Salish Kootenai College
ED 372 TEACHING MATHEMATICS IN THE EARLY GRADES

Quarter: Fall 2015-2016 **Location: Education Building, Room 120** **Time: Mon. & Wed. 12:30 to 1:50**	**Instructor: Amy Burland** **Office: Education Building Room 131** **Office Hours: Thurs: 8-12, F: 1-3** **e-mail: amy_burland@skc.edu** **Telephone: 406-275-4761**

Catalog Course Description/Content:
Teaching Mathematics in the Elementary Classroom focuses on learning theories and teaching strategies for early elementary (K-4th Grade) mathematics. The class is based on implementing the Montana Common Core State Standards in Mathematics. In addition, candidates will explore classroom materials, models, and technologies appropriate and effective in guiding mathematics instruction for early elementary grades. Prereq: EDUC 240, Acceptance into TEP, MATH 134, MATH 135, MATH 136. Coreq: EDUC 371.

Required Text Book:
De Walle, John, Elementary and Middle School Mathematics Teaching Developmentally (9th Digital Edition) will also be used for EDUC 397.

Relation to Conceptual Framework:
This course helps the student learn to develop experiential mathematics lessons through the use of models and real world problems. It introduces them to many mathematics models and other valuable lesson resources as well as a reflective lesson plan.

Cultural Relevancy:
Students' traditional and practical experience will be integrated into the problem solving approach. Students will address the IEFA Essential Understandings in one learning activity that they are required to create.

Critical Thinking:
Students will analyze traditional versus reform instructional approaches used in various textbooks. Student discussions and panels will be used to debate real-life classroom scenarios in order to anticipate professional ways of dealing with said issues.

Citizenship:
Students will teach mathematics lessons to partnering classrooms out in the field.

Communication:
Students will develop lesson plans that elicit deep understanding and classroom discourse among students. Students will partner with a peer when teaching lessons out in the field. One student of the pair will teach while the other observes and provides feedback. The pair will change roles each time they teach in the field.

Standards - Access to

- Montana Mathematics Common Core Standards: http://opi.mt.gov/Curriculum/montCAS/MCCS/index.php#gpm1_4
- Essential Understandings Regarding Montana Indians: http://opi.mt.gov/pdf/indianed/resources/essentialunderstandings.pdf
- NCTM Standards and Principles: http://standards.nctm.org/document/appendix/numb.htm

INTASC Principles and Indicators (Assessments in bold are to be included in student portfolios)

Indicators:	**Type**	**Assessments**
INTASC Principle 1: Learner Development **1(b)** The teacher creates developmentally appropriate instruction that takes into account individual learners' strengths, interests, and needs and that enables each learner to advance and accelerate his/her learning. **1(d)** The teacher understands how learning occurs--how learners construct knowledge, acquire skills, and develop disciplined thinking processes—and knows how to use instructional strategies that promote student learning. **1(i)** The teacher is committed to using learners' strengths as a basis for growth, and their misconceptions as opportunities for learning.	Knowledge Knowledge Dispositions	***Unit and Lesson plans**
INTASC Principle 3: Learning Environments **3(c)** The teacher collaborates with learners and colleagues to develop shared values and expectations for respectful interactions, rigorous academic discussions, and individual and group responsibility for quality work. **3(p)** The teacher is committed to supporting learners as they participate in decision making, engage in exploration and invention, work collaboratively and independently, and engage in purposeful learning.	Knowledge Dispositions	*Unit and Lesson Plans
INTASC Principle 4: Content Knowledge **4(a)** The teacher effectively uses multiple representations and explanations that capture key ideas in the discipline, guide learners through learning progressions, and promote each learner's achievement of content standards. 4(b)The teacher engages students in learning experiences in the disciplines(s) that encourage learners to understand, question, and analyze ideas from diverse perspectives so that they master the content. **4(r)** The teacher is committed to work toward each learner's mastery of disciplinary content and skills.	Knowledge Knowledge Dispositions	*Unit and Lesson Plans
INTASC Principle 5: Application of Content **5(a)** The teacher develops and implements projects that guide learners in analyzing the complexities of an issue or question using perspectives from varied disciplines and cross-disciplinary skills. **5(d)** The teacher engages learners in questioning and challenging assumptions and approaches in order to foster innovations and problem solving in local and global contexts. **(h)** The teacher develops and implements supports for learner literacy development across content areas.	Knowledge Skills Skills	*Unit and Lesson Plans

5(j) The teacher understands how current interdisciplinary themes (e.g., civic literacy, health literacy, global awareness) connect to the core subjects and knows how to weave those themes into meaningful learning experiences. **5(m)** The teacher understands critical thinking processes and knows how to help learners develop high level questioning skills to promote their independent learning.	Knowledge Dispositions	
INTASC Principle 6: Assessment **6(g)** The teacher effectively uses multiple and appropriate types of assessment data to identify each student's learning needs and to develop differentiated learning experiences. **6(j)** The teacher understands the difference between formative and summative applications of assessment and knows how and when to use each. **6(r)** The teacher takes responsibility for aligning instruction and assessment with learning goals.	Knowledge Knowledge Skills	*Unit and Lesson Plans
INTASC Principle 10: Leadership and Collaboration **10(d)** The teacher works collaboratively with learners and their families to establish mutual expectations and ongoing communication to support learner development and achievement. **10(g)** The teacher uses technological tools and a variety of communication strategies to build local and global learning communities that engage learners, families, and colleagues.	Skills Skills	**Parent Response Paper**

Course Objectives/Content:

The main focus of this course deals with teaching mathematics in grades K-8. At the end of the course, you (the student) should be able to:

1. Compare the features of the Montana Common Core State Standards (CCSS) at the Office of Public Instruction (OPI) and the standards found in the Interstate New Teacher Assessment and Support Consortium INTASC;
2. Name and compare at least two different elementary math curriculums;
3. Write daily and unit lesson plans;
4. Name at least four manipulatives and demonstrate instruction with at least one math manipulative;
5. Develop a math learning center;
6. Describe at least three problem solving strategies;
7. Describe at least one theory associated with students learning;
8. Analyze computer programs and websites that target elementary mathematics.

Point Distribution:

A = 400-360 points B = 379-320 points C = 319-280 D = 279-280 F = 279 points and below

Course Assignments:

I. Foundations and Standards

1. **Response Paper (25 points): Personal Math Autobiography and Philosophy** (due Oct. 18 on Moodle)

   Part 1: Write about your learning experiences in mathematics throughout your educational career as a student. What topics, lessons, teachers, incidents, or experiences had positive or negative impacts on how well you learned math, and how you perceive mathematics. Based on the literature provided and Chapter 2 concerning constructivism in mathematics education which is based on Vygotsky and Piaget's work, discuss how this theory relates to the way YOU were taught mathematics. How did the way you were taught mathematics shape your attitude about mathematics? What was the impact and why?

   Part 2: Based on these experiences as a learner, what methods, tactics, and philosophy will you employ as a teacher? How will you implement these beliefs? Compare your evolving philosophy of teaching math to each of the Mathematics Common Core State Practice Standards (pages 2 and 3 plus the NCTM handout). Also relate it to the literature provided and textbook concerning constructivism in mathematics education.

II. Teaching

Lesson plans to be taught in the schools: Working with a partner, choose a lesson plan from the class resources provided (IEFA Model Teaching Units, textbook, NCTM Journals) and revise as needed for student learners. The lesson plan will be submitted to the principals and teachers in the classrooms that we visit. (3 plans x 25 pts – kindergarten, 1st grade, and 4th grade) **These points will be included in the grade for EDUC 371 – practicum field experience.*

Unit Plan (100 pts) Prepare hands-on minds-on 4-day unit teaching a concept with a "big ideas" approach. Take at least an example from one textbook for the unit which must be made up of the following: at least one problem solving activity, Math Talks, a children's literature book, IEFA, manipulatives and/or technology. Appropriate resources to use include elementary textbook samples, NCTM journals, NCTM Principles and Standards for School Mathematics manual, Van de Walle texts (including the course textbook) and OPI IEFA Model Teaching Units. Include a task specific rubric for the assessment of the unit that is directly aligned with the unit objectives. This assessment should be designed for the end of the unit – not for each lesson. ATTACH the RUBRIC. (*It is preferable that this unit includes lessons taught in the schools.) Specific points will be given to the following:

a) **Math Talks to begin each lesson including guiding questions (15 pts)**
b) One problem solving lesson (15 points)
c) Children's Literature Book (10 points)
d) Elementary Mathematics Textbook example of concepts (15 points)
e) Assessment and Scoring Rubric (15 points)
f) IEFA Essential Understandings embedded (15 points)
g) A minimum of 3 resources cited (15 points)

IV. The Teacher, the Professional

1. Parent Response (25 points): A parent questions your approach to teaching mathematics and the Common Core Practice Standards. Justify the use of a problem solving/constructivist environment in your classroom using research (NCTM Journals and electronic data bases subscribed through the library), observations you have made, standards, etc. Write as though you were speaking directly to the parent defending your instruction for the Unit Plan in which you developed. Expectations of being professional include expressing appreciation for parent interest and for directly contacting you with his/her questions.

III. Readings (10 pts per chapter x 15 chapters = 150 points): Submitted on Moodle by midnight on Sundays of the week assigned. Besides posting it on Moodle, have it accessible (either electronically or in hard copy) for Monday's class discussion.

Late Assignments: Late assignments will be docked 20% of earned grade if submitted within the next week's deadline. Moodle will accept assignments only one week past due date and then work will be granted 50% of earned points.

IV. Optional Final Exam: 100 points. Those students who have 80% or higher at the end of Week 8 may choose not to take the exam.

Additional Course Information

1) **Class participation self-assessment (100 points = 5 points per meeting x 20 meetings):**
As an adult learner in this class, you are a co-creator in the content of the course. To bring meaning to the course content you will be asked to participate in discussion, group work, presentations, critique classmate presentations, and other class activities. A variety of class activities, discussions and presentations will be conducted throughout the course. These cannot be made up, therefore your absence forfeits the opportunity to learn from the activities and earn participation points for the meeting. By being consistent with attendance, you are beginning to act and think like a teacher and demonstrate professional responsibility.

Students are expected to **be on time for class** and to **stay until the designated time set for dismissal (this means staying in class while it is in session)**. If a student must leave early he/she must inform the instructor(s) at the beginning of class. Communication with the instructors is very important; if students know that they will have to miss a class, it is best to contact the instructor ahead of time. As stated above, there is no way to make up what is covered in class whether absence is considered "excused" or "unexcused". The course is designed for students to be in attendance at all sessions***. If an absence is needed, arrange for someone in the class to pick up handouts and other materials and information presented.***

**If a complication arises and arrangements are made ahead of time, instructors will exercise their right to make an exception based on responsibility and respect shown by individual students through punctuality, participation and effort shown in class.*

2) **Preparation for Class:**
Teaching out in the field: Preparedness for teaching out in the field includes submitting a completed lesson to the instructor on the assigned day and having handouts printed before arriving at the school to teach.

Rewriting Assignments: In cases where assignments are judged to be poor quality, students may request consideration for a rewrite of the assignment. This request must be made by the end of the first week of seeing the grade.
*No extra credit or alternate assignments are available because of late assignments and loss of participation points due to absences.
*Again, if a complication arises and arrangements are **made ahead of time**, I will exercise my right to make an exception based on responsibility and respect shown by individual students through punctuality, participation, and effort shown in class.

3) **Credit Hours:**
Following the SKC Credit Hour policy, to meet the identified student learning outcomes of this course, this course, delivered over a 10 week term, will approximate:

3 hours/week classroom or direct faculty instruction. In addition, out-of-class student work will approximate a minimum of 6 hours each week to complete the weekly assignments.

4) Cell Phones:

Students must keep cell phones in the off position during class. Any student who chooses to either make a call or take a call during class will be asked to leave for the remainder of the class period. (This does not include calls made during class breaks.)

Taken from the SKC student handbook: VI Good Things To Know:

Cell Phones: Cell phones will not be permitted in classrooms. Please turn off phone upon entering classroom. This is showing respect for your instructor and other students. Failure to do so may result in class suspension.

5) **Academic Honor Code**

All course work shall follow the guidelines of the Academic Honor Code as set forth by the SKC Student Handbook. Do your own work, allow other students to do their own work. **Plagiarism** involves the taking of someone else's words, ideas, or writings and presenting them as your own. Avoid plagiarism by always acknowledging the ideas of others through citing your sources of the information. Violation of the Academic Honor Code may result in failure of the assignment, the course, or possible expulsion from school.

6) Reasonable Accommodations

Reasonable accommodations are provided for eligible students with identified disabilities. The College complies with the Rehabilitation Act of 1973 and the Americans with Disabilities Act. Students may contact the College's Disability Officer, Linda Pete, in the Bookstore Building Room 111. Her email is linda_pete@skc.edu and phone number is 275-4968.

7) SKC Retention

The SKC Retention Team consists of SKC staff and faculty who provide student-centered support services on a daily basis. The SKC Retention Team is here to help you to be successful in reaching your educational goals. You can contact the SKC Retention Team yourself, or your instructor may refer you (for example, if you "disappear" from class or if he/she is concerned about your attendance and performance). Any student who does not come to class the first week is automatically referred according to SKC retention policies in place. *Debbie L. Bell, SKC Retention Coordinator* (Bookstore Annex, 275-4928, Email: retention@skc.edu)

EDUC 372 Teaching Math in the Early Grades
TEP II Portfolio Artifact

InTASC Principle 5: Application of Content
Critical Thinking/Problem Solving Lesson/Unit Plan

STANDARD	0 Unacceptable	1 Developing	2 Proficient	3 Exemplary
Lesson Plan developing critical thinking, problem solving or performance skills. PEPP 10-58-531 Candidates (iii) demonstrate knowledge, understanding, and use of the major concepts, and procedures, and reasoning processes of mathematics that define number systems and number sense, operations, algebra, geometry, measurement, data analysis statistics and probability in order to foster student understanding and use of patterns, quantities, and spatial relationships that can represent phenomena, solve problems, and deal with data to engage students in problem solving, reasoning and proof, communication, connections, and representation	Candidate does not demonstrate content knowledge nor implements practice standards.	Candidate demonstrates content knowledge and some implementation of practice standards through a minimum of 2 of the criteria cited as Proficient.	Candidate demonstrates sound approach to implementing content and practice standards through planned questioning that: a) establishes students' background knowledge and understanding, b) generates student –to-student(s) discourse, c) generates higher level thinking through analysis of differing peer strategies.	Candidate demonstrates the skills described as "proficient" beyond the expected level of a novice teacher. This score is reserved for the candidate who demonstrates skills of an experienced teacher or one who is able to mentor others.

Score: _____

This Unit Plan focused lesson received a score of _____ out of a possible _____ points for EDUC 372.

Comments:

EDUC 372 Teaching Math in the Early Grades
TEP II Portfolio Artifact

InTASC Principle 10: Leadership and Collaboration
Written Letter to Parents

Student_____ Instructor: _____

Date:

Level of Performance:	0 Unacceptable	1 Developing	2 Proficient	3 Exemplary
10(d) The teacher works collaboratively with learners and their families to establish mutual expectations and ongoing communication to support learner development and achievement. Guiding Principle: B & E	Lacks indication of collaboration between learner and family members in written letter. Letter effectively communicates 1 or less of the 3 Proficient criteria.	Limited indication of collaboration between learner and family members in written letter. Parent letter effectively communicates 2 out of the 3 Proficient criteria.	Letter clearly indicates the desire for collaboration between learner and family members. Parent letter is effective in communicating: a) sensitivity to parent concerns, b) reasoning behind MCC Practice Standards instructional approaches, c) written with clarity; has no errors in conventions and grammar.	Candidate demonstrates the skills described as "proficient" beyond the expected level of a novice teacher. This score is reserved for the candidate who demonstrates skills of an experienced teacher or one who is able to mentor others.

This Written Letter to Parents received a score of _____ out of a possible 25 points for EDUC 372.

Comments: