TMCC Syllabus Spring 2016 (Updated)
EDUC 405 Math Methods & Materials

Instructor: Kristie R Dionne
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Office hours: Monday- Thursday 9:00-3:30
                Friday- By appointment
Class: 3 credits
       9:00-10:20 Tuesday & Thursday
       Room 216
Course Description: EDUC 405 Math Methods and Materials is a course for elementary education majors. Topics covered in this class include: state and national math standards, problem solving, assessment, number concepts, numeration, whole number operations, patterns, estimation, fractions, decimals, ratio, proportion, percent, geometry, measurement, statistics, data, probability and algebraic concepts. Emphasis is given to hands on discovery learning through real life application. 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 in a diverse classroom.

Rational: Elementary Education and Early Childhood majors taking Math Methods will be immersed in best practices in teaching through learning and practice.

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 model 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, carry out the methods, and incorporate materials necessary to instruct elementary mathematics lessons according to the state standards to include: problem solving, assessment, number concepts, numeration, whole number operations, patterns, estimation, fractions, decimals, ratio, proportion, percent, geometry, measurement, statistics, data, probability and algebraic concepts.
2. Compare and contrast different types and characteristics of knowledge and learning in mathematics;
3. Design an instructional environment that supports the teaching and learning of mathematics in a diverse classroom;
4. Assess students' mathematical thinking and plan appropriate instruction, through both formative and summative assessment;
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 Canvas.

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 Tammy Morin, 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. <mark>Please turn your cell phones on silent during class. Leave the room if you need to take a call.</mark>

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. <mark>**If class is cancelled for any reason, assignments remain due to be turned in electronically by the due date.**</mark>

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 = <mark>150 pts</mark>
Math Autobiography- <mark>25pts.</mark>
Elementary Math Classroom Observations/Reflections- 5 hours/classes- <mark>25 pts</mark>-set up on your own at a local school(s)
Math Activities- <mark>20 pts.</mark>
Quizzes- 10 pts.x 20 =<mark>200 pts.</mark>
Midterm Exam- Multiple choice/scenario questions=-<mark>50 pts.</mark>
Final Exam- <mark>50 pts.</mark>
Unit of 5 Authentic Math Lessons on one concept: Must include the following: teach 2 lessons to class-2x56= <mark>112 pts.</mark> <mark>Total unit: 100 pts.</mark>
      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

Course INTASC	ND Standards	Objectives	Artifacts	
EDUC 405: Math Methods and Materials	50015.2a, d, i	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	Chapter Readings Math Autobiography Journal Readings Quizzes Midterm Lesson Plans Final Project-Unit Observations/reflections	#5 Application of Content

		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.		

Tentative Class Schedule

DATE	Topic	Assignments
WEEK 1 January 12 January 14	**Syllabus Expectations NCTM Common Core Standards Field experience to Minot Airforce Base- 1-14-16**	**Class Participation-5 pts. Class Participation-5 pts. Read Chapters 1-2 Math Autobiography-25 pts**
WEEK 2 January 19 January 21	**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 26 January 28	**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 2 **February 4**	**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.** **Math activity- 1 student** **shares each day. Sign up. -20** **pts.**
WEEK 5 February 9 **February 11**	**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 16 **February 18**	**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 23 **February 25**	**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 1 **March 3**	**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 8 **March 10**	**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 22 March 24	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 March 29 March 31	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 5 April 7	Lessons-(part of your unit)-teach to class (5)	Class Participation-5 pts. Class Participation-5 pts. Quiz 10- Chapters 21-23/class notes-20 pts.
WEEK 13 April 12 April 14	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 (6 each week)-56 pts
WEEK 14 April 19 April 21	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 (6)
WEEK 15 April 26 April 28	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 3 May 5	Final post test UNITS Due on Canvas	Class Participation-5 pts. Final Posttest- 50 pts. UNITS Due-100 pts.