

TMCC Syllabus Spring 2014
EDUC 405 Math Methods & Materials



Instructor: Kristie R Dionne

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Office hours: Monday- Thursday 8:00-4:30

Friday- By appointment

Class: 3 credits

9:00-10:20 Tuesday & Thursday

Room 216

Course Description: This course addresses the application of innovative teaching methods and materials for teaching elementary school mathematics. It stresses developmentally appropriate instructional strategies that emphasize problem solving approaches to math instruction.

Course Goals: This spring semester, you are to undertake an investigation into the learning and teaching of mathematics at the elementary level. Your inquiry will support your initial mathematics teaching endeavors and enable you to continue learning as your teaching practice matures. You will investigate how children learn mathematics and what is meant by deep teaching and understanding of mathematics. You will learn how to teach mathematics so that learners see relationships and connections within and between mathematics ideas to their daily lives.

Instructional Objectives:

1. Identify the content (what), carry out the methods (how), and incorporate materials (manipulatives and tools) necessary to teach elementary mathematics;
2. Compare and contrast different types and characteristics of knowledge and learning in mathematics;
3. Assess students' mathematical thinking and plan appropriate instruction, both formally and informally;
4. Design an instructional environment that supports the teaching and learning of mathematics;
5. Evaluate instructional decisions about the use of curricular materials, manipulative materials, technology, and supplemental materials.

Required Text: Van de Walle, J. (2010). *Elementary and middle school mathematics: Teaching developmentally*. (7th ed.). New York, NY: Addison Allyn and Bacon.

Supplemental Required Readings: Handouts/Articles and research

Methods of Instruction: Direct instruction (lecture and power point presentations), discussion, group work, peer teaching, student presentations, hands-on demonstrations, and field based applications. Assignments will be required electronically on Jenzabar.

Your Rights and Responsibilities: If you have emergency medical information to share with me, if you need special arrangements in case the building must be evacuated, or if you need accommodations in this course because of a disability, please make an appointment with me. My office location and office hours are Room 219, 8:00-4:30 Monday through Thursday and some Fridays. If you plan to request disability accommodations, you are expected to register with the TMCC counselor (Rm. FA 103) 477-7947.

Cultural Relevancy of Course Content: During the process of the course Math Methods and Materials, participants and the instructor will explore the ways that classroom teaching can include and incorporate literacy in the classroom. Anishinabe, as well as other cultures will be explored. Students will be required to participate in a service learning project which will involve working with Native American students from the local area. Also students will be expected to teach reading through the use of literature from various cultures.

Class Participation: Regular attendance is mandatory. Please be on time and plan to stay the entire class period. Class participation will count toward your grade. If you come late or leave early points will be deducted. **Please turn your cell phones on silent during class. Leave the room if you need to take a call.**

Unexcused absence: Every class period there will be an “in class” assignment. No points will be given if you are absent for any reason.

Excused absence: Must be made in advance. Only extremely necessary circumstances will be considered to be excused.

Assignments: Must be completed as assigned and “ON TIME.” Late work will not be accepted. In class assignments may be hand written. Out of class assignments should be typed in size 12 font, using APA format, with all sources cited. Assignments will be graded on accuracy in punctuation, content, spelling, appropriate grammar, and sentence and paragraph structure. Reading assignments are required reading out of class. **If class is cancelled for any reason, assignments remain due to be turned in electronically by the due date.**

Performance Assessments: An evaluation of your papers, assignments, projects, in-class discussions, small and large group presentations, and participation will determine whether or not you’ve met the instructional objectives for the course. Scholarship, initiative, cooperation, attitude and improvement will also be taken into consideration.

Academic Honesty: Students are expected to maintain scholastic honesty. Scholastic dishonest includes but is not limited to cheating on a test, plagiarism, and collusion. When an infraction occurs, instructors have the authority to act personally. Instructors will report action to the Dean of Academic Programs. A student has the right to appeal the instructors’ action in accordance with the student appeal policy.

Class Points:

Class participation/small group work- 5 pts. x 30 = 150 pts

Math Autobiography- 25pts.

Elementary Math Classroom Observations/Reflections- 5 hours/classes- 50 pts-set up on your own at a local school(s)

Quizzes- 10 pts.x 20 =200 pts.

Midterm Exam- Multiple choice/scenario questions=-50 pts.

Unit of 5 Authentic Math Lessons on one concept: Must include the following: teach 2 lessons to class-2x56= 112 pts. Total unit: 100 pts.

Lesson 1- children's literature, manipulatives, problem solving

Lesson 2- flipchart technology, manipulatives, problem solving

Lesson 3- writing, manipulatives, problem solving

Lesson 4- science, manipulatives, problem solving

Lesson 5- art/culture, manipulatives, problem solving

Binder-10 pts.

TOTAL POINTS: 697 pts.

Course	ND Standards	Objectives	Artifacts	INTASC
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<p>EDUC 405: Math Methods and Materials</p>	<p>50015.2a, d, i</p>	<p>1. Identify the content (what), carry out the methods (how), and incorporate materials (manipulatives and tools) necessary to teach elementary mathematics; 2. Compare and contrast different types and characteristics of knowledge and learning in mathematics; 3. Assess students' mathematical thinking and plan appropriate instruction, both formally and informally; 4. Design an instructional environment that supports the teaching and learning of mathematics; 5. Evaluate instructional decisions about the use of curricular materials, manipulative materials, technology, supplemental materials.</p>	<p>Chapter Readings Math Autobiography Journal Readings Quizzes Midterm Lesson Plans Final Project-Unit Observations/reflections Binder</p>	<p>#2 Learning Differences #4 Content Knowledge #5 Application of Content #6 Assessment #7 Planning for Instruction #8 Instructional Strategies</p>
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Tentative Class Schedule

DATE	Topic	Assignments
WEEK 1 January 14 January 16	Syllabus Expectations NCTM	Class Participation-5 pts. Class Participation-5 pts. Read Chapters 1-2 Math Autobiography-25 pts
WEEK 2 January 21 January 23	Teaching Mathematics in the Era of the NCTM Standards Common Core Standards Exploring what it Means to Know and Do Mathematics	Class Participation-5 pts. Class Participation-5 pts. Read Chapters 3-4
WEEK 3 January 28 January 30	Teaching Through Problem Solving Planning in the Problem- Based Classroom	Class Participation-5 pts. Class Participation-5 pts. Read Chapters 5-6 Quiz 1- Chapters 3-4/class notes-20 pts.
WEEK 4 February 4 February 6	Building Assessment into Instruction Teaching Mathematics Equitably to All Children Native American Lesson- Numeration-Gesture Counting Materials	Class Participation-5 pts. Class Participation-5 pts. Read Chapters 7-8 Quiz 2- Chapters 5-6/class notes-20 pts.
WEEK 5 February 11 February 13	Using Technology to Teach Mathematics Developing Early Number Concepts and Number Sense Native American Lesson- Numeration-Gesture Counting Materials	Class Participation-5 pts. Class Participation-5 pts. Read Chapters 9-10 Quiz 3- Chapters 7-8/class notes-20 pts.
WEEK 6 February 18 February 20	Developing Meanings for the Operations Helping Children Master the Basic Facts	Class Participation-5 pts. Class Participation-5 pts. Read Chapters 11-12 Quiz 4- Chapters 9-10/class notes-20 pts.
WEEK 7 February 25 February 27	Developing Whole-Number Place-Value Concepts Developing Strategies for Whole-Number Computation	Class Participation-5 pts. Class Participation-5 pts. Read Chapters 13-14 Quiz 5- Chapters 11-12/class notes-20 pts.

WEEK 8 March 4 March 6	Using Computational Estimation with Whole Numbers Algebraic Thinking: Generalizations, Patterns, and Functions	Class Participation-5 pts. Class Participation-5 pts. Read Chapters 15-16 Quiz 6-Chapters 13-14/class notes-20 pts. Lesson-(part of your unit) - teach to class-8/week-56 pts. Midterm- 50 pts.-Online
WEEK 9 March 11 March 13	Developing Fraction Concepts Developing Strategies for Fraction Computation	Class Participation-5 pts. Class Participation-5 pts. Read Chapters 17-18 Quiz 7- Chapters 15-16/class notes-20 pts. Lesson-(part of your unit) teach to class-9/week
WEEK 10 March 25 March 27	Developing Concepts of Decimals and Percents Proportional Reasoning	Class Participation-5 pts. Class Participation-5 pts. Read Chapters 19-20 Quiz 8- Chapters 17-18/class notes-20 pts.
WEEK 11 April 1 April 3	Developing Concepts of Data Analysis Exploring Concepts of Probability Developing Concepts of Exponents, Integers, and Real Numbers	Class Participation-5 pts. Class Participation-5 pts. Read Chapters 21-23 Quiz 9-Chapters 19-20/class notes-20 pts.
WEEK 12 April 8 April 10	Native American Lesson Geometry-Native Structure Materials	Class Participation-5 pts. Class Participation-5 pts. Quiz 10- Chapters 21-23/class notes-20 pts.
WEEK 13 April 15 April 17	Lessons-(part of your unit)-teach to class (6)	Class Participation-5 pts. Class Participation-5 pts. Lesson-(part of your unit)-teach to class (6 each week)-56 pts
WEEK 14 April 22 April 24	Lessons-(part of your unit)-teach to class (6)	Class Participation-5 pts. Class Participation-5 pts. Lesson-(part of your unit)-teach to class (6)

WEEK 15 April 29 May 1	Lessons-(part of your unit)- teach to class (5)	Class Participation-5 pts. Class Participation-5 pts. Lesson-(part of your unit)- teach to class (5)
WEEK 16 May 6	UNITS Due-100 pts.	Class Participation-5 pts. UNITS Due