MATH /MATH ED 228 _Fall 2019
Tuesday 12:00-1:50 pm (Sci A 212); Thursday 12:00-1:50 pm (Sci A 213)

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Office Hours: Tuesday /Wednesday: 11:00 – 12:00 pm

Course Description:

MATH 228. Fundamental Mathematical Concepts for Elementary Teachers. 3 cr. Basic concepts and properties of set, number systems, and function for elementary school mathematics. Prereq: MATH 100 or placement above MATH 100. GEP: QL*
MATH ED 228. Teaching Elementary School Mathematics. 1 cr. Principles, goals, methods, study of curricular content and assessment techniques; includes field experience.

*This course will fulfill the Quantitative Literacy(QL) requirement as part of the General Education Program(GEP) for education majors only. Because this course is identified as a QL course in the GEP, assignments and assessments may be collected and copied for use of in GEP assessment. Names or identifying marks will be removed from copies of collected artifacts.

Course Purpose and Goals:

Too often our previous experiences with mathematics have caused us to focus on memorization and finding correct answers. Consequently, our understanding of what mathematics is and what it means to do mathematics is shaped by these experiences and is rather limited and narrow. **However,** this course is designed to develop your understanding of mathematics by providing opportunities for you to experience what it means to problem solve and reason about mathematics. Emphasis is on problem solving (investigating, conjecturing, and justifying), on understanding of concepts, on connections among concepts, and on written and verbal communication of strategies and reasoning. Basically, as future teachers, we need to develop a "deep understanding" of the mathematics we teach. For this to happen, the content of each course is stretched beyond the level that generally might be taught in a K-8 setting.

Therefore, you will be expected to provide complete explanations and justifications of the reasoning you used to solve problems. This requires practice and commitment to sense making on the part of the student. <u>You must participate mentally in the learning process.</u> This participation includes studying the material; working with others; struggling with non-routine problems; reasoning and solving problems; symbolically representing mathematical thinking and reasoning; listening to others; reflecting about what you are doing; as well as the more typical tasks of taking examinations and doing homework.

Required Textbook/Resources:

Beckmann, S. (2018). [5th Edition] *Mathematics for elementary teachers with activities*.
Boston: Pearson.

Other Resources (see Library Reserve section or online journal):

Carpenter T. P., Fennema, E., Franke, M. L., Levi, L., & Empson, S. . (1999). Children's
Mathemat ics: Cognitively Guided Instruction, Second Edition Portsmouth, NH: Heinemann.
Blanton, M. L. (2008). Algebra in elementary classrooms: Transforming thinking, transforming
practice. Portsmouth, NH: Heinemann.
Thomas P. Carpenter, Megan Loef Franke and Linda Levi (2003). *Thinking mathematically:
Integrating arithmetic and algebra in the elementary school*. Portsmouth, NH: Heinemann. ISBN
0-325-00565-6.

Common Core State Standards for Mathematics: Download from website:
http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf (can be found at your
D2L/resources)

https://www.illustrativemathematics.org/content-standards/1

Additional Readings will be available on Canvas

Course Structure and Tentative Requirements

Attendance (20 points): Because we will be seeking a way to teach children mathematics in way
that you were not taught, attendance and participation are crucial elements in this course to
envision how it would be studied and/or practiced in classroom. You are expected to attend every
class meeting. If you are absent more than 3 **times** without any special circumstances, it will be
considered unprofessional, and it will result in a disposition concern form. If you are absent 6
classes (1 day meeting = 2 classes) or more, your course grade will be "F". There will be no penalty
for 3 absences during the whole semester. After the third absence, 5 points per absence will be
subtracted from your total maximum attendance points.

There will be no make-up exam with the possible exception of unforeseen emergencies (decided
by instructor). If there is an emergency, the student must provide official written documentation
and the make-up exam must be arranged within 5 calendar days. (This should be done through the
Dean of Students or the Disability and Assistive Technology Center). Further, you are responsible
for making sure that you have copies of **all** material distributed in class, announcements made in
class, and content covered in class. **(Ask your friend to collect class works and assignments -
try not to ask me to send class materials)**

Participation (30 points): You are expected to participate in class activities and discussions. In
your actively mode of learning environment, you are not only reading what others had written
(***receptive***) but also to write and to speak using your *expressive* language. Not only listen my
knowledge about mathematics (*receptive)* but also engage in small –group discussion and make
verbal reports to the whole class (**expressive**).

Your participation in class also means that you should not only share your ideas during class discussions and in small group work, but also listen and learn from me and from your course mates. **You will be asked to present solutions to the class, and your willingness to do so will be reflected in your grade. It is expected that you will present solutions and/or lead a discussion at least _6 times_ during the semester.**

Presentation (60 points): You will present **two 10-minute long presentations**. One, Children's literature book, and the other, article presentation from Teaching Children Mathematic. Details will be presented later. In addition to these, you will introduce to our course mates, as a table, some math games that can be used in our future teaching.

Read-Write/Reflection (30 points): We will read some assigned reading from multiple sources. You will see a tentative schedule for reading assignments, but dates or even the readings themselves may change as we go along. You will be asked to submit your reflections approximately **three times** during the semester. The intent is to support you in developing a habit of reflection on your own thinking and learning; you may even find this record useful when you begin teaching. Only reflections that are typed will be accepted, unless otherwise specified

Lesson Plans for Practicum Experiences (30 points): This course includes three practicum experiences. For each experience, your grade strand will write a lesson plan. More information about the content and grading will be provided

Practicum Experiences Summaries and Reflections (30 points): Right after the practicum experiences you will write a summary and reflection of your teaching. Information about the format and content of the summary and reflection will be provided.

Homework assignments: (90 points) You will be asked to work on and hand in approximately ten paper homework assignments (activities from your textbook and sets of materials from my sources) which will give you the opportunity to solidify and further develop your understanding of ideas we will cover in class. More information about the assignments will be given with each assignment.

Computational Fluency Test (CFT): (50 points) You will be taken a pre- and post-version of the CFT tests. The pre-version will not be graded but the post-version will be graded, and it will be around the week 12-13 of this semester.

Weekly Quizzes (50 points): There will be quick weekly evaluations (15-20 minutes) based on a weeklong topic (HW, and in-class materials).

Quizzes (50 points): There will be 2 quizzes scheduled regularly throughout the semester. A quiz may be 35 – 45 minutes in length. Each quiz will be announced in one-week advance.

Tests (70 points): There will be 2 tests given throughout the semester. Each will comprise one entire 50-minute class period. Study guide will also be provided.

Final Examination (100 points): The final examination time will be during finals week. More information about the content will be provided.

E. Grading

This 4-credit hour class requires 6–8 hours of outside of class study per week. Make sure that you schedule and put in those hours consistently throughout the semester. Your course grade will be calculated on a percentage basis (number of points earned out of number possible) and assigned a corresponding letter:

94-100% = A	90- 93 % = A-	
86-89% = B+	83-85% = B	80-82% = B-
76-79% = C+	73-75% = C	70-72% = C-
66-69% = D+	60-65% = D	
Less than 60% = F		

I will not use any kind of judgments to lower your final grade.

MATH/MATH 345-Point Distribution (Dr. Kanbir)

Evaluation Item	Points (Max)
Attendance	20
Participations	30
Presentations	60
Read/Write- Reflection	30
Practicum Lesson Plans	30
Practicum Summaries	30
Homework- SETs	90
Computational Fluency Test (CFT)	50
Weekly Quizzes	50
Quizzes	50
Tests	70
Final	100
Total	**600**

All of this requires a level of focus that cannot be obtained while you are using your cell phone (including texting, social networking, playing games or browsing the internet) or reading other material (including preparing for other classes). With both in class and in the school doing practicum work, it is extremely important that you interact with your colleagues, school personnel, and children in a respectful manner. **The use of a cell phone (which includes texting), reading other materials, and other unproductive and disruptive behaviors (during class or at the practicum location) are considered unprofessional. Please note that unprofessional behaviors have significant negative affect on you and your group and may result in a disposition concerns form.**
Activities such as talking or leaving the classroom while class is in session should be avoided. **Cell phones must be out of sight.**
Disposition Concerns: The Mathematical Sciences Department takes the preparation of teachers seriously. As such, we expect pre-service teachers to treat their preparation with the same level of seriousness. As you may know, the School of Education evaluates teacher candidates based on certain disposition indicators:

- Collaboration Issues: The ability to work together, especially in a joint intellectual effort.
- Honesty/Integrity: The ability to demonstrate truthfulness to oneself and to others; demonstrate moral excellence and trustworthiness.
- Respect: The ability to honor, value, and demonstrate consideration and regard for oneself and others.
- Emotional Maturity: The ability to adjust one's emotional state to suitable level of intensity in order to remain engaged with one's surroundings.
- Reflection: The ability to review, analyze, and evaluate the success of past decisions in an effort to make better decisions in the future.
- Flexibility: The willingness to accept and adapt to change.
- Responsibility: The ability to act independently, demonstrating accountability, reliability and sound judgment.

While there are many behaviors that may result in the issuance of a disposition concern form, some of the most frequent causes are *poor attendance, consistently being late for class, and not completing assigned tasks.* We view each of these as an indication of lack of reverence for learning and lack of responsibility, and any of these will result in the filing of a disposition concerns form. Any student needing to arrange a reasonable accommodation for a documented disability should contact Disability Concerns at 715-346-3365 or emailing datctr@uwsp.edu and/or by completing the http://www.uwsp.edu/disability/Documents/Request%20for%20Services.pdf
For more information, check out the Assistive Technology website.
http://www.uwsp.edu/assistive/Pages/default.aspx

The vision of mathematics promoted by National Council of Teachers of Mathematics is based on the following six principles:

- Excellence in mathematics education requires equity —high expectations and strong support for all students.
- A curriculum is more than a collection of activities; it must be coherent, focused on important mathematics, and well-articulated across the grades.
- Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well.
- Students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge.
- Assessments should support the learning of important mathematics and furnish useful information to both teachers and students.
- Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students' learning.

---Principles and Standards for School Mathematics
National Council of Teachers of Mathematics, 2000, pp.11–24

In the spirit of these principles and Standard for Mathematics Practices(SMP), this course is designed to provide you to opportunity to

1. Develop and understand mathematical knowledge for teaching related to PreK-5 mathematics, particularly in the domains of the number systems, counting and place values, whole number operations, algebraic reasoning, and problem solving as it relates to number and operations.
2. Analyze how diverse groups of students understand particular mathematics topics at various grade levels and construct instruction plans based on the analyses.
3. Learn about and become familiar with elementary school mathematics curriculum (e.g., Common Core State Standard for Mathematics (CCSSM 2010) and Standard for Mathematics Practice(SMP), etc.).
4. Become knowledgeable about teaching and learning materials (textbooks, resources, manipulatives, and technology) to assist them in planning meaningful activities for elementary students.
5. Be aware of current issues and topics of debate regarding mathematics education and learn to create an instructional environment independently and collaboratively so that it promotes problem solving with understanding and sense making for diverse groups of students.
6. Develop and practice habits of reflection and examination of teaching practices.

Preservice Teacher Outcomes:

Preservice teachers will be expected to develop and show competency in each the InTASC Model Core Teaching Standards' (2011) learning outcomes.

http://www.ccsso.org/Documents/2011/InTASC_Model_Core_Teaching_Standards_2011.pdf

Upon successful completion of this course students will be able to:
- Demonstrate an enhanced ability to provide multiple representations, analyze concepts and potential student difficulties, and communicate about mathematical situations involving number and operations. (InTASC #4)
- Effectively communicate their personal beliefs relative to teaching and learning of mathematics both orally and in writing. (InTASC #1, 8, 9, 10)
- Explore the issues and mathematical concepts required for teaching elementary mathematics and effectively communicate ideas and thoughts with peers via consistent dialog. This lays a foundation of confidence with mathematics that prepares prospective teachers for the ever-increasing demands within the professional of elementary teaching…not just able to do the mathematics bit able to explain WHY. (InTASC #1,3,4)
- Apply and adapt a variety of problem-solving strategies and develop the logical and critical thinking skills necessary to continue to read about and learn mathematical topics and how mathematics is used in real-world situations. (InTASC #5)
- Develop a deeper and broader understanding of mathematics as a whole by exploring the connections that exist among mathematical topics and between mathematics and other content areas. (InTASC #4, 5)
- Demonstrate deep understanding of the big idea of number sense, both at the elementary level and beyond. (InTASC #4, 5)
- Demonstrate personal and professional skills and habits that prepare one for the work of a public school teacher, especially the practice of reflecting on one's work and the work of students. (InTASC #10)
- Model persistence, conjecturing, and generalizing when working with mathematical situations/problems.
- Demonstrate, through field experience, the ability to create an engaging and inclusive learning situation. (InTASC #2, 3)