



EDUC 176 Teaching Mathematics

Dadaab, Kenya November 29-December 9, 2014

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This course is an introduction to teaching mathematics at the junior secondary school level (Forms 1 and 2). It provides opportunities to examine mathematics teaching and learning, explore strategies and ideas for teaching mathematics, examine mathematics curricula, use theories of learning to interpret students' mathematical thinking, and imagine teaching and learning mathematics in different ways.

Objectives

- **look closely** at experiences and places where mathematics learning *happens* in everyday life (what matters?)
- **think about** your *strengths*, commitments and roles as a mathematics teacher inside and outside school
- **build upon** what you *know* and *do* toward learning to study mathematics teaching and learning
- **imagine and explore** teaching and learning mathematics in *different* ways (*what if* we try something new?)
- **consider** larger social and cultural ways of thinking about mathematics education (how do *you* make sense of them?)

Topics

Topic	What mathematics do I teach? LANGUAGE
Key Ideas	What is mathematics? Whose mathematics are we teaching? What mathematics is taught in school and how is this similar to or different from mathematics learned elsewhere (e.g., in more informal settings such as in the market, playing sports, or dress-making). What are the possibilities for what mathematics might be and could be taught? What are the philosophical commitments of curriculum as communicated through textbooks?
Topic	How do I teach mathematics? TIME
Key Ideas	How do we recognize mathematics teaching and learning? What makes mathematics teaching difficult? What are the purposes, implications, and challenges of assessment? How might mathematics be taught in ways that prepare students for the national exams as well as sustain students' interest and motivation in mathematics and their hope for the future? What mathematics is needed for teaching? What approaches to learning do you model? How do you use strategies with available resources?
Topic	Where do I teach? PLACE
Key Ideas	What is cultural about teaching and learning mathematics? How might we draw from the environment of where we teach to consider a range of possibilities for teaching mathematics? How can place inspire and constrain what and how mathematics is taught and learned?
Topic	Who do I teach? SELF/OTHER
Key Ideas	What does it mean to learn mathematics? How do students understand and make sense of mathematics? Which mathematical concepts are most challenging for students to learn and why? We will examine approaches to learning across the rich diversity and needs of students, while addressing issues related to culture, equity and gender. What are your narratives? What are the narratives of your students? What are your/their challenges? What are your/their hopes?
Topic	Why do I teach mathematics? PURPOSE and PROMISE OF EDUCATION
Key Ideas	Given our inquiries so far, we will focus on strengths, struggles, as well as what calls us

	to teaching and promises of practice. How do we bring our students to the world of mathematics, and the world of mathematics to our students? How do we nurture their capacity to remake or rewrite the world with mathematics?
Topic	Introduction and construction of Case Study
Key Ideas	We will discuss what makes a good case to study that links knowledge to action. Case studies are stories that bring reality (with an educational message) into our discussions.
Topic	Studying teaching and learning mathematics. TEACHING AS INQUIRY
Key Ideas	How can we deepen our understandings of teaching, learning and mathematics and their social/cultural contexts in order to better understand our teaching practices? How might attending to language, time, place, self/other, and purpose give opportunities to inquire into our teaching?

Course Requirements

Outside class assignments (See separate handout sent by email in October)

Noticing student's mathematical thinking – Solve a mathematics problem yourself. Then observe two different students work on the problem, paying attention to the ways in which they solve it.

In class assignments

1. Four to five writing responses (1 page in length) based on in-class activities and discussions
2. Working in pairs select, develop, and facilitate a math problem for an in-class math fair. You and your partner will work on a problem, consider adaptations and extensions, and ways in which it might be presented to others (students, community members, parents, teachers, elders).
3. Working in small groups, "Mathematics Learning Circles," your group will develop a teaching and learning case that highlights an issue/dilemma/question/challenge or possibility (developed from your own teaching, your experiences in the class, and/or with the math fair). Mathematics Learning Circles will present their cases and discuss possible actions with the class.

Lectures

Several ideas and strategies for deepening our understanding of mathematics teaching and learning will be offered.

Instructor notes and resources will be posted through the UBC elearning Connect course website.

Final Exam will include all the above parts of the course that we cover in class.

**We will give attention to gender and equity issues by modeling inclusive practices and exploring possibilities for inclusion of female voices in teaching practices across subjects areas.

Assessment (out of class assignment, in class assignments, and final exam)

A level grade: Submissions have evidence of critical analysis, strong connections between ideas and analysis; personal engagement with the issues/topics; writing is original, fluent, creative and coherent; minor grammatical or proofreading errors.
A+ (90-100%); A (85%-89%); A- (80-84%)

B level grade: Submissions have: evidence of critical analysis, some strong connections between ideas and analysis; personal engagement with the issues/topics; writing is original, fluent, and coherent; minor grammatical or proofreading errors.
B+ (76-79%); B (72-75%); B- (68-71%)

C level grade: Submissions have some evidence of critical analysis, few connections between ideas and analysis; limited personal engagement with the issues/topics; writing is original, logically sequenced with developing fluency and clarity; some grammatical or proofreading errors. C+ (64-67%); C (60-63%); C- (55-59%)

D level (50-54%) /Fail (0-49%): Submissions have little or no evidence of critical analysis, weak connections between ideas and analysis; weak personal engagement with the issues/topics; writing is disjointed and without conceptual coherence and clarity; numerous grammatical or proofreading errors.