



## Faculty of Education

### CURS4140: Math Methods I

Course outline for Fall - 2013

#### 1. Course Details & Important Dates\*

Term	Section	Status	Course Type	Day	Time
F	A			Mon & Wed	10:00 to 12:00

Location	CRN #	Classes Start	Classes End	Final Exam Period
	40490	Aug 28, 2013	Nov 21, 2013	None

\* for other important dates go to: [www.uoit.ca](http://www.uoit.ca), then Current Students, then Important Dates

#### 2. Instructor Contact Information

Instructor Name	Office	Phone	Email
Dr. Robin Kay	EDU 519	(ext. 2679)	robin.kay@uoit.ca
<b>Office Hours:</b> By Appointment (Mon & Wed) <b>Online:</b> Skype (rkay59) <b>Google Hangout:</b> <a href="mailto:kayuoit@gmail.com">kayuoit@gmail.com</a> <b>Twitter:</b> <a href="https://twitter.com/kayuoit">https://twitter.com/kayuoit</a>			

#### 3. Course Description

This course introduces teacher candidates to the theory and practice of teaching mathematics in the Intermediate/Senior divisions. Integrating relevant ideas and content from educational psychology, cognitive science, technology and mathematics education, and the Ontario mathematics curriculum, the course is designed to help prospective teachers:

- understand the Ontario mathematics curriculum content (Grade 7 to 12)
- learn a variety of effective, research-based teaching strategies and assessment tools
- learn strategies for addressing individual needs and diversity in the classroom
- develop pedagogically sound methods for integrating technology into the mathematics curriculum
- develop strategies for using manipulatives effectively
- develop solid reflection skills to enhance personal practice
- develop motivational and questioning techniques specific to mathematics
- demonstrate a professional attitude and approach to learning and teaching

#### 4. Learning Outcomes

On the successful completion of the course, students will be able to:

- demonstrate a thorough knowledge of the content and pedagogy of Intermediate/Senior mathematics (Grades 7 -12)
- apply a variety of effective teaching strategies based on the Leading Math Success Program
- reflect on learning and teaching strategies used to teach mathematics and modify practices based on these reflections
- use strategies for dealing with classroom diversity
- integrate literacy skills in the teaching of mathematics
- use a wide variety of technological tools to enhance mathematics education
- be aware of a wide variety of supporting mathematics resources
- critique curriculum resource material in the light of the most recent research in mathematics education

#### 5. Course Design

Students will participate in a two hour class, twice a week for 9 weeks. Students are expected to bring their laptops to and attend all classes. The majority of the classes will consist of a series of hands-on activities to illustrate theory and practice. A course website (see [tinyurl.com/math-uoit-2013](http://tinyurl.com/math-uoit-2013)) will be used extensively to present key information about lessons, resources, and tools. In addition, the [course wiki](#) will be used to house creative activities and resources that students construct during class or for homework. Finally, an extensive set of video podcasts will be used to support learning inside and outside of the class.

#### 6. Outline of Topics in the Course

<b>Lesson 1</b>	Course Overview & How We Learn Mathematics?
<b>Lesson 2</b>	Organizing & Starting a Lesson
<b>Lesson 3</b>	Motivation & Minds On
<b>Lesson 4</b>	Mathematical Explanation + Video Podcasts
<b>Lesson 5</b>	Teaching Strategies – Part 1 (Constructive)
<b>Lesson 6</b>	Teaching Strategies – Part 2 (Manipulative Tools)
<b>Lesson 7</b>	Teaching Strategies – Part 3 (Technology – Part 1)
<b>Lesson 8</b>	Teaching Strategies – Part 4 (Technology – Part 2)
<b>Lesson 9</b>	Teaching Strategies – Part 5 (Discussion & PBL)
<b>Lesson 10</b>	Grade 7 & 8 - Resource Wiki
<b>Lesson 11</b>	Formative Assessment
<b>Lesson 12</b>	Individual Differences
<b>Lesson 13</b>	Reflection
<b>Lesson 14</b>	Grade 9 to 12 Curriculum
<b>Lesson 15</b>	Teaching Strategies – Grades 9 to 12
<b>Lesson 16</b>	Math Activities Practice
<b>Lesson 17</b>	Resource Sharing – Part 1
<b>Lesson 18</b>	Resource Sharing – Part 2

## 7. Key Resources

### [Course Web Page](#)

The course web site is an integral part of the ongoing course instruction. The web site contains:

- the course description,
- [lesson plan summaries](#),
- electronic copies of relevant articles and other text materials,
- [multimedia resources](#) that form the basis for class activities,
- comprehensive web resources
- [assessment and evaluation](#) criteria, and
- [math technology tools](#)

### [Course Wiki](#)

- The course wiki is created by the class and consist of a variety of useful artifacts created by teams of students over the term
- For reference, here is the [2012 Term 1 - Wiki](#)
- For reference, here is the [2010 Term 1 Wiki](#)

### [Math Tech Tools for Busy Teachers](#) (Wiki)

- This site list video podcasts on how to use over 25 technology tools for mathematics

## 8. Evaluation Method

Students will be required to complete a series of practical assignments inside and outside of class. The assignments are designed to assess the key learning outcomes described in Section 4 above. Both formative (for learning) and summative (of learning) assessment will be conducted. Finally, students will have the opportunity to work individually and/or collaboratively, depending on the assignment.

### Summary of Assignments

1. Professionalism	<b>10%</b>
2. Participation	<b>30%</b>
3. Online Journal Reflection	<b>20%</b>
4. Video Podcast Creation	<b>20%</b>
5. Showcase Resource	<b>20%</b>

Details of each assignment are listed in the "Assignments and Tests" – Section 9.

*Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the [UOIT Academic Calendar](#).*

## 9. Assignments

1. **Professionalism (10%)**
  - This portion of the grade will be based on professionalism (e.g., attendance, participation, focus in class)
  - Students will be asked to self-assess their degree of professionalism twice during the term
2. **Participation (30%)**
  - This portion of the grade will be based on practical artifacts produced in class and designed to support learning and teaching
  - Many of the in-class artifacts will be posted on the [Course Wiki](#)
  - Students will work individual and/or in teams depending on the assigned activity
3. **Online Journal Reflection (20%)**
  - Individually, students will keep an online journal/blog of reflections based on key questions asked in class as well as practicum experiences
4. **Video Podcast (20%)**
  - Individually, students will create and post a video podcast explanation of a grade 7/8 math problem based on sound explanation principles
5. **Showcase Resource (20%)**
  - In teams, students will select, summarize, and present a meaningful resource that can be used to teach in secondary classrooms (Grade 9-12)

### **Missed or Late Assignments**

Assignment criteria are specified in the detailed assignment descriptions. Read them carefully to be sure that you have fulfilled all aspects of the requirements. Assignments are DUE ON THE DAY indicated. Late assignments will be handled as follows:

#### *Non-negotiated Late Assignment*

An assignment that has been handed in late without prior agreement between the student and the professor to extend the time for the assignment to be handed in will be considered a non-negotiated late assignment and will be assigned **a grade of zero**.

#### *Negotiated Late Assignment*

An assignment that has been handed in late in accordance with a mutually agreed deadline and penalty (if applicable) will be considered a negotiated late assignment and will be marked in accordance with the mutually agreed terms.

#### *Extenuating Circumstances*

The professor will consider individually, rare extenuating circumstances, which may cause an assignment to be late. Examples of extenuating circumstances include hospitalization, death of a loved one, traffic accidents, etc. The student must provide documentation to validate the extenuating circumstance. It will be at the professor's discretion to work out the extension in this situation.

## 10. Accessibility

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through the Centre for Students with Disabilities in a timely manner, and provide relevant and recent documentation to verify the effect of their disability and to allow the University to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

## 11. Professional Conduct

Students in programs leading to professional certification must demonstrate behaviour appropriate to practice in those professions. Note that in the case of teacher preparation programs, the appropriate behaviour is outlined in the *Professional Standards for the Teaching Profession* which is at <http://www.oct.ca/public/professional-standards>.

Where the dean determines that behaviour inconsistent with the norms and expectations of the profession has been exhibited by a student, that student may be immediately withdrawn from the program by the dean or subject to one or more of the sanctions as described in the [academic calendar](#), 5.15.3.

A student demonstrating professional unsuitability may be immediately suspended from any practicum, field work or similar activity at the discretion of the dean pending a final decision.

## 12. Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with UOIT's regulations on Academic Conduct (Section 5.15 of the [Academic Calendar](#)) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to be copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, and other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a written reprimand to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop.

### **13. Course Evaluations**

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates via MyCampus.