**MATHEMATICS FOR ELEMENTARY TEACHERS III**

**COURSE SYLLABUS**

**Spring Quarter 2016-17**

**Course Information**

a. *Number:* MATH 134

b. *Title:* Mathematics for Elementary Teachers III

c. *Prerequisite:* MATH 133 with at least a C grade or instructor consent

 You have to drop the course if you have not met the prerequisite requirements.

d. *Credits:* 5

e. *When Offered:* This course is offered Spring Quarter and meets in Beaverhead (Piel Qlawqn) Room 108 **M-T-R-F** from **2:30 to 3:50**.

**Personal Information**

a. *Instructor:* Terry Souhrada

b. *Office Location:* Room 104 Stephenson Building

c. *Office Hours:* Monday through Friday: 10:30 – 11:00 or by appointment

d. *Telephone:* 275-4943

e. *E-mail:* terry\_souhrada@skc.edu

**Required Materials**

a. *Text:* None

b. Manipulative Kit

c. Notebook (with dividers recommended), pencil, and graphing calculator

**Description**

This course is the third of a three-quarter sequence of important mathematics for elementary education majors. Topics include in the course: Probability, Statistics, and Geometry.

**The focus** of the course will be to help you enhance your mathematics background. It will be taught using the same pedagogical methods used in MATH 133 and MATH 134, which may be different from other mathematics courses you have taken in the past. The content of the course will be based upon materials developed by the Mathematics Education Collaborative (MEC), Dr. Ruth Parker, and presented from the constructivist view of learning. Constructivism is a theory of teaching and learning that emphasizes the learner taking an active role in constructing her/his own learning. The learner interacts in an environment geared toward exploration, reasoning, problem solving, collaboration, and open communication.

**The goal** of this course is for you become mathematically powerful students and independent learners of mathematics. It is also to allow you to become competent and confident problem solvers. The content and experiences in the course will lead you toward this goal. As the instructor I will be your guide and support as you make sense of mathematics. True understanding will only come when you make sense of a situation through your own lens of understanding. My role is not to tell you everything about the subject, nor is it to answer all of the questions that will arise as you engage in problem solving. You will at times experience confusion and perhaps frustration. This is a natural and necessary part of the learning process. I will help you reflect and work your way out of confusion before your frustration becomes debilitating to your learning. Don’t be afraid of wrong answers. Mistakes are the foundation of discovery and deep understanding. Sometimes learning occurs only after *multiple* attempts down wrong paths. Without mistakes and productive struggle we are incapable of real and lasting learning.

During your struggle you may be asked to share your thinking and current understanding. However you will never be required to share without first giving your permission. This sharing process allows us all as a learning community to come together and help each other see mathematics more clearly by examining it through a variety of different perspectives. It is through this sharing of ideas that we learn from each other.

You will have opportunities to learn while working in groups, with partners, and as an individual. Collaboration with others is a valued method of learning. Listening to others as you engage in collaborative problem solving will help you see a variety of points of view and several ways of solving a problem. In groups, you are not to ‘teach’ someone how to solve a problem and you are not to direct others to think in a certain way. Each person must think for her/himself and make sense of the situation in a way that works for them. For many problems, I will insist that you not be satisfied with simply finding one way to solve a problem. Instead, I will push you solve problems in multiple ways. Getting the right answer is not the only goal in solving a problem. Understanding how you got to the answer is also an important goal, as is being able to communicate your understanding to others. While collaborative learning is desired, you are at the same time individually accountable for learning the material.

This is a 5-credit course so be ready to spend at least 15 hours per week working on the course materials. Following the SKC Credit Hour policy, to meet the identified objectives of this course over a 10 week term approximately ***FIVE*** hours per week should be spent for “class time” which consists of problem-solving, menu tasks, class activities, and group tasks. All of these are designed to address the Montana Common Core Standards and Standards of Mathematical Practices. Approximately, ***TEN*** hours per week will be spent out of class reading and reflecting on research based articles, problem-solving, reflecting, verify, and researching mathematical content.

**Attendance and Professionalism**

In order to give yourself the best possible chance to succeed in this class, you need to attend every day. Everything we do builds on previous material, most of which is not presented in a textbook. If you must miss a class, let me know ahead of time and make arrangements with a classmate to make sure you get the notes, materials, and information you missed.

Additionally, you are all being prepared to be professional educators. As part of that preparation you are expected to adapt to certain professional standards held within the field of education. Those include, but are not limited to, arriving on time, completing work when expected, consistent attendance, and common personal courtesies and respect for each other and your instructors. Failure to adhere to these standards reflects poorly on the seriousness with which you view yourself as a future educator of young children.

Although no attendance points will be given, as a developing professional, you will be expected to be in class on time and remain until the designated time set for dismissal. If you must leave prior to the end of class, request permission from the instructor to do so at the *beginning of class*. Understand that it is the prerogative of the instructor to either grant or deny this request.

Use of a cell phone or other personal communication devices during class for any purpose other than directly connected with the mathematics being discussed is considered to be unprofessional. So keep the devices put away and in the off or silenced position during class unless otherwise indicated by the instructor. If it is absolutely necessary for you to use technology for person purposes during class, show respect for others around you and remove yourself from the room to do so.

There will be many activities and assignments you will not be able to make up due to the nature of the assignment. This is a course designed to help you develop a deep understanding of mathematics and also prepare you professionally to be a quality professional educator. Teachers are required to be in school at all times and on time. Consistent attendance is evidence that you are willing accept the responsibilities expected of any professional educator. This is professional responsibility. Additionally, poor attendance will result in missed information, missed assignments and tests, and possible failure of the course as well as a reflection of your professional disposition.

**Objectives** - Upon completion of the course students will:

1. General Course Objectives

1. solve a variety of math problems related to concepts taught in grades K-8.
2. define and use a variety of mathematics terms and concepts addressed in the course
3. apply problem-solving strategies to a variety of situations.
4. develop and project a sincere interest in mathematics.
5. function effectively in a group problem-solving environment.
6. learn the necessary mathematics content necessary to be a successful elementary teacher of mathematics

2. Critical Thinking

1. develop the ability to interpret, quantify, and solve real-world problems.
2. appreciate the value of alternative approaches to problem solving.
3. validate work with clear organization and explanation.

3. Cultural Awareness

1. accept and appreciate a variety of mathematics backgrounds and abilities.
2. increase understanding of their own strengths and methods through interaction with diverse group of learners.
3. address the Essential Understandings regarding Montana Indians through mathematical connections.
4. apply and recognize mathematical content whenever applicable in culturally relevant settings.

4. Communication

1. discuss, justify, and verify solutions
2. learn to convey mathematical ideas through oral, pictorial, and written communication
3. organize and consolidate mathematical thinking
4. communicate mathematical thinking coherently and clearly to peers, teachers, and others

#### analyze and evaluate the mathematical thinking and strategies of others

#### use the language of mathematics to express mathematical ideas precisely.

**Course Requirements**

1. Class attendance and participation. Participation is a key part of the course and you can’t participate if you are not here! Because we do not use a textbook, there is no resource from which to get information when you miss other than your classmates.
2. Complete individual menus of problems, group tasks, homework problems, and assessments.
3. Homework is primarily for reinforcement and extension of class sessions.
4. Complete article reviews and other readings.
5. Have a positive and productive disposition toward yourself, your classmates, and mathematics. Be respectful of fellow classmates and the instructor as you share ideas.

**Grading**

Your final grade will be determined according to a standard percentage scale

(90-100=A, 80-89=B, 70-79=C, 60-69=D, 0-59=F) with points distributed as follows:

Menu Tasks 25%

 Article Reviews and Discussions 10%

Homework Assignments 15%

Performance Assessments 50%

\*\*I reserve the right to be generous to borderline people who have attended regularly and made an outstanding effort.

**Reassessing on Incorrect Understandings**

Assessments will be given periodically to determine your level of understanding of the mathematics content presented in this course. Any or all portions of each assessment may be retaken, on an individual basis, at the student’s discretion. In order to reassess you must:

1) identify the errors in the incorrect problems and redo the problems on paper separate from the original assessment responses.

2) for each incorrect problem write a description of the error you found and why it is an error.

3) meet with the instructor to discuss what you have learned from correcting these items.

4) complete any additional practice deemed necessary by the instructor.

5) retake an assessment containing items that focus on the content of the original items done incorrectly.

The retake must be completed within 2 weeks after the scored assessment has been returned to you. Your reassessment grade will be the grade you receive, but in no event will the replacement grade exceed **80%**.

Failure to meet any of the above criteria results in the loss of the opportunity to reassess.

**Policy Regarding Late Assignments/Revisions**

Late work will not be accepted without *PRIOR* instructor approval. No revisions will be possible unless requested by the instructor. If the instructor requests a revision of an assignment, the grade you receive will be the grade on the last attempt.

**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 (linda\_pete@skc.edu, 406.275.4968) or consult the SKC web page for Students with Disabilities for more information.

The faculty reserves the right to change the course syllabus or course content. Students will be provided advanced notice of changes.

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Detach at the dotted line. Sign, and return the portion below the line.

I have read and understand the requirements and expectations for this course. I also understand that this document represents an agreement to the policies outlined within. Should changes be made I understand that I will be provided advance notice of these changes.

Printed Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_

Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Tentative Schedule – Spring 2016 \*\*

 **MONDAY TUESDAY WEDNESDAY THRUSDAY FRIDAY**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***APRIL*** |  **3** |  |  **4** |  |  **5** |  |  **6** |  |  **7** |
| *outside of class*Syllabus ReviewGeom Pre-Assess | *outside of class* Polygons | **NO CLASS** | *outside of class* Tiling | *outside of class*Polygon Angles |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Last Day To* | **10** |  | **11** |  | **12** |  | **13** |  | **14** |
| *Add*Polyhedron Vertices | Regular Polyhedron | **NO CLASS** | Intro Area | *outside of class*NetsSurface Area |
|  | **17** |  | **18** |  | **19** |  | **20** |  | **21** |
| *outside of class*Menu Work Day | Geoboard Area | **NO CLASS** | Scaling | *outside of class*On Demand Task(Geometry) |
| *Faculty* | **24** |  | **25** |  | **26** |  | **27** |  | **28** |
| *In-service Day***NO CLASS** | ***Menu 1 Due***Intro Volume | **NO CLASS** | Finding Volume | Intro Transform |
| ***MAY*** |  **1** |  |  **2** |  |  **3** |  |  **4** |  |  **5** |
| More Transform | Symmetry | **NO CLASS** | Symmetry | ***Geometry******Post-Assessment*** |
|  |  **8** |  |  **9** |  | **10** |  | **11** |  | **12** |
| Prob. Pre-Assess | Intro Prob | **NO CLASS** | Exper/Theor Prob | Equally Likely |
|  | **15** |  | **16** |  | **17** |  | **18** | *Community* | **19** |
| Prob Model/Diag | More Model/Diag | **NO CLASS** | Menu Work Day | *Service Day***NO CLASS** |
|  | **22** |  | **23** |  | **24** |  | **25** |  | **26** |
| ***Geometry*** ***Retake Due***Menu Work Day | Multi-Stage Prob | **NO CLASS** | Dep/Ind Events | On Demand Task(Probability) |
| *Memorial*  | **29** |  | **30** |  | **31** | ***JUNE*** |  **1** | *Last Day To* |  **2** |
| *Day***NO CLASS** | ***Menu 2 Due Probability******Post-Assessment*** | **NO CLASS** | Intro Stats | *Drop*Central Tendancy |
|  |  **5** |  |  **6** |  |  **7** |  |  **8** | *Last Day* |  **9** |
| Various Plots | Interpreting Stats | **NO CLASS** | On Demand Task(Statistics) | *of Class****Probability******Retake Due*** |

**\*\* NOTE:** All information contained in this calendar is tentative and subject to change.