for teaching and use this to make appropriate choices based on the course being taught and the specific content.
4. Understand that cross-curricular content, leadership, and continued professional growth are part of the senior teaching role.

**Instructional orientation:** In this course, a professional learning community approach will be exercised. This will entail active sharing and consultations with your colleagues and this is to follow the OCT Ethical Standard of respect. We will be developing resources that are consistent with the instruction of the core content of the mathematical curriculum, as well as examining assessment and evaluation appropriate to courses. It is expected that everyone will engage, be willing to make presentations to the group, and demonstrate the OCT Ethical Standard of integrity. It is incumbent upon each student to explore applications of mathematics, exercise their communication skills, and to explore different instructional methodologies.

**Course Schedule:** Tailoring of classes will be discussed in class with an emphasis on student needs. To this end Friday of week 1 will include a “needs assessment.” You will need a device and be prepared to go outside on the Friday of week 2. Further details will be given in class.

**Evaluation:** Evaluation, for this course, is composed of three assignments:

### 1. “Go with the Flow”

The curriculum has sequenced courses. In this assignment you will look at the range of grade 10 to first year after high school (whether university, college or workplace) and consider how the content varies across these courses. You are encouraged to consider using tables to highlight how different aspects of the content progress across the range of grades. In addition, you will likely find it beneficial to explain similarities and differences in words.

Value: 30% Due Date: Thurs. Sept. 26 at start of class.

### 2. “Hitting the Mark-ing”

Each student will generate a test and marking scheme for a particular content area in a particular course that would take about 50 minutes for high school students to complete. The marking scheme may include additional teacher specific details of the design of the test such as connections to the curriculum (use curriculum coding mentioned in class) and ulterior objectives of the question. Note that this assignment uses only hardcopies and all due dates refer to the start of class. (Value 35% as broken down in rubric.)

A) You will supply three hardcopies (not electronic) of the test and a marking scheme—these all need to be separate with your name on each.

Due Date: Thursday, Nov. 14, at the start of class.

B) Once the tests in part A have been received, you will be supplied with two tests from other students that you have to complete with a mix of correct and purposefully erroneous answers. Note that tests with very few answers, and those with virtually all answers correct, may be interesting points of discussion, but are not suited to this assignment.

Due Date: Friday, Nov. 15.

C) The two responses to your test will be returned to you to be marked. It is expected that you will exercise descriptive feedback and a constructive stance consistent with formative assessment. Note that you are allowed to alter your marking scheme.

Due Date: Friday, Nov. 22, (Please staple to Part D).

D) Write a page reflection that explains: any alterations you made to your marking scheme, any issues that have become apparent about your test, and the overall effectiveness of your assessment. Note that you only need to include a new marking scheme if you made significant changes to the scheme.

Due Date: Friday, Nov. 22.

Criterion	4+ (90-100)	Level 4 (80-89)	Level 3 (70-79)	Level 2 (60-69)	Level 1 (50-59)
<b>Your Test (Value 7%)</b>					
Content	Level 4 that is clearly tiered to suit different levels of ability.	Appropriate and clearly covers specific curriculum expectations.	Appropriate to the course.	Most parts are appropriate to the course.	Major discrepancies with course content.
Variety	Level 4 with a final question that the student may extend their knowledge by completing.	Level 3 in a manner that accommodates different learning styles.	Good variation in question types.	Limited or too much variation in question types.	Little or no variation or far too much variation in question types.
Realistic	Level 3 and there is an underlying diagnostic agenda that will help you understand the student's specific difficulties.	Level 3 and the format is likely to lead to assessment of all content for a student who only completes some of the test (i.e. weak students).	Format and timing are credible for students in the course.	Minor format or timing difficulties.	Significant format or timing difficulties.

Answers to other person's test. (Value 3%)					
	Level 3 with style and charisma! (We have get a sense of role playing.)	Level 3 with degree of errors varying in degree of detectability.	A good variety of response types including intentional errors that show good anticipation of student errors.	Limited variety of response types.	Response does not demonstrate an appreciation of the types of responses students may give.
Marking of responses. (Value 10% each)					
Test #1	Level 3 completed in a manner that is appropriate to the student's assessed ability and will improve the students' understanding.	Level 3 with a high degree of clarity that is succinct.	Flaw points are identified and constructive feedback given.	Some flaws are identified or feedback is limited. ALSO cases where feedback is excessive or unreasonably repetitive.	Few flaws recognized and feedback is limited.
Test #2	Level 3 completed in a manner that is appropriate to the student's assessed ability and will improve the students' understanding.	Level 3 with a high degree of clarity that is succinct.	Flaw points are identified and constructive feedback given.	Some flaws are identified or feedback is limited. ALSO cases where feedback is excessive or unreasonably repetitive.	Few flaws recognized and feedback is limited.
Reflection (Value 5%)					
Marking Scheme	Level 4 done succinctly and clearly.	Level 3 but including remarks for evolution of the test based on the responses.	Overall statement about all aspects of the marking scheme.	Minor oversights in commenting about your marking scheme.	Major oversights in commenting about your marking scheme.

Issues	Very few or minor issues allowing a deeper look at secondary purposes that could be built into the test design.	The few issues are addressed and there is consideration of how more focussed information about student needs could be built in.	Issues are recognized and reasonable ways to address them are given.	Some issues are recognized or methods to address them are not entirely credible.	Limited recognition of issues and a lack of credible ways to address them.
Effectiveness	Level 3 and both the student and the teacher will be more informed as a result of it being written and marked.	Level 3 and students or the teacher will be more informed as a result of it being written and marked.	Assessment of students is appropriate to the course and provides reasonable feedback.	Some limitations in appropriateness and degree of feedback that can be provided.	The test could be contested as not assessing students fairly or accurately.

### 3. “Walking us through the details”

A 25 minute presentation to the class about the details of a particular course. This must include a graphic organizer to show how the course connects to all possible prerequisite courses. It must also address the sequencing of the major units and provide a rationale that explains the options of ordering topics. The presentation then needs to demonstrate two or three key concepts and demonstrate effective ways to provide instruction about those concepts.

Each presentation will be evaluated by your peers. Your “report cards” will be graded with respect to the quality of your feedback. Note that final grades for presentations will be made by your professor (as is required of professional teachers when using peer evaluations).

Dates of presentations last two classes. Value 35%

Criterion	4+ (90-100)	Level 4 (80-89)	Level 3 (70-79)	Level 2 (60-69)	Level 1 (50-59)
Graphic Organizer	Clear, succinct, and level 4	Details all possible prerequisites in an orderly way.	Details are provided but are not complete.	Considerations are vague and not overly functional.	Limited consideration.
Explanation of overall course structure.	Level 4 but with much more clarity about	Themes of the course are provided and	Some themes are made clear.	Overall structure is addressed but is not overly	Not specifically addressed but evident

	choices.	connected to prior learning.		clear.	from overall presentation.
Ordering of topics	Level 4 with more details about how choices can tailor the course to student needs.	A clear succinct rationale for a particular order of topics in the course that tied to course details.	A rationale is provided with limited support from the course expectations .	Evidence of sequencing without a clear rationale.	Sequencing is implied by the order of the presentation but not addressed effectively.
Major concept 1	Level 3 but with reference to further literature supporting approaches.	Underlying mathematical concept is made clear and pedagogical options are evident.	Concept is explained and pedagogy is addressed but one of the other is limited.	Concept is explained and pedagogy is addressed but both are limited.	Limited explanation of concept and limited explanation of instructional options.
Major concept 2					
Peer report cards	Always positive in tone, constructive, and provide some direction.	Usually positive in tone, constructive, and provide some direction.	Two of three of: positive in tone, constructive , and provide some direction.	Limited in terms of tone, benefit to recipient, or lacking clarity.	Comment is not supportive of student improvement .
Overall Impact	All aspects of the task have been addressed with a high degree of effectiveness .	Approach to the task is demonstrative of professional effectiveness .	There are gaps in the effort to accomplish this task.	These two levels will be addressed with a face to face meeting to determine a plan of action.	

Report card evaluation. Place values in a bland spreadsheet with one line per student. Line should be “FirstName #1 #2 Comment” Where #1 is a percent on how useful the content is to you as a teacher and #2 is a percent grade about the impact of the presenter in terms of capturing your attention. The comment should acknowledge a good feature, suggest something that could be improved, and suggest a larger goal for the longer term. Example,  
Sibbald 90 80 The approach was definitely innovative and something I was not aware of. It would be beneficial to use a larger font on the SmartBoard so that all students can

follow the full presentation. Going forward make sure all students can see the notes and hear what you say.

(Note: Grading this looks for explanations of both numerical grades in the comment, and, yes, it is there.)

Note regarding use of third party materials: Teachers routinely modify materials from third parties. In this course, it is necessary to cite all third party resources that you have contributed significantly to the development of your work. It is your responsibility to provide the source of materials you use. For example, if you find a lesson plan on the internet and adapt it to your teaching with a new lesson plan, you should include a statement that provides the URL for the original lesson plan. (Note: submission of the third party lesson plan constitutes academic dishonesty.)

Please be aware of my policy regarding extensions for assignments. All extensions must be negotiated prior to the due date and that, even with an extension, marks can be deducted according to the circumstances of the extension. In all circumstances, including marks of zero, students may hand in the assignment for descriptive feedback.

### **Important Course Policies:**

1. This course outline contains all pertinent information with regard to expectations for and requirements of this course.
2. Students are expected to arrive for class on time, be prepared (i.e., required readings completed before class), and to conduct themselves professionally. This means that activities such as talking out of turn, completing work for other courses, listening to iPods, checking cell phone messages, web-surfing, and using computer applications such as email and Facebook are inappropriate in-class activities and are a distraction to you, your classmates, and the instructor.
3. Students must use their Nipissing e-mail address when emailing the course instructor. All email communication should be professional in tone and content.
4. If a student is absent for a scheduled test or in-class assignment, it is the student's responsibility to contact the instructor as soon as possible. The student must provide appropriate documentation for the absence before a request to make up missed work will be considered.
5. Students are responsible for keeping back-up copies of all written work and assignments for this class.
6. Assignments have identified due dates. Work must be submitted on time. Extensions must be negotiated prior to the due date and will only be considered in cases of extenuating circumstance and at the discretion of the professor. A late penalty of 5 percent per day will be assessed on all late assignments.

## 7. University Policy Reminders:

Please review the policies that pertain directly to attendance and exams.

The attendance policy is found at the following link:

<http://www.nipissingu.ca/calendar/regulations/academic/Pages/Attendance.aspx>

The Nipissing University policy on academic dishonesty in the Course Calendar -

<http://www.nipissingu.ca/calendar/regulations/academic/Pages/Student-Appeals-and-Petitions.aspx#dishonesty>

## 8. Student Accessibility Services (SAS)

Student Accessibility Services assists students with permanent and temporary disabilities.

Disabilities supported include, but are not limited to: Learning Disabilities, Mental Health, ADHD, Sensory Disabilities, Medical Disabilities and Physical Disabilities

If you have or suspect you have a disability for which you require academic accommodation or supports, please visit the SAS team in B210 or get more information on the Nipissing University SAS webpage ([www.nipissingu.ca/sas](http://www.nipissingu.ca/sas)).